Journal of Small Business Management

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Why Create Value for Others? An Exploration of Social Entrepreneurial Motives
by Jennifer Ruskin, Richard G. Seymour, and Cynthia M. Webster

Social entrepreneurs create value for and with target communities in need. This paper responds to calls for research addressing social entrepreneurs' drive to benefit others. We draw from psychology to augment the understanding of motives in entrepreneurship before conducting a phenomenon-driven, instrumental case study of social entrepreneurs' motives. We find some emotions, such as entrepreneurial passion and frustration, lead to self-oriented motives, while sympathy and empathy are precursors for other-oriented motivations, such as altruism and social justice. This work provides a theoretical platform for future studies in entrepreneurial motivation that addresses the importance of nonfinancial motives and associated rewards for fostering engagement in the sector.

Introduction

In the young field of social entrepreneurship, even the definition of social entrepreneurs is contentious, despite substantial attention to the subject over the last decades (Bacq and Janssen 2011; Nicholls 2010). Regardless of whether the perspective taken is narrow, viewing social entrepreneurs as social bricoleurs who bring about small scale change at a local level, or broad, considering social entrepreneurs as social engineers who create systemic change at a national or international level (Zahra et al. 2009), most agree that social entrepreneurs create value for and with vulnerable segments of the population (Austin, Stevenson, and Wei-Skillern 2006; Dees 1998b; Martin and Osberg 2007).

Like commercial entrepreneurs, social entrepreneurs identify opportunities, leverage resources, and establish ventures. Rather than creating new ventures with the primary purpose of capturing financial gain, social entre-

preneurs act creatively, innovatively, and resourcefully to fill a market-based gap in the provision of a social good or service to a target community (Austin, Stevenson, and Wei-Skillern 2006; Nicholls 2006). The community in need typically is an "underserved, neglected, or highly disadvantaged population that lacks the financial means or political clout to achieve" social change without intervention (Martin and Osberg 2007, p. 35). Although social entrepreneurs' activities involve the economic, they prioritize nonfinancial outcomes (Austin, Stevenson, and Wei-Skillern 2006; Dees 1998b; Mort, Weerawardena, and Carnegie 2003) including cultural, social, and natural values (Seymour 2012). The balance of financial and nonfinancial goals varies among different types of entrepreneurs (Mahto et al. 2010). We focus on social entrepreneurs in an effort to offset the heavy emphasis on financial motivations in prior research (Haugh 2006; Ucbasaran, Westhead, and Wright 2001). With clear social goals,

Jennifer Ruskin is Deputy Academic Director of the Professional and Community Engagement program in the Faculty of Business and Economics at Macquarie University.

Richard G. Seymour is Director of the Entrepreneurship and Innovation Program at The University of Sydney Business School.

Cynthia M. Webster is Associate Professor of Marketing and Management at Macquarie University.

Address correspondence to: Jennifer Ruskin, Faculty of Business and Economics, Macquarie University, Building E4A, New South Wales, Australia, 2109. E-mail: jennifer.ruskin@mq.edu.au.

social entrepreneurs offer an interesting context for exploring nonfinancial motivations that may have relevance for other entrepreneurs.

Social entrepreneurs are a distinctive community of practitioners. We argue that extant literature explores how they operate social ventures (see, for example, Austin, Stevenson, and Wei-Skillern 2006; Corner, and Ho 2010; Di Domenico, Haugh, and Tracey 2010) without sufficiently understanding why they operate their social ventures. Despite several calls for research addressing why social entrepreneurs do what they do (Austin, Stevenson, and Wei-Skillern 2006; Haugh 2005; Miller et al. 2012), surprisingly little empirical research to date investigates social entrepreneurial motivation. To address this gap in knowledge, we ask what motivates social entrepreneurs to concentrate their resources and efforts on creating value for and with disadvantaged groups. In addition, we build on recent scholarly interest in the influence of emotions on entrepreneurial motivation and behavior (Baron 2008; Cardon et al. 2009) to consider whether particular emotions precede social entrepreneurial motivation. Given government, industry, and academic scholars' acknowledgement of the important role social entrepreneurs play in addressing increasingly complex social challenges (Bacq and Janssen 2011), a better understanding of social entrepreneurial motivation may assist social entrepreneurs, policymakers, and impact investors to build ventures that both create value for target communities *and* offer satisfying returns to social entrepreneurs.

Following the recommendation of Shane, Locke, and Collins (2003), this paper draws on the psychology literature to inform our understanding of entrepreneurial motivation. We begin with a discussion of emotions as antecedents to motivation followed by an overview of self- and other-oriented aspects of motivation from the field of psychology. After introducing each emotional antecedent and motive, we return to the entrepreneurship literature to review the current understanding of emotions and motives in the context of entrepreneurship. From this theoretical foundation, we gather data from social entrepreneurs to understand the factors that drive them. We discuss the results, embed them in the motivation and entrepreneurship literatures, and conclude with a conceptual model of social entrepreneurial motivation.

Human Motivation

Over a century of academic research addresses why people do what they do (Forbes 2011). Researchers alternately address motives (White 1959), needs (Deci and Ryan 1985; Maslow 1943; McClelland 1985), drives (Maslow 1943), desires (Reiss 2004), instincts (McDougall 1918), and goals (Kasser and Ryan 1993; Sheldon et al. 2004). For the purpose of this research, we use the terms motive, need, and drive interchangeably. We avoid using instinct, which is somewhat archaic (Carsrud and Brännback 2011), and desire, which conveys conscious decision-making. We reserve goal for addressing rewards associated with acting on motivations (Sheldon 2002). Researchers of entrepreneurial motivation tend to consider intentions (Carsrud and Brännback 2011) and personal characteristics that influence motivation, such as risk taking, locus of control and tolerance for ambiguity, alongside motives (Shane, Locke, and Collins 2003). We focus on motives.

Motivation is formed by a number of factors, including emotions (Batson and Shaw 1991), intentions (Krueger, Reilly, and Carsrud 2000), and past experience (Delmar and Wiklund 2008). We consider emotional antecedents to motivation in this study for three reasons. First, emotions may be particularly important for understanding the behavior of social entrepreneurs. For example, the social emotions of compassion and empathy enable one person to perceive the experience of others (Batson et al. 1988), and these emotions tend to be associated with social entrepreneurs (Dees 1998a; Prabhu 1999; Thake and Zadek 1997). Furthermore, a social entrepreneur's emotional connection to a social issue and/or target community can make it difficult to act in the strategic interests of their venture (Austin, Stevenson, and Wei-Skillern 2006), even though emotions can also increase engagement and commitment to the work (Renko 2013). Second, the relationship between emotions and entrepreneurial motivation is an under-researched area of interest in entrepreneurship in general (Cardon et al. 2012), and in social entrepreneurship, in particular (Miller et al. 2012). Recent studies suggest emotions play a role in entrepreneurs' experience of entrepreneurship (Morris et al. 2012) and their perceptions of success (Baron, Hmieleski, and Henry 2012), but research to date does not offer empirical evidence of associations between emotions and social entrepreneurial motivation (Miller et al. 2012). Third, social emotions have long been

associated with helping behavior (Batson and Shaw 1991; Cialdini 1991; Cialdini et al. 1987), but have received limited attention in the context of social entrepreneurship. The emotion-motivation connection may be of particular interest in social entrepreneurship, a context in which people establish ventures to benefit others.

A useful distinction in the motivation literature is between self- and other-oriented needs. Table 1 presents some of the major motivation theories categorized according to their identification of self- versus other-oriented motives, or both. The psychology and commercial entrepreneurship literatures tend to address self-oriented drives without much consideration for other-oriented motives (Batson 1990; Van de Ven, Sapienza, and Villanueva 2007). In departure from this tradition, the social entrepreneurship literature addresses other-oriented motivation with little attention to self-oriented motives. Recently, Miller et al. (2012) propose specific factors that foster other-oriented motivation in social entrepreneurship, focusing particularly on an emotional connection to the target community. We consider both self- and other-oriented aspects of social entrepreneurial motivation and the emotional precursors for each.

Emotional Antecedents

Emotions and motivations move people, in fact, both words originate from the Latin verb to move, *movere*, indicating a fundamental connection between the concepts (Bradley 2000). Emotional responses influence the direction, intensity, and persistence of motivated behavior (Seo, Barrett, and Bartunek 2004). Recent research suggests emotions precede entrepreneurial motivation and behavior with different emotions having distinct behavioral responses (Cardon et al. 2009; Hahn et al. 2012). Positive emotions, like joy, tend to influence judgments of entrepreneurial opportunities and increase the likelihood of pursuit (Welpe et al. 2012), whereas negative emotions, like shame, tend to reduce entrepreneurial motivation (Doern and Goss 2013). But, other negative emotions, such as anger, seem to incline entrepreneurs toward action (Welpe et al. 2012).

Emotions can be either personal or social in nature. Personal emotions do not depend on the emoting individual's perception of others. Most of the entrepreneurial emotion research addresses personal emotions, such as joy, anger, fear, and positive affect (Baron 2008; Baron, Hmieleski, and Henry 2012; Welpe et al. 2012). Other emotions are social emotions as they are experienced by a person when considering another person's situation (Batson and Shaw 1991). The emotions of sympathy and empathy are social emotions principally associated with other-oriented motivations (Bar-Tal 1985; Batson et al. 1988). Sympathy is the capacity to feel concern for others, while empathy is the ability to assume another person's emotional state (Eisenberg and Miller 1987). Past research in psychology associates the social emotion of empathy with the other-oriented motive of altruism (Batson and Shaw 1991). Among social entrepreneurs compassion is identified as an emotion that augments other-oriented motivations to pursue social entrepreneurship (Miller et al. 2012). Compassion is similar to empathy, but compassionate people identify with those who are suffering and empathic people may experience either the positive or negative emotions of others (Miller et al. 2012). Miller et al. (2012) propose that the processes of integrative thinking, prosocial cost-benefit analyses, and the commitment to help others transform compassion into social entrepreneurship.

Thus, evidence suggests that emotions can impact motivation. Further, personal and social emotions exist as distinct types of emotions, and specifically, the social emotion of empathy is associated with altruistic motivation. The link between emotions and motivation has not been extended to other-oriented motivation in general or between personal emotions and self-oriented motivation. In the next section, we explore the literature on self-oriented motivation.

Self-Oriented Motivation

Many of the psychological theories of motivation assume people act in their own interest and emphasize the self-oriented nature of human drives (Batson 1990). Personal needs lead people to seek safety, freedom, love, and success. For example, Maslow's (1943, 1954) hierarchy of needs framework proposes that people meet their most basic physiological needs first, such as food and shelter, before moving up the hierarchy to satisfy higher order needs, such as belongingness, and culminating with self-actualization.

In parallel with the psychology literature, the commercial entrepreneurial motivation literature focuses on self-oriented motivation (Van de Ven, Sapienza, and Villanueva 2007). Commercial entrepreneurship research acknowledges both financial and nonfinancial motivations for entrepreneurship, but tends to focus on venture performance and personal benefits associated

with entrepreneurship (Renko 2013). Need for achievement, the drive to complete challenging tasks to a high standard (McClelland 1953), is correlated both with the choice to become an entrepreneur (Stewart and Roth 2007) and the likelihood to perform successfully as an entrepreneur (Collins, Hanges, and Locke 2004). The need for autonomy, having control over one's own behavior (Deci and Ryan 2002), and independence, acting on one's own volition (Ryan and Deci 2001), also motivate the pursuit of an entrepreneurial career (Carter 2011; Kuratko, Hornsby, and Naffziger 1997). A common thread of these motives is the focus on benefits to the individual. Despite social entrepreneurs' motivation to create value for others, autonomy and independence drive some social entrepreneurs (Shaw and Carter 2007). Additional self-oriented goals of social entrepreneurship include personal satisfaction (Shaw and Carter 2007) and economic returns (Certo and Miller 2008; Peredo and McLean 2006).

Table 1
Sample of Self- and Other-Oriented Motivation Theories

Self-Oriented Motivation Theories		Other-Oriented Motivation Theories	
Authors and Theories	Self-Oriented Motives	Authors and Theories	Other-Oriented Motives
Maslow (1943) Hierarchy of needs	Physiological, safety, love, esteem, self-actualization	Kant (1788) principled motivation	Morality
Herzberg (1965) Motivator-hygiene theory	Achievement, recognition, work itself, responsibility, advancement, company policy and administration, supervision, supervisor relationship, peer relationships, working conditions, personal life	Bar-Tal (1985), Piliavin and Charng (1990) Altruistic behavior	Altruism
McGuire (1976) psychological motivations	Consistency, attribution, categorization, objectification, autonomy, stimulation, teleological, utilitarian, tension-reduction, expressive, ego-defensive, reinforcement, assertion, affiliation, identification, modeling	Batson et al. (1981, 1988, 1989) Empathy-altruism hypothesis	Altruism
McClelland (1953), McAdams (1980), Winter (1992) Human social motive theory	Achievement, affiliation, power	Dawes et al. (1988) collective motivation	Cooperation
Ryan and Deci (1995) Self-determination theory	Autonomy, relatedness, competence	Tyler (2000) social justice	Social justice

Table 1
Continued

Theories That Include Both Self- and Other-Oriented Motives

Authors and Theories	Self-Oriented Motives	Other-Oriented Motives
McDougall (1918) Instinct theory	Flight, repulsion, curiosity, pugnacity, self-abasement, self-assertion, reproduction, gregarious instinct, acquisition, construction	Parental instinct
Murray (1938) Theory of psychogenic needs	Dominance, deference, autonomy, aggression, abasement, sex, sentience, exhibition, play, affiliation, rejection, infavoidance, defendance, counteraction, achievement, acquisition, blamavoidance, cognizance, construction, exposition, harmavoidance, order, recognition, retention, understanding	Succorance, nurturance
Erikson (1982) stages of psychosocial development	Hope, will, purpose, competence, fidelity, love, wisdom	Care
Cialdini et al. (1987), Batson and Shaw (1991) Egoistic prosocial motivation	Egoism	Altruism
Max-Neef (1991) human scale development	Subsistence, affection, understanding, participation, idleness, creation, identity, freedom	Protection
Kasser and Ryan (1993) goals and well-being	Self-acceptance, affiliation, financial success	Community feeling
Reiss (2004) Theory of sixteen basic desires	Power, curiosity, independence, status, social contact, vengeance, honor, physical exercise, romance, order, eating, acceptance, tranquility, saving	Idealism, family
Forbes (2011) framework of human motivation	Security, identity, mastery, empowerment, engagement, achievement, belonging	Nurturance, esteem

Other-Oriented Motivation

Motivation is other-oriented if the primary intention is to benefit another individual or group of people and personal rewards for the behavior are secondary (Van de Ven, Sapienza, and Villanueva 2007). Although academic research addressing other-oriented motivation is relatively limited (Batson 1990), recent research considers the interplay between prosocial motivation and both job design (Grant 2007) and creativity (Grant and Berry 2011). In a review of the motivation literature, Forbes (2011) identifies just four explanations of prosocial motivation: the anticipation of personal benefits, the emotional response to people in need, the drive to help a target community, and the motivation to uphold a principle such as social welfare. Egoistic prosocial motivation suggests that people help others to gain personal satisfaction (Batson et al. 1988) or to relieve their own discomfort from watching others suffer (Cialdini et al. 1987). Alternatively, collectivist motivation (Dawes, Van De Kragt, and Orbell 1988; Van de Ven, Sapienza, and Villanueva 2007) and other-oriented motivation based on principles (Forbes 2011; Kant 1788) appear more genuinely focused on the needs of others.

Although commercial entrepreneurship research focuses more on self-oriented motivation, other-oriented motivation appears to play a role for at least some commercial entrepreneurs. At a basic level, the concept of self extends to

seeking benefits for the entrepreneur's family (Buttner and Moore 1997; Kuratko, Hornsby, and Naffziger 1997). At a slightly broader level, entrepreneurs may have aspirations to benefit nonfamily members of their community (Peterson 1995) or nonfamily employees of a family firm (Zellweger et al. 2013). Research shows that while women entrepreneurs seek to help others across their careers, their male counterparts are more likely to have other-oriented motivations later in their careers (Wasserman 2008). Overall, entrepreneurs appear to experience a mix of self- and other-oriented motives that vary by gender and across time.

A continuum of organizational motivation distinguishes social from commercial ventures (Dees 1998a), with social ventures characterized by social mission taking precedence over financial aims (Austin, Stevenson, and Wei-Skillern 2006; Dees 1998b; Mort, Weerawardena, and Carnegie 2003). Social entrepreneurs' focus on an other-oriented mission affects their choice of organizational structure (Townsend and Hart 2008), access to financial resources (Miller and Wesley Ii 2010; Tracey and Jarvis 2007), and likelihood of venture success (Renko 2013). Scholars alternately describe social entrepreneurial motivation as prosocial (Miller et al. 2012; Renko 2013) or altruistic (Mair and Noboa 2006; Nicholls 2006). Both prosocial motivation and altruism refer to the voluntary, intentional desire to help others (Bar-Tal 1985; Grant 2008). Altruism is the narrower concept with the additional stipulation that there cannot be expectation of an external reward (Bar-Tal 1985).

In summary, there is some recognition of the role emotional antecedents play in forming entrepreneurial motivation, but the influence of particular emotions on self- and other-oriented social entrepreneurial motivation is unclear. Researching self-oriented motivation is common in psychology and commercial entrepreneurship research tends to follow suit, but the extant literature on self-oriented motives among social entrepreneurs is quite limited, mainly examining matters of achievement and autonomy. Though a range of other-oriented motives are considered in psychology, the entrepreneurship research does not substantially address this area. The limited social entrepreneurship literature on other-oriented motivation discusses altruism and prosocial motivation but provides insufficient empirical evidence of their existence. With this clear gap in the extant literature, we seek data and evidence from social entrepreneurs to discover emotional antecedents, self-oriented motives, and other-oriented motives that drive the pursuit of social entrepreneurship.

Methodology

We take a qualitative case study approach to explore the poorly understood phenomenon of social entrepreneurial motivation (Yin 2009), seeking to enrich conceptual understandings and generate theory (Chetty 1996). To learn from social entrepreneurs willing to share their stories (Thompson, Alvy, and Lees 2000) and generate an instrumental case of social entrepreneurial motivation, we probed the perspectives of a number of social entrepreneurs operating separate ventures. Small business case studies often focus on a single venture, examining an intrinsic case selected for its own merit (see for example Fuller and Cummings 2003; Gardet and Fraiha 2012; McGovern 2006). In our study, individual social entrepreneurs are the unit of analysis, and social entrepreneurial motivation is the phenomenon-driven case under investigation (Eisenhardt and Graebner 2007). In the following paragraphs, we discuss our approach, data collection, and analysis.

With little prior empirical evidence of social entrepreneurial motives, we designed our study to gather data on motives that occur throughout founding and management. We controlled for the environment by including only social entrepreneurs within Australia (Shane, Locke, and Collins 2003). We defined social entrepreneurs broadly to include people who established ventures, either individually or as part of a start-up team, with the primary aim of achieving a social impact (Bacq and Janssen 2011). All study participants were recommended by agencies that support social entrepreneurs, and when asked, all participants indicated that addressing a social issue was the primary reason for establishing their ventures. The ventures included for-profit, nonprofit, and hybrid organizations (Townsend and Hart 2008). In almost all cases, the social entrepreneur founded a new organization, although one initiated a new project within a 129-year-old nonprofit organization. In that instance, the social venture had its own leadership team and staff. We included a range of venture stages, entrepreneurship processes, and social purposes. The two Australian agencies from which we sourced our cases distributed an invitation to participate in the study to approximately twenty social entrepreneurs listed on their databases. From the resulting

Table 2
Overview of Social Entrepreneurs (SE)*

SE	Field of Work	Region Served	Org. Form	Founder	Gender	Age	Years of Operation
SE1	Career development	Sydney, Melbourne	NP	Individual	M	25–29	1
SE2	Community development	Sydney	NP	Team	M	30–34	9
SE3	Nutrition	Sydney	NP	Individual	F	35–39	1
SE4	Career development	Sydney, Brisbane	FP	Team	F	25–29	3
SE5	Financial services	Victoria	NP	Team	F	35–39	15
SE6	Health care	Australia, New Zealand	NP	Individual	F	35–39	6
SE7	Career development	Sydney	NP	Team	F	20–24	<1
SE8	Cultural awareness	International	FP	Individual	F	40–44	2
SE9	Environmental educ.	International	NP	Team	F	40–44	18
SE10	Arts education	International	NP	Individual	F	50–54	6
SE11	Youth leadership	Melbourne, Sydney	NP	Individual	F	25–29	7
SE12	Domestic violence	New South Wales	FP	Team	F	35–39	2
SE13	Nutrition, career development	Sydney	FP	Team	M	35–39	<1

*Adapted from Ruskin and Webster 2011.
Abbreviations: Org. Form, organizational structure; NP, nonprofit; FP, for profit; Age, age at venture founding.

pool of seventeen, we selected four social entrepreneurs with active social ventures who were accessible, willing to participate, and operated ventures that addressed distinct social issues (Stake 1995). After the first four interviews, we selected nine additional social entrepreneurs to include a range of venture profiles in terms of field of work, organizational structure, individual-versus team-founded, and years in operation in our sample (Patton 1999; Stake 2006). We included all three men who were part of the pool of potential participants. See Table 2 for a description of the social entrepreneurs who participated in the study.

Data obtained to explore social entrepreneurial motivation consisted of in-depth, semistructured interviews, follow-up emails, and additional documentation such as brochures and web profiles. In line with a qualitative approach, we gathered data from and about social entrepreneurs until no new meaningful information emerged (Guest, Bunce, and Johnson 2006). Semistructured interviews took place over five months, either in-person or via Skype. The interviewer asked six primary

questions and allowed interviewees to speak freely. Table 3 offers an overview of the main questions asked, including sample probing questions used to prompt more complete responses and examples if required.

Interviews were transcribed and both transcriptions and emails were entered in NVivo 8 (QSR International, Melbourne, Australia, USA) to code passages relevant to motivation. An initial round of open coding identified lists of emotions, self-oriented motives, and other-oriented motives. A coding frame was established to include emotional antecedents and both self- and other-oriented motives. Then, we returned to the transcripts and coded all motivation-related comments a second time (Spiggle 1994). This selective coding process allowed us to analyze the data from different perspectives (Patton 1999). The first pass of the data occurred without a frame to anticipate particular motives, while the second coding process allowed us to search for additional statements that would confirm or refute the emotions and motivation constructs that we initially found. This information

Table 3
Overview of Interview Questions

Primary Questions	Sample Follow-up Questions
Please describe your organization.	How did you initially assess the need for your organization's activities?
Who benefits from your venture's activity, and how do they benefit?	What value does your venture create?
How are your personal needs met by the organization?	Do the benefits you receive fit your expectations from before you became involved?
How do you measure and report performance?	Do your indicators include financial, social, cultural and/or environmental performance?
What are the typical transactions associated with your venture's activity?	Are the exchanges balanced in terms of the value of what is exchanged?
Do you describe yourself as a social entrepreneur?	What drew you to become a social entrepreneur?

was triangulated with other documentation from brochures and websites.

Following two rounds of initial coding, we categorized the coded data into themes and subcategories (Corbin and Strauss 1990). Comments by theme and subcategory were entered into a matrix format and reviewed to identify patterns and linkages across themes (Miles and Huberman 1994). Although some techniques for qualitative data analysis were drawn from Corbin and Strauss (1990), this research is not grounded theory (Eisenhardt and Graebner 2007). Our data gathering and analysis were guided by conceptual knowledge drawn from the extant psychology and entrepreneurship literatures (Sutton and Rafaeli 1988). Thus, in contrast to grounded theory, we entered our data collection phase with a framework of types of motivation that have emerged in other contexts to assess their potential for extending theory in social entrepreneurship. Table 4 outlines both the coding frame of emotions and motives as well as the constructs that were identified through further analysis. Specifically, we categorized passages according to the type of emotion or motivation referenced, then we used an abstraction process to group related drives under a single motivational construct (Spiggle 1994). For example, the need to reciprocate and experiencing a sense of calling were clustered together under the motive that results from feelings of obligation. These processes of open coding, identifying patterns, and comparing across

themes outside the context of grounded theory research have been used in past entrepreneurship research (Dyer and Ross 2000).

Findings

The results are organized according to whether constructs are emotional antecedents, self-oriented motives, or other-oriented motives. We draw on the rich psychology and entrepreneurship literatures to situate emotional antecedents and self- and other-oriented motives visible in the data. First, we define constructs not identified in the literature review and consider how they have been understood in past commercial and social entrepreneurship studies. Then, we discuss unique aspects of each construct, using direct quotes from social entrepreneurs to clarify and enrich the findings.

Emotional Antecedents

The importance of emotions as antecedents to entrepreneurial motivation surfaces as a dominant finding. Although there are clear references to links between emotions and entrepreneurship in the literature (see, for example, Cardon et al. 2009; Hahn et al. 2012; Welpe et al. 2012), our interview questions do not specifically investigate emotions as antecedents to social entrepreneurial motivation. Of their own accord, participants describe their strong emotional involvement in response to various questions about their ventures, including questions about venture structure, need assessment, team

Table 4
Overview of Findings

Emotional Antecedents

Passion	Frustration	Sympathy	Empathy
• "I'm in love with the concept, I'm in love with the people involved. I just love it." (SE7) • "The joy of sharing stories, the joy of knowing that…That's a huge buzz for me; it's so exciting…That really excites me." (SE8) • "When I [think about how to describe what I'm doing] I think—gosh, I'm just doing what I love." (SE11)	• "Just got really fed up with the unfulfilling nature of what I was doing." (SE1) • "We were getting sick of seeing exported goods and mass-produced fashion being sold off cheap." (SE4) • "I was really disheartened and felt helpless…I remember feeling frustrated and overwhelmed." (SE4)	• "I had an experience as an 18 year old…I experienced racism for the first time and I was horrified…. It was a really strong response for me, and a really strong life experience, and I think deep-down I was just really passionate about social justice after that." (SE8)	• "I can't possibly be alone with this; no one is such a special snowflake that their thoughts are all their own. There have to be other women out there who feel like this." (SE6) • "My experience with mental health issues and violence and coming from a messed-up family background…I've had some messed up stuff that I've experienced, so I kind of related." (SE7)

Self-Oriented Motives

Achievement	Autonomy	Relatedness	Influence
• "It's possible [to tackle education challenges in remote communities]… if I can do it [and]… I haven't got a team of ten people, I've got no space, I've got no money… why can't people in power [do it]?" (SE10)	• "This allows me to run my own business, set up my own business, make my own mistakes." (SE1) • "[My wife and I] get a stipend, but that stipend is only equivalent to one of us. That's our choice; that's our lifestyle." (SE2)	• Awareness of the issue through personal relationships (SE3 and SE4)	• Offer people a community as an alternative to "cocooning" (SE2) • "I [have the right to] control over whether I choose to have children… and where and how I choose to birth those children." (SE6)

Table 4
Continued

Self-Oriented Motives

Achievement	Autonomy	Relatedness	Influence
• "Part of it could be looking back and seeing that I've been able to do that, set up an organisation and go through all of the ups and downs that go along with that." (SE11) • "I've always been someone that really likes seeing a problem, trying to solve it and then let other people run the solution." (SE13)	• "I get to choose what goes in." (SE10) • "I can sleep at night knowing that I'm doing something…I'm not sitting on my hands." (SE6)	• Moved to the target community "to *be* [there]. We call it incarnational living, because we're completely in the midst of everything…that's how these girls are allowing me to have an input into their lives. They trust me and they listen to me and they ask for my advice." (SE7) • "I became a farmer…because I wanted to be able to look those farmers that I had been dealing with in the eye and say, 'I know for a fact that this is possible.'" (SE13)	• "We're not harming the environment in any way whatsoever… That's a pretty good feeling." (SE8) • The Vietnam war was a wake-up call and became a driving force to encourage a more sustainable "way of living and being in the world." (SE9) • "My youngest daughter didn't really get much of an education for a whole lot of reasons…not being able to influence what happened with her …part of this is that I can do this for other kids." (SE10)

Other-Oriented Motives

Altruism	Nurturance	Social Justice	Sense of Obligation
• "I just feel that the wage part of it is not so important as the change." (SE3)	• "We were told we could either put him on the…drug for ADHD or take the path of…changing the diet, and I thought, I can't just give him that drug without knowing that I've done everything I could do." (SE3)	• "We've got the 13th largest company in the world…and we don't have a single indigenous employee. Something's wrong." (SE1)	**Destiny** • "This is exactly what I'm meant to do.' … I had a very strong feeling that this was some kind of destiny for me" (SE8) • "It's almost filling a call to action." (SE9)

Table 4
Continued

Other-Oriented Motives

Altruism	Nurturance	Social Justice	Sense of Obligation
			Reciprocity
• "I think that people thought I was crazy, because I was basically working for free and for other people, and not for myself." (SE4)	• "Holding [my grandchild] in my arms for the first time, [I thought] what about this beautiful being that I'm now responsible for?…becoming a grandma has quadrupled that drive…I wonder, 'What's it going to be like for them when they're my age?'" (SE9)	• "Unbelievable inequity between people currently living here on the earth… I just find that gap irreconcilable and obscene." (SE9)	• "I'm using a tool that changed my life to change other people's lives." (SE1)
• "Nothing economic was driving me. It was driven by the social benefits I knew this product could give." (SE8)		• "Because, if education is important for kids, then it doesn't actually matter where they live, what their religion is, what colour they are, what sort of community they're living in." (SE10)	• "It's not just because I'm amazing that I pulled myself out of it. It's because I had people around me…so I just decided that I wanted to do the hard yards with other people." (SE7)
• "My biggest aim now is to get [my one part-time employee] full-time employment, even before I get full-time employment." (SE8)		• "We have a fundamentally unfair food system at both ends…the system's not great for the farmers and at the other end, the food is expensive for consumers." (SE13)	• "There were many people along the way who held my hand and loved me anyway and supported me…What do I want that to feel like for other people?" (SE12)

members, and prior experiences that led to venture formation. Participants refer to passion, frustration, sympathy, and empathy as emotions associated with their social entrepreneurial motivation. *Passion* is feeling drawn toward an activity that one enjoys, finds important, and chooses to do (Vallerand et al. 2003). Entrepreneurial passion involves similar intense positive emotions directed toward engaging in meaningful entrepreneurial activities and is associated with increased motivation (Cardon et al. 2009). Some of the social entrepreneurs in this study use words like "love" (SE7, SE8, SE11) and "joy" (SE8) to explain why they do what they do. SE8 comments that one aspect of her venture is "a huge buzz for me…[it] really excites me." Similarly, SE7 says she's "in love with the concept, I'm in love with the people involved."

In contrast, other participants are drawn to social entrepreneurship as a means to address a source of *frustration*. Frustration in a work context refers to feelings of stress, irritation, and annoyance (Hart and Staveland 1988) associated with constraints that prevent achievement of valued goals (Peters and O'Connor 1980). A tendency toward negative affective experiences among entrepreneurs limits the scope of goals set and increases the likelihood of dissatisfaction with outcomes (Delgado-García, Rodríguez-Escudero, and Martín-Cruz 2012). Some social entrepreneurs in this study are drawn to establish their ventures as a means to reduce a source of frustration. For example, SE1 says he "just got really fed up with the unfulfilling nature of what I was doing" and left his former job to establish his social venture. SE4 expresses her frustration with the available opportunities for new, independent designers when she says she is "sick of seeing exported goods and mass-produced [items] being sold off cheap."

Sympathy and *empathy* appear to reflect the type of emotional connection that social entrepreneurs feel toward their target communities, either as sympathetic observers or as members of the target community. SE8 indicates the role sympathy played to ignite her interest in social issues by saying she became interested in addressing issues of prejudice when she observed racism for the first time as a young adult. She explains she was "horrified… it was a really strong response for me." In contrast, SE6 and SE7 suggest they experience the same challenges faced by their target communities with comments such as "I can't possibly be alone" (SE6) and "I've had some messed up stuff that I've experienced, so I kind

of related" (SE7). We use the term empathy instead of compassion to conform with the long-standing association between empathy and altruism in academic research (Batson et al. 1988; Cialdini et al. 1997), and because comments by social entrepreneurs in this study are consistent with the definition of empathy.

Self-Oriented Motives

Need for achievement is a motivation for almost all social entrepreneurs in our study as they talk about their desire to challenge themselves and find solutions to social issues. For example, SE13 enjoys "seeing a problem, trying to solve it, and then let[ting] other people run the solution." SE11 describes the satisfaction of looking back and seeing that she has "been able to do that, set up an organization and go through all of the ups and downs that go along with that." Though achievement surfacing as an entrepreneurial motive is not surprising, as achievement has long been associated with the choice of an entrepreneurial career (Collins, Hanges, and Locke 2004; McClelland 1965; Shane, Locke, and Collins 2003), the focus of the achievement drive differs. For social entrepreneurs achievement appears to center on creative processes that solve entrenched societal problems. SE10 is a prime example. She notes that her venture demonstrates that "it's possible [to tackle education challenges in remote communities]… if I can do it [and]… I haven't got a team of ten people, I've got no space, I've got no money… why can't they do it?… why can't people in power [do it]?"

This study confirms that *autonomy*, having the freedom to determine how to manage their ventures, appears to be at least part of the motivation for social entrepreneurs. For example, SE1 says being a social entrepreneur "allows me to run my own business, set up my own business, make my own mistakes," and SE10 comments, "I get to choose what goes in." Our findings suggest that autonomy among social entrepreneurs extends to both choosing how to live one's life and having the social impact one values. When asked about the minimal salary that he and his wife take from their business, SE2 replies that "it's our choice, that's our lifestyle." He acknowledges that it is "a lot of hard work," but identifies several large, interconnected societal problems that he and his wife are committed to addressing. SE6's venture is part of her search for meaning in life as is evident in her statement: "I can sleep at night

knowing that I'm doing something... I'm not sitting on my hands."

Relatedness, the drive for warm, close connections with other individuals (Deci and Ryan 2002; McAdams 1980; Murray 1938), becomes apparent as a motive for some social entrepreneurs in the study. People seek companionship with peers (Reiss 2004) and membership in a community (Deci and Ryan 2002; Maslow 1943). The time and efforts devoted to building social networks (Cromie and Birley 1992; Jack 2010; Zhang et al. 2008) suggest entrepreneurs act to meet their need for relationships. None of the social entrepreneurs in our study purposefully started their ventures to increase their social connections. Instead, personal relationships seem to make them aware of serious problems in need of solutions. For example, SE3 considers her son, who faces a health challenge, as the primary inspiration for her venture that makes healthy food affordable. Similarly, SE4 identifies her relationships with other designers as contributing to her awareness of the disadvantages faced by emerging, independent designers in a marketplace dominated by mass production. Relatedness also appears to offer a form of legitimacy. SE13 says he "became a farmer... because I wanted to be able to look those farmers that I had been dealing with in the eye and say I know for a fact that this is possible." SE7 chooses to live in her target community and calls it "incarnational living, because we're completely in the midst of everything." In both cases, social entrepreneurs who come from outside their target communities build trust with the community. SE7 comments "that's how these girls are allowing me to have an input into their lives. They trust me and they listen to me and they ask for my advice," attributing some of her venture's success to the relationships.

Power, or *influence*, is the drive to alter the behavior of others (Winter 1992), and it motivates the social entrepreneurs in the study. Many of the social entrepreneurs in our study engage in their ventures to shape the actions of people in their target communities in ways that promote the participant's personal values. For example, SE9 built a venture that educates and trains communities around Australia and internationally to identify ways they can be more sustainable at individual, community, and regional levels. She sees her venture as an opportunity to encourage a more sustainable "way of living and being in the world." Similarly, SE2 encourages community engagement,

SE8 promotes cultural understanding and SE10 fosters arts education. Each of these participants has built a venture through which they have the capacity to influence others and bring about social change. This is consistent with evidence that power-motivated people seek careers in which they have legitimate authority to guide the behavior of other individuals (Winter 1992).

Other-Oriented Motives

As anticipated, *altruism* is evident as a motive in this study. Participating social entrepreneurs indicate they help unknown others without anticipating external rewards. For example, SE3 comments, "I just feel that the wage part of it is not so important as the [social] change," and SE4 says "people thought I was crazy... [to be] working for free and for other people and not for myself." When SE8 considers the reasons for establishing her venture, she states quite directly, "nothing economic was driving me. It was driven by the social benefits I knew this product could give" to the target community.

Comments from social entrepreneurs in the study also reflect *nurturance*, the need to care for, encourage, and foster the development of familiar others (Murray 1938; Reiss 2004). Nurturance as a motive for entrepreneurship is consistent with research suggesting that commercial entrepreneurs build businesses to offer a secure future for their family members (Kuratko, Hornsby, and Naffziger 1997). Social entrepreneurs appear less focused on meeting family responsibilities through their ventures (Shaw and Carter 2007). Nonetheless, SE3 affirms that she built a venture that supports lifestyle changes to address her son's health challenges while simultaneously improving access to healthy, affordable food for other community members. SE9's venture addresses sustainable lifestyle issues and she describes becoming a grandparent as "quadrupling" her drive to engage in her venture wondering "what's [the world] going to be like for [my grandchildren] when they're my age?" Two aspects of nurturance are indicated in the above statements: caring for known others and providing for future generations (Erikson 1982). Nurturance is coupled with altruism when SE8 explains her aim is "to get [my one part-time employee who is a member of the target community] full-time employment, even before I get full-time employment," thus placing the creation of value for a known other over her own personal returns.

Social justice, equitable access to opportunities and resources (Tyler 2000), emerges as the strongest finding, evident for all social entrepreneurs in the study. Social justice is similar to other concepts of motivation including idealism, working to improve society (Reiss 2004), and seeking to create a better place (Kasser and Ryan 1993). With a small number of exceptions (Zhao 2013), social justice is not addressed to a great degree in the commercial entrepreneurship literature. Social entrepreneurs, conversely, are perceived to seek equitable access to opportunities and resources for marginalized segments of the population (Martin and Osberg 2007; Thake and Zadek 1997). One of the few empirical studies of social entrepreneurial motivation finds that 79 percent of social entrepreneurs cite creating social change as an influential factor leading them to establish a social venture (Shaw and Carter 2007). All of the social entrepreneurs in this study discuss the drive to promote equity in their target communities. SE9 refers to the "unbelievable inequity between people currently living here on the earth," which she calls "irreconcilable and obscene." Other social entrepreneurs discuss a lack of access to employment (SE1 and SE2), financial services (SE5), markets (SE4 and SE8), education (SE10), healthy food (SE3 and SE13), and other opportunities in life (SE6, SE7, SE11, and SE12). People motivated by social justice seek to eliminate or change situations that result in disadvantage for a particular group of people. For example, SE10 comments that "if education is important for kids, then it [should not]... matter where they live, what their religion is, what color they are, [or] what sort of community they're living in." SE13 identifies "a fundamentally unfair food system at both ends": farmers have difficulty covering the cost of growing healthy, organic food, and "the food is expensive for consumers."

Though altruism and social justice are similar, there are two clear distinctions. First, altruism motivates behavior to help an individual facing a personal crisis, such as offering extended paid leave to an employee dealing with the sudden onset of a long-term disability. In contrast, social justice motivates behavior to alleviate a source of systemic disadvantage, such as a lack of employment options for people with disabilities. Second, a motive is not altruistic if the actor expects to receive an external reward (Bar-Tal 1985), but people motivated by social justice may expect to benefit personally if they reduce disadvantage in their own community.

Although a *sense of obligation* receives relatively little attention in the psychology literature, two aspects of this motive emerge from the data. In some cases, people perceive their work as a calling. A modern experience of work as a calling involves fulfilling one's destiny, doing one's duty for society, and even feeling drawn to a particular type of work by fate (Bunderson and Thompson 2009). Consistent with this aspect of obligation, some of the social entrepreneurs in our study feel a sense of obligation to the target community as their "destiny" (SE8) or a "call to action" (SE9). The other aspect of feeling obligated stems from the need to reciprocate. Delayed reciprocity refers to returning a favor at a later point in time (Funk 2012) and generalized exchange suggests that favors may be repaid to society at large (Yamagishi and Cook 1993). Evidence from past studies confirms that feeling a need for reciprocity drives employees to engage in prosocial behavior (Korsgaard et al. 2010) and family businesses to support their communities (Niehm, Swinney, and Miller 2008). A number of social entrepreneurs in this study feel the need to reciprocate an earlier advantage. SE12, for instance, feels a personal obligation to close friends and family: "there were many people along the way who held my hand and loved me anyway and supported me." SE7 refers to an adopted community in her comment "It's not just because I'm amazing that I pulled myself out of it. It's because I had people around me... so I just decided that I wanted to do the hard yards with other people." At an even broader level, SE1 appreciates that although his social venture is in a different community and country from the program in which he participated as a youth, "I'm using a tool that changed my life to change other people's lives." At different levels of engagement from individual to community and nationally to internationally, these social entrepreneurs are expressing a sense of obligation to give back to the target community as a driving force for their ventures.

To summarize, the study findings suggest passion, frustration, sympathy, and empathy as emotional precursors to social entrepreneurial motivation. It seems that slight variations on the self-oriented needs of achievement, autonomy, relatedness, and influence are present among social entrepreneurs. In addition to altruism, which is commonly identified in the literature, our data indicate social entrepreneurs experience three other-oriented motives: nurturance,

social justice, and a sense of obligation. Taken together these four other-oriented motives may be components of what is frequently referred to as prosocial motivation. Building on these findings, we now propose a conceptual model of social entrepreneurs' motives.

Discussion

Our results suggest that passion and frustration are emotional antecedents of self-oriented social entrepreneurial motivation, while sympathy and empathy are emotional antecedents of other-oriented drives of social entrepreneurs. The self- and other-oriented motives identified are consistent with prior assumptions that social entrepreneurs strive both to help others and achieve personal fulfillment (Mair and Martí 2006). In this section, we present three key findings that are represented graphically as a conceptual model of social entrepreneurial motivation in Figure 1.

The social entrepreneurs in our study discuss passion, frustration, sympathy, and empathy in response to questions about their motivations. They are either drawn toward social entrepreneurship to pursue personal passions or pushed away from prior employment to alleviate the experience of frustration. For example, SE10 and SE11 express passion when describing why they engage in their ventures. These same study participants experience self-oriented motives, including achievement, autonomy, and influence. Similarly, for SE1 and SE4 the emotion of frustration is prevalent in stories about why they founded their ventures, and they discuss the self-oriented motives of autonomy and relatedness. In this way, passion and frustration

Figure 1
Conceptual Model of Social Entrepreneurs' Motives
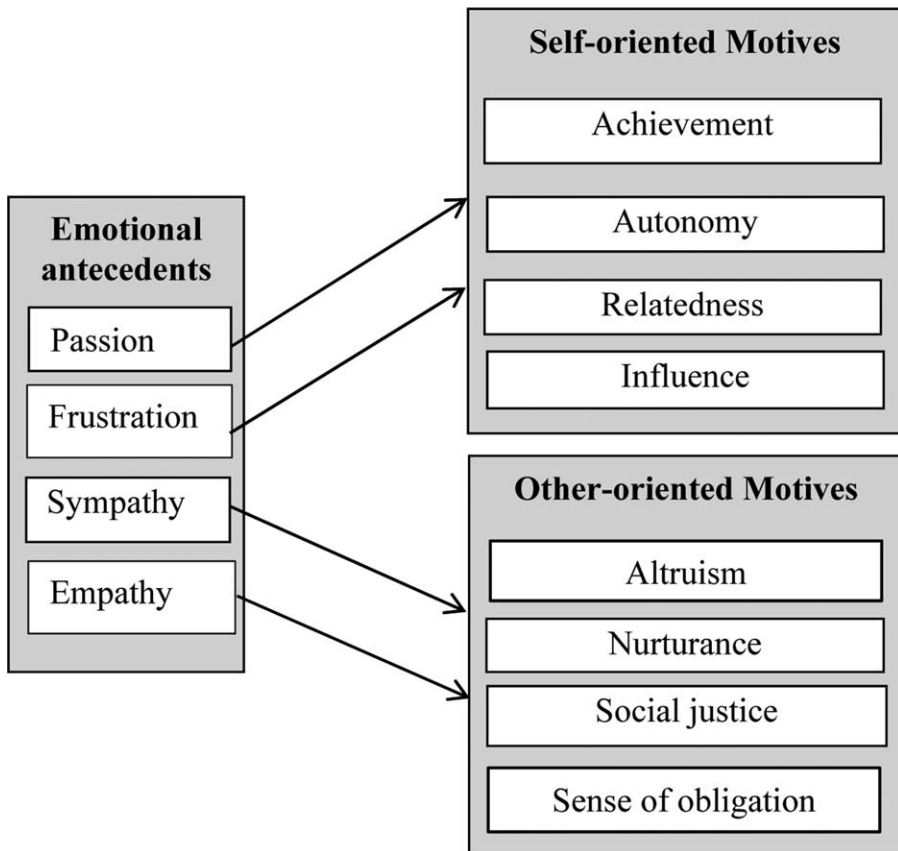
appear linked to self-oriented motives. The social emotions of sympathy and empathy seem to precede other-oriented motives. SE8 reveals sympathy in telling formative life experiences that eventually led to becoming a social entrepreneur. Altruism and a sense of obligation appear to be strong motivating forces for her. Comments by SE7 indicate that she empathizes with her target community and is motivated by a sense of obligation. As these associations are drawn from qualitative data, further quantitative research is required to assess whether the proposed model associations are appropriate (see for example Anderson and Vastag 2004; Dick, Heras, and Casadesus 2008; Mithas and Krishnan 2009). Nevertheless, this key finding indicates that passion is associated with maximizing personal satisfaction, frustration is linked to minimizing personal dissatisfaction, and further, both sympathy and empathy foster the drive to help others.

Our study identifies four self-oriented motives for social entrepreneurship: achievement, relatedness, autonomy, and influence. All four motives receive substantial attention in the psychology literature (see, for example, Deci and Ryan 2002; McAdams 1980; McClelland 1953; Winter 1992), and achievement is firmly established in the entrepreneurship literature (Carsrud and Brännback 2011; Collins, Hanges, and Locke 2004; Shane, Locke, and Collins 2003). Revisiting the literature after analyzing our data reveals a nuanced expression of each motive among social entrepreneurs. Achievement-motivated social entrepreneurs apply creativity to resolve challenging social problems in addition to a more general drive to complete difficult tasks to a high standard. Autonomy is acting on one's own volition (Ryan and Deci 2001) to manage ventures and live life meaningfully. Relatedness-motivated social entrepreneurs seek strong, supportive connections with others (Deci and Ryan 2002; McAdams 1980). These relationships both expose social entrepreneurs to the problems they address and establish their legitimacy with target communities. For social entrepreneurs, influence is not the drive to dominate others but rather to guide the actions of others (Winter 1992) to bring about social change.

The other-oriented motives that are apparent in our data include nurturance, altruism, social justice, and a sense of obligation. Each of these motives is identified and studied in the psychology literature (see, for example, Davis, Panksepp, and Normansell 2003; Korsgaard et al. 2010; McCrae, Costa, and Martin 2005; Pozzebon et al. 2010), but not significantly in the context of entrepreneurship. Our sample of social entrepreneurs expresses other-oriented drives in ways that adhere closely to the constructs as they are defined in the literature. What is interesting and important is that much of the recent research in management and entrepreneurship collapses other-oriented motivation into prosocial motivation (Grant 2007; Grant, and Berry 2011; Miller et al. 2012). A key finding of this study that warrants further investigation is the presence of four specific types of other-oriented motivation among social entrepreneurs.

Of the four other-oriented motives identified in our data, only altruism receives attention in the entrepreneurship literature (Karra, Tracey, and Phillips 2006; Patzelt and Shepherd 2011). Currently in the context of social entrepreneurship, altruism is vaguely defined as unselfish behavior with little empirical evidence (Baron 2007; Mair and Martí 2006; Nicholls 2010). This study considers altruism specifically as the voluntary drive to help others without expecting extrinsic rewards and finds supporting data from several participants who place the creation of social value for others ahead of their own financial returns. Although not specifically identified, a return to the literature suggests some experience of nurturance, social justice, and feelings of obligation among social entrepreneurs. Choi and Kiesner's (2007) teaching case of a priest establishing a training and employment social venture for youths as an alternative to gang membership mirrors the concept of nurturing. The priest's motivation appears based in deep-seated, caring relationships with the youth beneficiaries. The drive for social justice is apparent in social entrepreneurs' striving for social change to address unjust disadvantages facing their target communities (Martin and Osberg 2007). Prior research, however, associates social justice with community-level pursuit of social change, rather than as a motive that drives individuals (Nicholls 2010). Although obligation is not prominent in the social entrepreneurship literature, emerging evidence shows an effective strategy for encouraging socially responsible behavior is to establish the need to reciprocate (Griskevicius, Cant, and Vugt 2012). Thus, additional other-oriented motives may be present, but overlooked, among social entrepreneurs.

Results of this study indicate some similarities with, and differences from, prior entrepreneurial motivation research. Recent reviews of

the commercial entrepreneurial motivation literature identify the need for achievement and independence as common among commercial entrepreneurs (Carsrud and Brännback 2011; Shane, Locke, and Collins 2003). Our findings suggest that social entrepreneurs are motivated similarly to succeed at the challenges of establishing a new venture, and to have the autonomy to work and manage their ventures without external control. Following from motivation research that distinguishes entrepreneurs who pursue an opportunity from those who become entrepreneurs out of necessity (Carsrud and Brännback 2011), our data suggest that most study participants are opportunity entrepreneurs. They see potential to have a social impact in an area that is important to them, and they establish a venture to take advantage of the opportunity to create social change. In contrast, other participants indicate feelings of destiny or a calling to establish their ventures. Rather than a necessity for survival, there is a component of needing to fulfill one's purpose in life. One of the few studies of social entrepreneurial motivation finds that social entrepreneurs principally seek to have a social impact, and experience less drive to be independent or attain financial security than their commercial counterparts (Shaw and Carter 2007). Our findings emphasize other-oriented motives, but also recognize the fundamental relevance of self-oriented motives to social entrepreneurs.

Our study has both the strengths and limitations of a sample of 13 social entrepreneurs in Australia. Although we attempted to include as much variation as possible, in terms of venture stages, social issues, entrepreneurship process, and founder demographics within the parameters of Australian social entrepreneurs, it is possible that a larger sample of social entrepreneurs or social entrepreneurs from different countries would reveal additional motives not captured in our study. At this exploratory phase of studying social entrepreneurial motivation, the strength of rich, deep, in-depth interviews with a diverse cohort of social entrepreneurs outweighs the limitations of a small sample. The primary data complement a broad review of the entrepreneurship and psychology literatures.

It is important to note that at the time of the interviews all study participants were operating successful ventures, which introduces the risk of recall and survivorship bias (Cassar 2004; Cassar and Craig 2009). This is qualitative research exploring the breadth of motives for starting

and continuing operation of social ventures. Including participants in a range of operational phases enables us to gain understanding of the motives associated with both start-up processes and on-going engagement in social ventures. Whether the participant had been in business for several months or 18 years, none of the social entrepreneurs in our sample represents failed ventures. Thus, our data are limited to emotions and motives associated with the establishment of successful social ventures. In reality, many entrepreneurial ventures fail (Gimeno et al. 1997; Jenkins, Wiklund, and Brundin 2014; Shepherd, Wiklund, and Haynie 2009), and it is possible that there are emotional and motivational differences between successful and unsuccessful social entrepreneurs. For example, if social entrepreneurs are too passionately connected with the social issue they are trying to address, might it lead them to make decisions that doom the venture to failure? Alternately, is it possible that the exclusive presence of other-oriented motives without any self-oriented motivation can cost a venture its long-term viability?

Conclusion

This study identifies emotional antecedents and motives that drive social entrepreneurs to establish social ventures. We draw on the more developed psychology literature (Shane, Locke, and Collins 2003) for a framework of motivation. Results from our case study of social entrepreneurs are situated in the psychology and entrepreneurship literatures, revealing implications for both practice and theory. For practitioners, having a better understanding of social entrepreneurial motivations can aid both people involved in social ventures and policy development. For example, if a social entrepreneur understands that she is motivated by relatedness, then it will be important to make organizational decisions that maximize her time working with members of the target community rather than sitting behind a desk or overly engaging with funders. Similarly, policymakers who are aware of social justice as a motive may seek to support monitoring and evaluation guidelines that encourage deep and regular feedback on community impact. More generally, people who develop business policy and tertiary educators can reduce barriers and support business structures that maximize motivation for social entrepreneurs. To the extent that other entrepreneurs are driven by nonfinancial motivations, all types

of entrepreneurs can benefit from an increased awareness of a broader range of motivations to engage in entrepreneurial activities.

At an academic level, this paper develops multiple aspects of our understanding, including identifying the two types of motivations, the relationships between emotions and motivations, and explaining the conceptual relationships among these constructs. First, this paper contributes to the entrepreneurship literature by identifying that social entrepreneurs experience both self- and other-oriented motivations. This is significant as entrepreneurship literature has tended to characterize social entrepreneurs as being driven to help others while painting their commercial cousins as seeking personal gains. Second, there have been recent calls to better understand the role of emotions in the entrepreneurial process (Cardon et al. 2012), such as identifying the connections between emotions and opportunity identification (Welpe et al. 2012), and between emotions and the probability of being satisfied with entrepreneurial outcomes (Morris et al. 2012). This paper contributes to these debates by suggesting that particular emotions are associated with social entrepreneurs' self- and other-oriented motivation. Finally, we have created a model that gives researchers the tools to understand the complexity of entrepreneurial motivation, and provides them with a platform for further research and theoretical developments.

The model can be used to inspire multiple areas for future research. For example, academics could better understand how emotions and motives are associated with rewards. This could include researching how motivations impact the individual's decision-making or opportunity identification, as well as structuring the exploration of how an entrepreneur's motivations relate to firm-level performance and outcomes for target communities. At a regional level, studies could explore how entrepreneurial motivations differ across countries or cultures. Finally, quantitative studies could be developed to allow testing and refining of our model.

In conclusion, this study builds on the motivation research from psychology and entrepreneurship to advance our understanding of social entrepreneurial motivation. A phenomenon-driven, instrumental case study of social entrepreneurial motivation gives a rich picture of the emotional precursors to both self and other-oriented motivation. Exploring the factors that drive social entrepreneurs to create value for others offers some preliminary insights into what motivates and sustains engagement in social ventures. It may also provide a useful framework for better understanding the nonfinancial motives of people who choose other careers, including commercial entrepreneurs.

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Seizing Opportunities: The Moderating Role of Managerial Characteristics on the Relationship between Opportunity-Seeking and Innovation Efficacy in Small Businesses

by Danielle Cooper, Whitney Peake, and Warren Watson

We draw from regulatory focus theory to examine the relationship between a focus on opportunities through strategic orientation and entrepreneurial culture and managerial reports of innovation efficacy in small businesses. We propose that manager goals and behaviors moderate these relationships. Hypotheses were tested on a sample of 352 small employer firms. Findings support that strategic orientation positively associates with innovation efficacy and that this relationship is stronger under low managerial direction behaviors. Entrepreneurial culture positively associates with innovation efficacy when managers focus on profit and growth goals and under high managerial direction behaviors.

According to seminal research in entrepreneurship, innovation distinguishes entrepreneurs from other small business owners (Carland et al. 1984; McClelland 1961; Schumpeter 1934). Chen, Greene, and Crick (1998) determined that founders of small businesses differed from non-founder managers on innovation self-efficacy, or confidence in performing a task (Bandura 1997) in the area of innovation. While Chen, Greene, and Crick (1998) work suggests that innovation efficacy predicts founding a firm, less is known about factors that influence innovation efficacy in established small businesses. Prior research suggests that self-efficacy is influenced by past performance (Bandura 1982; Seijts et al. 2004), indicating that innovation efficacy may not only be a predictor of future innovation but also may serve as an indicator of innovative performance. Understanding the antecedents of innovation efficacy in small business is important, as innovation has been linked to small business growth and performance (Freel 2000; Heunks 1998).

Innovation efficacy is likely influenced by the firm's propensity to recognize and act on opportunities. The entrepreneurial process begins with opportunity identification (e.g., Lumpkin and Lichtenstein 2005; Ucbasaran, Westhead, and Wright 2008), and innovation serves as the vehicle through which opportunities take form (Eckhardt and Shane 2003; Gaglio and Katz 2001). Thus, to understand innovation efficacy, we must gain a better understanding of the processes underlying opportunity identification in small businesses. Scholars have only recently begun to explore the processes that spur opportunity identification (e.g., Baron 2006; Mitchell et al. 2007; Tumasjan and Braun 2012). In an

Danielle Cooper is the Dean Henry Hays Professor of Management and Associate Professor at the University of North Texas.

Whitney Peake is the Vitale Professor of Entrepreneurship and Assistant Professor at Western Kentucky University, Gordon Ford College of Business.

Warren Watson was a Regents Professor in Management at the University of North Texas. He passed away in July 2014 and is dearly missed as a colleague, mentor, and friend.

Address correspondence to: Danielle Cooper, Management, University of North Texas, 1155 Union Circle, #305429, Denton, Texas 76201. E-mail: danielle.cooper@unt.edu.

attempt to explain these processes, researchers have conceptually linked these processes to regulatory focus theory (e.g., Baron 2002; Brockner, Higgins, and Low 2004; Bryant 2007; Gibbs 2009; Hmieleski and Baron 2008; Ozgen and Baron 2007; Wu et al. 2008). Regulatory focus theory posits that a promotion self-regulatory focus triggers aspirational goals and forward-looking visions (Higgins 1997) and the appreciation of novel information, which should enhance opportunity recognition (Kark and van Dijk 2007). In contrast, a prevention focus emphasizes duty-related goals and the avoidance of pain or loss (Johnson, Chang, and Yan 2010).

According to regulatory focus theory, an individual's self-regulation focus is shaped by both disposition and environment; thus, organizations are thought to influence individuals' promotion versus prevention focus (Brockner, Higgins, and Low 2004). Brockner and Higgins (2001) proposed that the goals and culture of entrepreneurial firms likely elicit a promotion focus. Thus, from the work of Brown, Davidsson, and Wiklund (2001) on firm entrepreneurial orientation, we identify two organizational-level elements that likely influence manager and employee regulatory focus: strategic orientation and entrepreneurial culture. Strategic orientation describes the relative emphasis on opportunities versus resource constraints in strategic decisions, and entrepreneurial culture describes the emphasis on new ideas in the firm. When a firm's strategy and culture focus on opportunities and new ideas, a promotion focus is more likely to be triggered among managers and employees. Conversely, strategies and cultures focused on resource constraints and maintaining the status quo more likely encourage a prevention focus.

In addition to these organizational elements, managerial attributes may influence the manager's regulatory focus as well as those of employees. Brockner and Higgins (2001) suggest that beyond the messages that employees receive regarding ideal behaviors in the organization, their promotion versus prevention focus is also influenced by observing and interacting with managers. Past research has linked manager-level characteristics to the identification and exploitation of opportunities (Baron 2004; Baron and Ensley 2006; Ucbasaran, Westhead, and Wright 2008) and has called attention to the role of managerial behavioral processes in innovation and growth processes in small businesses (Merz, Weber, and Laetz 1994; Sadler–Smith

et al. 2003). Given the extant literature in these areas, it appears that integrating organizational attributes and managerial attributes may be required to better understand processes underlying innovation efficacy in small businesses.

Drawing from these lines of research, we examine how organizational attributes supporting a promotion focus influence innovation efficacy. We then examine the moderating influence of the managers' personal characteristics on the relationship between these firm level characteristics and innovation efficacy. Specifically, we examine one managerial cognitive characteristic—the manager's goal for the business (whether aspirational or support oriented) and one behavioral characteristic—the extent of the manager's direction behaviors (those behaviors focused on goal setting and improvement). We explore these issues with a sample of U.S. small employer businesses with 5 to 100 employees, since small firms make up the vast majority of businesses in the U.S. economy (Small Business Administration 2012). Following Chrisman et al. (2012), we set our minimum employment threshold at five employees to ensure the firms in our sample are large enough to encounter substantial demands related to managerial decision-making.

Below, we first discuss opportunity identification, regulatory focus theory, and self-efficacy theory and how they guide our research. We follow with our proposed hypotheses regarding organizational and managerial factors influencing innovation efficacy, and then introduce our methods and provide our empirical results. Finally, we discuss the implications of our research and future directions for research in this area, which will inform both the work of other researchers and practitioners.

Theory and Hypotheses

While some scholars define firm-level entrepreneurship in terms of characteristics of the firm's internal environment that promote opportunity identification, such as culture and strategic focus (e.g., Stevenson and Jarillo 1990), others have focused on the firm's innovative actions and outputs, such as new product development and internal structural changes (e.g., Covin and Miles 1999). Some researchers have also incorporated both opportunity identification and innovativeness in their description of firm-level entrepreneurship (Lumpkin and Dess 1996). In this paper, we distinguish firm factors

that promote opportunity identification—specifically, strategic orientation and culture—from a firm's innovative activities and examine the link between these constructs in small businesses.

Regulatory Focus Theory, Opportunity Identification, and Innovation Efficacy

Regulatory focus theory posits that individuals behave in alignment with their goals (Brockner and Higgins 2001). An individual's self-regulation focus is influenced by both the individual's innate disposition and the interactions with the environment in which he/she lives and works (Brockner and Higgins 2001; Brockner, Higgins, and Low 2004). While individuals have chronic tendencies toward promotion or prevention, promotion and prevention focus strength vary across situations and are influenced by environmental cues, such as feedback from authority figures and information about rewards and consequences (Roney, Higgins, and Shah 1995; Shah and Higgins 2001).

Promotion focus supports attention to aspirational goals, recognizing opportunities associated with those goals, and then exploiting those opportunities (Crowe and Higgins 1997). Such a focus leads individuals to value new and unique information, which may improve the ability to recognize opportunities (Kark and van Dijk 2007). Promotion-focused individuals seek outcomes related to making advancements and obtaining gains, and set lower standards for what constitutes an opportunity worth pursuing (Baron 2002).

Alternatively, prevention focus is typically concerned with stability, centering on security for the firm, and doing what is "responsible," based on perceived duties and obligations (Crowe and Higgins 1997). Outcomes pursued by prevention focused individuals relate to avoiding loss and ensuring safety and stability (Crowe and Higgins 1997; Johnson, Chang, and Yan 2010). Prevention focus may limit an individual from recognizing and capitalizing on opportunities in the business since their threshold for what constitutes a viable opportunity would be higher than an individual with promotion focus (Baron 2002).

Researchers have recently begun to draw on regulatory focus theory to understand the dynamics of entrepreneurship and innovation (Baron 2004; Brockner, Higgins, and Low 2004; Hmieleski and Baron 2008; Ozgen and Baron 2007; Tumasjan and Braun 2012). Brockner and colleagues (2004) argue that a promotion focus is likely to be particularly important in the entrepreneurial stage of recognizing and generating new ideas. This assertion is consistent with studies linking promotion focus to idea generation and creativity (Tumasjan and Braun 2012). Opportunity identification is an important precursor to innovation (Baron 2006; Short et al. 2010); thus, understanding factors influencing regulatory focus in small businesses may shed light on their innovative activities. Recent research by Hmieleski and Baron (2008) finds support for the role of promotion focus in the degree of change occurring in the business concepts of entrepreneurial firms.

Building on this work, we apply regulatory focus theory in an attempt to understand innovation efficacy in small businesses. Innovation efficacy is a specific task domain within entrepreneurial self-efficacy (ESE), focusing on efficacy in developing new ideas, products, processes, and entering new markets (Chen, Greene, and Crick 1998). Self-efficacy in a task domain is important to maintaining focus on a task, particularly in the face of difficulties (Bandura 1986) and increases the likelihood that individuals work toward goals (Seijts et al. 2004). Drawing from Bandura's (1977, 1986) work on self-efficacy, Chen, Greene, and Crick (1998) argue that it is important to note the reciprocal nature of ESE; performance in the entrepreneurial domain increases ESE, and ESE increases the likelihood of engaging in entrepreneurial activities. Prior work has demonstrated the positive effect of overall ESE on entrepreneurial intentions (McGee et al. 2009). Previous research has also shown that ESE may substitute for promotion focus in idea generation processes (Tumasjan and Braun 2012). Within the specific task area of innovation, innovation efficacy is an important construct as it likely reflects past performance in innovation and also has implications for the likelihood of engaging in future innovation.

Below we identify both organizational and managerial characteristics that are likely to relate to promotion focus in small businesses. We suggest that firms with organizational characteristics supporting attention to opportunities and aspirational goals are more likely to be successful in innovative activities and experience high levels of innovation efficacy. However, a manager's personal goals and behaviors influence these effects. For our conceptual model and hypothesized effects, see Figure 1.

Figure 1
Conceptual Model and Hypothesized Effects

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Conceptual Model and Hypothesized Effects
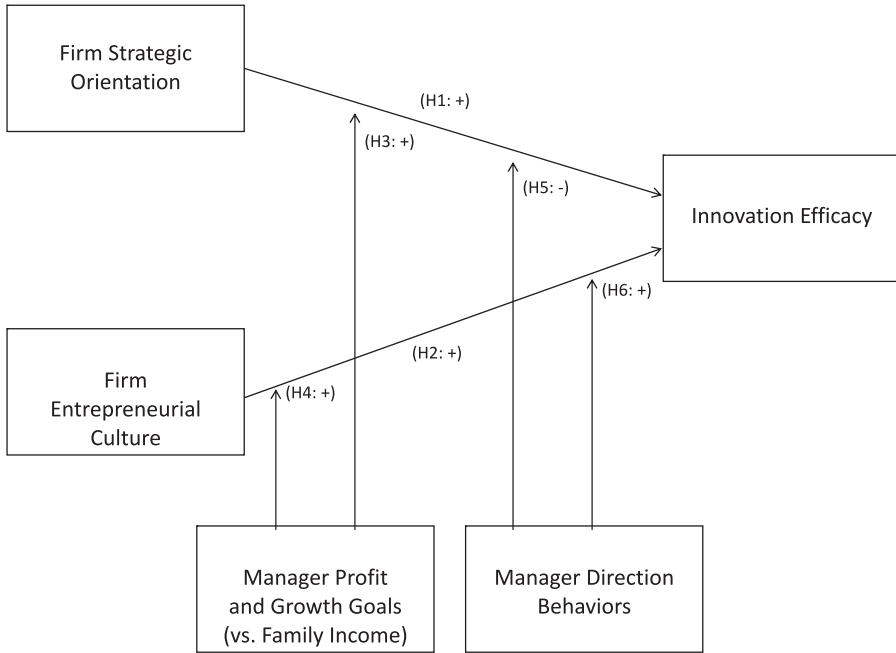
Strategic Orientation, Entrepreneurial Culture, and Innovation Efficacy

Establishing an opportunity-based conceptualization of entrepreneurship at the firm level, Stevenson and Jarillo (1990, p. 23) define the entrepreneurial firm as one that "pursues opportunity, regardless of resources currently controlled." Drawing from their work, Brown. Davidsson, and Wiklund (2001) developed a framework operationalizing the characteristics of entrepreneurial firms. Of these characteristics, two focus directly on the search for opportunities—the firm's strategic orientation, which is the extent to which strategy is driven by opportunities in the environment, and its entrepreneurial culture, defined as a culture that values the search for opportunities.

An entrepreneurial strategic orientation is characterized by a continual search for and willingness to pursue new opportunities (Mintzberg 1973). Firms differ in the extent to which opportunities, rather than resource constraints, drive their strategic decisions (Brown, Davidsson, and Wiklund 2001; Dess, Lumpkin, and Covin 1997). The work of Stevenson and Gumpert

(1985) and Brown, Davidsson, and Wiklund (2001) contrast the strategic orientation of firms with an entrepreneurial (promoter) focus with those with an administrative (trustee) focus. According to their typologies, entrepreneurial firms are those that pursue and exploit opportunities, irrespective of resource availability, while administrative firms pursue opportunities based on the resources under the firm's control.

Based on the conceptualization presented by Stevenson and Gumpert (1985), these organizational level constructs relate to the regulatory focus of the manager and employees in small businesses. An entrepreneurial strategic orientation creates an environment for individuals supporting a promotion focus and likely influences the extent to which managers and employees work diligently to both recognize and exploit opportunities, regardless of the resources currently available to the firm (e.g., Brockner, Higgins, and Low 2004; Hmieleski and Baron 2008; Tumasjan and Braun 2012).

In their discussion of strategic entrepreneurship, Kuratko and Audretsch (2009) link entrepreneurial-based strategies (i.e., entrepreneurial strategic

orientation) directly to innovation. Past research has demonstrated that firm strategies that are more aggressive in pursuing new opportunities are associated with higher levels of corporate venturing activities (Jennings and Seaman 1990). Additionally, Brown, Davidsson, and Wiklund (2001) discovered a positive and significant correlation between entrepreneurial strategic orientation of the firm and level of innovativeness, based on their entrepreneurial orientation innovativeness measure. Drawing from these ideas and findings, we propose:

H1: Entrepreneurial strategic orientation is positively related to innovation efficacy.

Firms with entrepreneurial cultures value the development and exchange of ideas and support opportunity-seeking by employees (Brown, Davidsson, and Wiklund 2001; Ireland, Hitt, and Sirmon 2003), which increases the likelihood that employees contribute to idea creation (Sebora and Theerapatvong 2010). Entrepreneurial cultures likely stimulate a promotion focus in employees by encouraging employees to focus on areas of potential gain for the firm (Brockner and Higgins 2001). Because individual employees possess different information, they identify different opportunities, even within the same technological environment (Shane 2000). Thus, creating an open environment in which employees beyond top managers are welcomed, involved, and valued in identifying opportunities, contributes to the firm's ability to identify a diverse set of opportunities (Stevenson and Jarillo 1990).

In a study of small businesses, Carrier (1996) found that having an organizational environment that encouraged idea exchange was an important factor in stimulating employee contributions to organizational innovation, such as ideas for new products, production processes, and management approaches. Further, Brown, Davidsson, and Wiklund (2001) found a significant correlation between entrepreneurship culture and the innovation measure used in their study. Drawing from these ideas and findings, we predict:

H2: Entrepreneurial culture is positively related to innovation efficacy.

The Moderating Role of Managerial Characteristics

The relationship between these firm characteristics and innovation efficacy likely depends in part on personal characteristics of the manager. Researchers have long explored managerial characteristics for their influence on the performance of small businesses. Elements such as experience (Peake and Marshall 2011), education (Van der Sluis, van Praag, and Vijverberg 2008), access to financial resources (e.g., Bosma et al. 2004; Wiklund and Shepherd 2005), and social networks (e.g., Bosma et al. 2004; Stam and Elfring 2008) have been used in an attempt to explain performance differences across entrepreneurial ventures. Exploration of the influence of managerial characteristics on firm behavioral outcomes, such as innovation, however, has received relatively less attention. Few small business studies have attempted to explore the effect of managerial characteristics on firm characteristics such as innovation efficacy (for exceptions, see Buttner and Gryskiewicz 1993; Kickul and Gundry 2002). Additionally, attention to moderating influences of managerial characteristics on factors affecting firm behavior outcomes, such as innovation, appears lacking in the extant literature.

Previously, we hypothesized the positive influence of both strategic orientation and entrepreneurial culture on innovation efficacy for small businesses. We now develop hypotheses related to the moderating role of the manager's primary goals for the venture and the direction behaviors of the manager.

Primary Purpose of the Business. Motivations for launching a venture vary; while some managers are more focused on family and security, others are more focused on work, risk-taking or profit (LaFuente and Salas 1989). The goals founders and/or managers have for their small businesses likely influence opportunity identification processes. Mintzberg (1973) identified growth as a defining goal of the entrepreneurial organization. Later researchers have supported this argument, indicating that growth-oriented goals separate *entrepreneurs* from other *small business owners* (Carland et al. 1984; Woo and Cooper 1991). Stewart et al. (1999) suggest that entrepreneurs can be distinguished from other business owners both through their profit and growth oriented goals, as well as by the use of strategic planning. Stewart et al. state, "...an entrepreneur capitalizes on innovative combinations of resources for the principal purposes of profit and growth, and uses strategic management practices" (1999, p. 191). These motivations can activate promotion versus prevention focus at the level of the individual manager.

While managers with growth goals focus on potential firm gains, those with security goals focus on preventing the loss of family income.

It is important to note that researchers suggest small and family firms may pursue both economic and noneconomic goals concurrently (e.g., Chrisman et al. 2012). For example, a small business manager may be interested in both growth and security for the family. However, researchers likewise argue that one or the other would take precedence in defining the strategic posture of the business (Getz and Petersen 2005). We explore profit and growth goals versus family income and support goals of the managers (Carland et al. 1984; Stewart et al. 1999; Stewart et al. 2003) in an attempt to determine which set of goals may take precedence. This does not preclude managers from having both economic and noneconomic goals; however, such an approach likely indicates which goals take precedence for the manager.

Prior research has examined the consequences of the match between broader environmental cues supporting exploration and the specific content of an individual's goals. When these are in alignment, such that both are focused on exploration, individuals are more likely to explore new ideas than when the broader environment supports exploration, but an individual is focused on a performance goal, since concern about the performance goal interferes with exploring new possibilities (Kozlowski and Bell 2006). Similarly, managerial concerns about family income likely shift attention to prevention and may distract attention from the pursuit of new opportunities, inhibiting the effect of an entrepreneurial strategic orientation on innovation efficacy. In contrast, when managers' goals align with the entrepreneurial strategic orientation of the firm, they are more likely to maintain a consistent promotion focus, and this strategic orientation will likely exhibit a stronger relationship with innovation efficacy.

An emphasis on growth by the manager also likely reinforces an entrepreneurial culture and its effect on the promotion focus of employees. Brockner and Higgins (2001) proposed that managers can support the effect of the organizational culture on employee promotion focus by serving as role models and communicating with employees. Supporting this proposition, Wu and colleagues (2008) found that employee perceptions of their manager's promotion focus was positively associated with employee creativity. Yan (2011) found that in combination with a participative leadership style, small business

managers' focus on growth and profit can enhance the positive effect of differences in employee ideas on innovation.

Based on these arguments and prior empirical work, we expect growth goals to enhance the effect of both strategic orientation and entrepreneurship culture on innovation efficacy. Thus, we propose the following:

H3: Strategic orientation is more positively related to innovation efficacy when profit and growth are the primary purpose of the venture than when family income is the primary purpose of the venture.

H4: Entrepreneurship culture is more positively related to innovation efficacy when profit and growth are the primary purpose of the venture than when family income is the primary purpose of the venture.

Manager Direction Behaviors. In addition to manager goals, their behaviors, such as planning and controlling activities, also influence outcomes in small businesses (Merz, Weber, and Laetz 1994; Sadler–Smith et al. 2003). One set of behaviors linked to growth in small business settings are direction behaviors, managerial behaviors in ventures that emphasize goal setting and continuous improvement (Watson, Stewart, and BarNir 2003). Managerial direction behaviors are important to the opportunity identification process because emphasis on improvement goals signals a promotion focus to employees by emphasizing aspirational goals (Wu et al. 2008).

While both manager direction behaviors and firm strategic orientation may encourage a promotion focus in employees, they may represent two separate avenues to increasing innovativeness in a firm, through exploitation of existing capabilities and exploration of new opportunities (March 1991), respectively. Because direction behaviors focus attention on improving existing products and processes, these types of behaviors tend to support incremental innovation and exploitation of existing capabilities (Benner and Tushman 2003). In contrast, a firm's strategic orientation focused on opportunity identification may encourage ideas for more radical innovation through openness to the exploration of new opportunities.

Thus, when direction behaviors are low, strategic orientation is likely to be particularly important to innovation efficacy and may

compensate for a lack of direction behaviors. Without managerial direction behaviors encouraging the improvement of existing products and processes, a promotion focus on new ideas and opportunities may be an essential source of innovation. In contrast, high levels of managerial direction behaviors may dampen the effect of strategic orientation on innovation, shifting resources, and efforts away from exploring new opportunities toward improving existing approaches (Benner and Tushman 2003). Thus, the effect of strategic orientation on innovation efficacy may be weaker under higher direction behaviors.

In contrast, the interactive relationship between direction behaviors and entrepreneurial orientation likely takes a different form than that with strategic orientation. Employees working in an entrepreneurial culture likely have a promotion focus and pay attention to areas for possible improvements. Employees can be an important source of new ideas about improving products and processes through their experiences on the job (Axtell et al. 2000). Employees with innovative ideas are motivated by an entrepreneurial culture in which managers support and work to bring such ideas to fruition (Shepherd, Patzelt, and Haynie 2010). While these ideas may often represent incremental areas for improvement, if they can be harnessed, they can contribute to the overall innovativeness of the firm (Bessant, Caffyn, and Gallagher 2001).

When managers reinforce a promotion focus through direction behaviors, employees may be more likely to develop these contributions and share ideas with managers. Past research demonstrates that employees generalize perceptions of their managers to the organization at large (Kozlowski and Doherty 1989); thus, researchers argue that managerial support for employee ideas increases innovative performance (Alpkan et al. 2010; Scott and Bruce 1994). Managerial direction behaviors may also help to orient employee ideas toward goals important to the firm and amplify the effectiveness of employee suggestions. Thus, we argue that direction behaviors enhance the positive effect of entrepreneurial culture on innovation efficacy. When managerial direction behaviors are low, employee ideas related to opportunities for improvement are less likely to be harnessed and less likely to relate to key organizational concerns. Further, employees that feel their managers obstruct innovative ideas are likely to stop sharing such ideas or leave the organization in search of another organization in which his/her ideas may be valued and harnessed, thus, further diminishing innovative ability (Shepherd, Patzelt, and Haynie 2010).

Based on these arguments and prior empirical work, we expect low (high) direction behaviors to strengthen (weaken) the influence of strategic orientation on innovation efficacy, and high (low) direction behaviors to strengthen (weaken) the relationship between entrepreneurship culture and innovation efficacy. Thus, we propose the following:

H5: *Strategic orientation is more positively related to innovation efficacy when direction behaviors are low than when they are high.*

H6: *Entrepreneurship culture is more positively related to innovation efficacy when direction behaviors are high than when they are low.*

Methods

As part of an assignment in an upper-level management course at a large Southwestern U.S. university, we collected data over a one-year time period via a snowball sampling technique (Heckathorn 2011). Snowball sampling is considered a useful tool for accessing populations that may be difficult to isolate, such as entrepreneurs and small business owners (Baltar and Brunet 2012). Each student was required to identify and interview two small business owners and data were collected over a one-year period. Prior to conducting the interviews, students were instructed on data collection norms, as well as the research questions of interest in the survey instrument. Further, requirements for the assignment indicated that the individual interviewed must be the primary manager of the business and active in the day-to-day operations of the venture. Managers were assured that responses were strictly confidential and that results would only be reported in aggregate form. Students were informed that random checks would be undertaken with the respondents to ensure the survey instruments were completed as instructed. A random check in which 10 percent of the respondents were contacted by phone indicate that the data were collected as instructed.

Given the nature of the data collection method, it is not possible to report a precise response rate. Students made appointments to collect the data and 85 percent of the students satisfactorily completed the assignment, which generated a sample

of 1,201 businesses. To best address our research questions and ensure that the effects were truly indicative of small employer businesses, however, the data set was narrowed to ventures reporting employment of 5 to 100 individuals. Our sample adheres to a commonly accepted definition of small business (e.g., Appelbaum and Kamal 2000; Heshmati 2001; Miller, Le Breton-Miller, and Scholnick 2008; Rogers 2004), while still considering employer firms with substantial management decisions (Chrisman et al. 2012). Following Chrisman and colleagues (2012), we limited our analysis to firms with a least five full-time employees. Once the employment size rules were applied, 352 businesses remained in the sample. Additionally, we performed tests of our hypotheses for firms with a maximum of 20 and a maximum of 500 employees and found consistent results, suggesting our findings are not a result of our sampling frame.

Following previous research on strategic orientation and entrepreneurial culture (Brown, Davidsson, and Wiklund 2001; Kickul and Gundry 2002; Wiklund and Shepherd 2003), the primary manager of the business reported on firm characteristics as well as their own traits. Of the respondents, 73.1 percent are male. Their ages ranged from 20 to 74, with an average age of 43.8. In terms of race/ethnic origin, 4.9 percent were Asian or Pacific Islander, 9.5 percent were Black, African, or African-American, 6.1 percent were Spanish/Latino/Hispanic, and 75.7 percent were White/Caucasian. In terms of education, 29.8 percent had a high school education, 3.6 percent had a vocational education, 10.7 percent had an associate's degree, 39.5 percent had a bachelor's degree, and 16.3 percent had a graduate degree. Their time in current position ranged from 1 year to 47 years, with an average of 10.6 years in the position, and they had an average of 17.4 years in their industry. Organization types included manufacturing (7.7 percent), retail (13.5 percent), wholesale (3.8 percent), construction (8.1 percent), and service (49.6 percent). The average size of the organizations was 22.4 employees, and average firm age was 15 years in operation.

Furthermore, following Chrisman and colleagues (2012) we compared the characteristics of our sample to the general population of small businesses in the United States (Small Business Administration 2010). As shown in Table 1, our sample exhibits a high level of similarity to the general small business population, based on

Table 1
Sample Characteristics

	SBA Population, 2008 (percent)	Study Sample (percent)
Industry		
Retail	19.9	13.5
Services	52.4	49.6
Manufacturing	5.1	7.7
Other	22.6	29.2
Owner/Manager Gender		
Male	64.1	73.1
Female	35.9	26.7
Owner/Manager Race/Ethnicity		
White	88.4	75.7
Non-white	11.6	24.3

data gathered by the Small Business Administration in 2008.

Because our data were collected from a single respondent using a single survey instrument, common method bias could potentially influence the results of the study (Doty and Glick 1998). However, there are reasons to suggest that common method bias may not have greatly affected the findings. First, with the exception of H1 and H2, our hypotheses are focused on interactions. Aiken and West (1991) state that common method variance is not likely to result in statistical interactions. Second, in the confirmatory factor analysis described below, we found that the hypothesized four factor model (entrepreneurial culture, strategic orientation, direction behaviors, innovation efficacy) fit better than a one-factor model, suggesting that common method variance did not significantly impact the results (Podsakoff and Organ 1986).

Measurement

Innovation Efficacy. To measure innovation efficacy, we used the measure from the Chen, Greene, and Crick (1998) entrepreneurial self-efficacy instrument. The innovation efficacy measure requests information about seeking opportunities and asks entrepreneurs to rate the effectiveness of their business on a seven-point Likert scale, from 1 (not at all, very little) to 7

(extremely well) related to the following: (1) new venturing and new ideas, (2) new products and services, (3) new markets and geographic areas, and (4) new management, marketing, and production practices. Cronbach's alpha for these four items was 0.80.

Strategic Orientation. Since strategic orientation is considered one of the hallmarks of an entrepreneurial firm (Wiklund and Shepherd 2005), we utilize the strategic orientation measure from Brown, Davidsson, and Wiklund (2001). This measure contrasts an administrative orientation to an entrepreneurial strategic orientation for the firm. Brown, Davidsson, and Wiklund (2001) allows for entrepreneurs to indicate how closely the statement on each end of the spectrum reflects their firm from entirely administrative ($X = 1$) to entirely entrepreneurial ($X = 7$). The dimensions in this measure consider the following: resource versus opportunity driven strategies, opportunity pursuance based on resources versus value, and resource versus opportunity controlled strategies. Cronbach's alpha for these three items was 0.76.

Entrepreneurial Culture. Entrepreneurial culture is purported to influence the behaviors of the firm (Minguzzi and Passaro 2001); thus, we use the entrepreneurial culture measure from Brown, Davidsson, and Wiklund to contrast whether an entrepreneur perceives the organization to have a more administrative or more entrepreneurial culture. For this measure, entrepreneurs rate whether the organization is entirely administrative in its organizational culture ($X = 1$) to entirely entrepreneurial in its organizational culture ($X = 7$). This measure considers the following aspects related to culture: presence versus lack of promising ideas, recognition or lack of recognition of opportunity due to societal changes, and an abundance versus lack of valuable ideas. Cronbach's alpha for these three items was 0.64. Although this is in the lower end of the range of acceptable reliabilities, such results are not uncommon for measures borrowed from prior research (Zahra, Hayton, and Salvato 2004), and previously, Brown, Davidsson, and Wiklund (2001) demonstrated the validity of this measure of entrepreneurial culture.

Venture Goal. Firms may have primarily economic-based goals related to profit and growth, or more security-oriented goals related to lifestyle and family support. For our instrument, we use the goal variable of Stewart et al. (1999),

in which respondents indicated whether the primary goal of the firm was ($X = 1$) profit and growth, or ($X = 0$) family income and support.

Direction Behaviors. We measured direction behaviors using four items focused on direction behaviors from Watson, Stewart, and BarNir (2003) scale of managerial interpersonal processes. Participants were asked to rate themselves on characteristics including, "Continually improve" and "Set high quality standards" on a seven-point Likert scale ranging from 1 = Not at all to 7 = Extremely Well. Cronbach's alpha for these items was 0.77.

Controls. We controlled for both firm and manager characteristics. Because firm size may relate to resources available for innovation (Acs and Audretsch 1987), we control for firm size, measured as the number of full-time employees (e.g., Rogers 2004). Additionally, because innovation practices also vary by industry (Acs and Audretsch 1987), we control for the industry categories of manufacturing, retail, service, or other, based on the category chosen by participants. Because the influence of a manager on business performance may be affected by the presence of partners (Headd 2003), we also include the number of partners who participate actively in the business as a control. Additionally, we control for the existence of a written plan for business development (1 = plan, 0 = no plan) as such plans may influence innovation activities (Stewart et al. 1999).

We also controlled for the managerial demographic characteristics of self-reported race/ethnic origin (1 = White/Caucasian, 0 = Other) and gender (Male = 1, Female = 0), which have been shown to influence outcomes in small businesses (e.g., Fairlie and Robb 2007, 2009; Johnsen and McMahon 2005; Street and Cameron 2007). While we focus on the direction aspect of the manager's interpersonal processes described by Watson, Stewart, and BarNir (2003), we also control for the manager relationship-oriented, or "synergy" behaviors, introduced in this same study. Using five items from Watson, Stewart, and BarNir (2003), managers were asked to rate the degree to which they demonstrate characteristics such as "resolving conflict with members" and being "friendly and cooperative with employees." Cronbach's alpha was 0.81 for these items. Table 2 includes the overall correlations and descriptive statistics for each of the variables in the study.

Table 2
Descriptive Statistics and Correlations

	Mean	S.D.	Min.	Max.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Innovation efficacy	4.59	1.16	1.00	7.00															
2. Firm size	21.16	21.65	5	100	0.138**														
3. Manufacturing	0.08	0.28	0.00	1.00	0.015	0.194**													
4. Retail	0.11	0.31	0.00	1.00	0.035	-0.041	-0.106*												
5. Service	0.51	0.50	0.00	1.00	-0.031	-0.180**	-0.310**	-0.365**											
6. Firm age	17.16	16.34	1.00	55.00	-0.110*	0.203**	0.095*	0.116*	-0.091*										
7. Development plan	0.56	0.50	0.00	1.00	0.292**	0.140**	0.014	0.001	-0.027	-0.128**									
8. Number partners	2.26	4.73	0	87	0.074+	0.180**	-0.034	-0.021	-0.060	-0.016	0.083+								
9. White	0.77	0.42	0.00	1.00	-0.077+	0.151**	0.089+	-0.003	-0.104*	0.194**	-0.096*	0.037							
10. Gender	0.74	0.44	0.00	1.00	-0.038	-0.026	0.034	0.041	-0.032	0.051	-0.149**	-0.090*	0.102*						
11. Number previous businesses	1.04	3.25	0.00	40.00	0.177*	0.077+	0.041	-0.043	-0.107*	-0.056	0.069+	-0.003	0.069+	0.081+					
12. Synergy behaviors	5.75	0.78	2.40	7.00	0.289*	-0.015	-0.077+	0.042	-0.033	-0.082+	0.118*	0.086+	-0.120*	-0.138**	0.000				
13. Strategic orientation	3.89	1.55	1.00	7.00	0.218*	0.083+	0.015	-0.067	0.023	-0.182**	0.122*	-0.017	0.045**	-0.025	-0.010	0.004			
14. Entrepreneurial culture	5.26	0.88	4.00	7.00	0.182*	0.120*	-0.024	-0.016	-0.023	-0.069+	0.053	0.022	-0.003	-0.138***	0.084+	0.143**	0.016		
15. Purpose of business	0.56	0.50	0.00	1.00	0.225*	0.102*	0.033	-0.086+	-0.031	-0.117**	0.204**	-0.041	-0.075	-0.015	0.083+	0.073+	0.131**	0.125*	
16. Direction behaviors	5.71	0.73	3.00	7.00	0.433**	0.090*	0.002	-0.008	-0.032	-0.077+	0.216**	0.096*	-0.139**	-0.028	0.050	0.516**	0.142**	0.105*	0.116*

$N = 352$, $+p < .10$, $*p < .05$, $**p < .01$.

Analysis and Results

Using LISREL, we conducted a confirmatory factor analysis of the items for the three scaled independent variables (strategic orientation, entrepreneurship culture, and direction behaviors) and the dependent variable (innovation efficacy). While results showed a significant chi-square statistic ($\chi^2 = 294$, df = 71, $p < .05$), other measures indicated an acceptable fit, with a goodness of fit index value of 0.97, a comparative index fit of 0.95, and an incremental fit index of 0.95. The root mean square error of approximation (RMSEA) was 0.05, which is within acceptable limits (Bentler 1990). This model fit better than a three factor model with strategic orientation and entrepreneurial orientation combined [($\chi^2 = 794$, df = 62, $p < .01$), RMSEA = 0.10, GFI = 0.91, CFI = 0.80, IFI = 0.80], a three-factor model with entrepreneurial culture and innovation efficacy combined [($\chi^2 = 799$, df = 62, $p < .01$), RMSEA = 0.10, GFI = 0.91, CFI = 0.80, IFI = 0.80], or a one-factor model, [($\chi^2 = 2,496$, df = 65, $p < .01$), RMSEA = 0.18, GFI = 0.76, CFI = 0.38, IFI = 0.38]. Given the results of our confirmatory factor analysis, we believe our measures to be suitable for analysis.

Hypotheses Tests

Hypotheses were tested using regression analysis. Following Cohen et al.'s (2003) recommendation for regression models with interactions, variables were centered. In Step 1, we entered the control variables and the main effects. In Step 2, we entered all two-way interaction terms. All variance inflation factors (VIFs)

Table 3
Regression Results: Effects on Innovation Efficacy

Variables	Step 1		Step 2	
	β	t-value	β	t-value
Constant	4.08	20.32**	4.10	20.72**
Strategic orientation	0.11	2.96**	0.16	3.03**
Entrepreneurial culture	0.13	2.10*	0.01	0.17
Purpose of business	0.26	2.32*	0.27	2.50*
Direction behaviors	0.46	5.29**	0.37	4.06**
Firm size	0.00	1.15	0.00	0.70
Manufacturing	0.12	0.57	0.04	0.17
Retail	0.32	1.68+	0.28	1.50
Service	0.12	0.96	0.10	0.79
Firm age	−0.00	−0.48	0.00	−0.18
Development plan	0.35	3.10**	0.34	3.10**
Number partners	0.01	0.59	0.01	0.65
White	−0.06	−0.46	−0.06	−0.46
Gender	0.05	0.38	0.07	0.55
Number previous businesses	0.05	2.97**	0.04	2.72**
Synergy behaviors	0.02	1.74+	0.02	1.913+
Direction behaviors × Strategic orientation			−0.12	−2.69**
Direction behaviors × Entrepreneurial culture			0.17	2.30*
Purpose of business × Entrepreneurial culture			0.26	2.12*
Purpose of business × Strategic orientation			−0.07	−0.97
F		10.13**		9.32**
R^2		0.31		0.35
Adjusted R^2		0.28		0.31

$N = 352$, $+p < .10$, $*p < .05$, $**p < .01$.

Figure 2
Entrepreneurial Culture, Primary Goal, and Innovation Efficacy
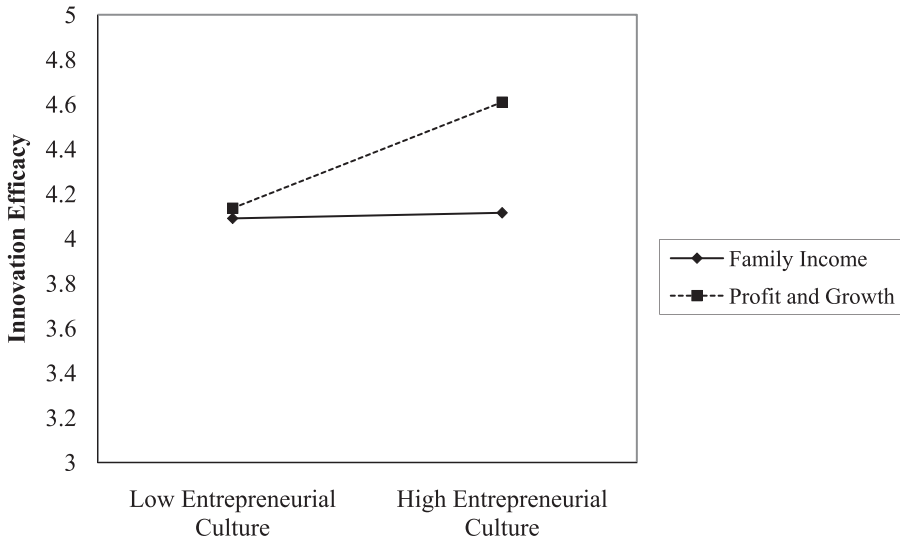
were less than 3, indicating that multicollinearity was not a significant problem in the regression models (Neter et al. 1996). Table 3 includes the regression results.

H1 and H2 predicted a positive direct effect of strategic orientation and entrepreneurial culture on innovation efficacy, respectively. Step 1 of the regression results showed support for the predicted main effects of strategic orientation ($\beta = 0.11$, $p < .01$) and entrepreneurial culture ($\beta = 0.13$, $p < .05$); however, the effect of entrepreneurial culture became insignificant in Step 2 ($\beta = 0.01$, *ns*) when the two-way interactions were included.

H3 and H4 predicted that strategic orientation and entrepreneurial culture would more positively affect innovation efficacy when the manager's primary purpose for establishing a business was profit and growth rather than family income. The interaction was significant for entrepreneurial culture ($\beta = 0.26$, $p < .05$) but not for strategic orientation ($\beta = -0.07$, *ns*). As shown in Figure 2, the results are supportive of H4. The interaction of entrepreneurial culture and goal of the firm indicates that at low levels of entrepreneurial culture, innovation efficacy is roughly equivalent, regardless of the primary goal of the firm (i.e., family income versus profit and growth). However, in firms with higher

entrepreneurial culture, those firms with profit and growth goals report greater levels of innovation efficacy than those with family income and support goals. It is important to note that those with primarily family income-centered goals exhibit little to no increase in innovation efficacy in low versus high entrepreneurial culture settings. Thus, goals must be aligned with opportunity pursuance in order for firms to report greater levels of confidence in innovation.

H5 predicted that effects of strategic orientation on innovation efficacy would be more positive under lower managerial direction behaviors. The interaction was significant ($\beta = -0.12$, $p < .01$). As shown in Figure 3, the results are supportive of H5. Figure 3 demonstrates the relationship between the interaction of strategic orientation and direction behaviors. At low levels of strategic orientation, there is a greater difference between those respondents exhibiting high and low levels of direction behaviors. However, at higher reported levels of strategic orientation, the difference in innovation efficacy between low and high direction behavior respondents declines. Thus, as hypothesized, strategic orientation appears to have a greater positive influence on innovation efficacy under low direction behaviors.

Figure 3
Strategic Orientation, Direction Behaviors, and Innovation Efficacy
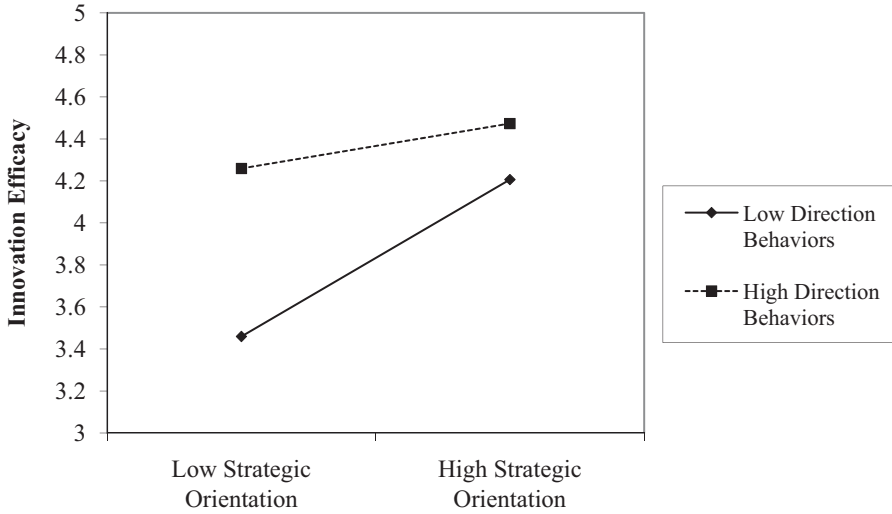
Figure 4
Entrepreneurial Culture, Direction Behaviors, and Innovation Efficacy
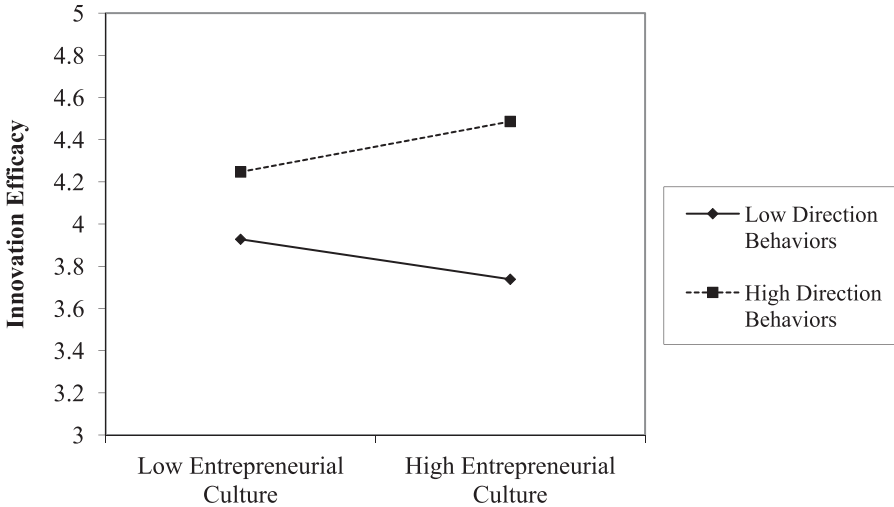
Furthermore, H6 predicted that managers' direction behaviors would strengthen the positive effects of entrepreneurial culture on innovation efficacy, and the interaction was significant ($\beta = 0.17$, $p < .05$). As shown in Figure 4, the results are supportive of H6. The plot of the interaction of entrepreneurial culture and direction behaviors exhibits the directions hypothesized. Under situations of low entrepreneurial culture, respondents reporting high and low direction behaviors report similar levels of innovation efficacy. However, under conditions of high

entrepreneurial culture, those with low direction behaviors report lower levels of innovation efficacy, and those with high direction behaviors report higher levels of innovation efficacy. As hypothesized, direction behaviors exacerbate the difference in innovation efficacy between those reporting high and low levels of entrepreneurial culture.

It is important to note that several of our control variables also significantly influence the level of innovation efficacy reported by the respondent. As expected, the presence of a written plan for development held a positive and significant relationship with level of innovation efficacy ($\beta = 0.35$, $p < .05$). This indicates that firms which have a plan for development are more likely to perceive themselves as having a greater capacity to manage innovation. Additionally, experience, in the form of previous business start-up held a positive and significant relationship with innovation efficacy ($\beta = 0.05$, $p < .01$). Thus, experience appears to positively influence one's perceptions of ability to innovate. Finally, synergy behaviors held a positive and marginally significant relationship with innovation efficacy ($\beta = 0.02$, $p < .10$), which suggests that those who perceive themselves as engaging in positive employee interactions also tend to rate their ventures as more innovative. Demographic and other firm characteristics did not appear to exhibit a direct effect on innovation efficacy.

Discussion

In this study, we explored the interactive effect of organizational attributes supporting a promotion focus and managerial goals and behaviors on innovation efficacy in small businesses. Our findings were generally supportive of the proposed framework, suggesting that organizational attributes and managerial characteristics play a joint role in influencing confidence in innovation in small businesses.

Theoretical Implications

This research contributes to the literature on opportunity identification in three primary ways. First, we build on prior work suggesting a positive relationship between both strategic orientation and entrepreneurial culture and innovation (Brown, Davidsson, and Wiklund 2001) by demonstrating that managerial perceptions of these organization-level factors affect innovation efficacy in small businesses. We root our predic-tions in regulatory focus theory and propose that strategic orientation and entrepreneurial culture support a promotion focus in organizational members, engendering the higher levels of the opportunity recognition required for innovation. Our findings demonstrate that a relationship does exist between strategic orientation and innovation efficacy. This finding illustrates that the firm's view of resources, specifically the extent to which the availability of resources restricts opportunity-seeking, affects innovation. Additionally, these results suggest that organizational attributes initiating a promotion focus can be useful to understanding innovation processes, contributing to prior work that has demonstrated the importance of self-regulation in opportunity identification (e.g., Brockner, Higgins, and Low 2004; Gibbs 2009; Ozgen and Baron 2007; Tumasjan and Braun 2012).

Second, we explore how managers' personal characteristics moderate the effect of these constructs on innovation efficacy. Given the importance of managerial characteristics in small business outcomes (Brandstätter 2011), it is important to understand how managerial factors influence opportunity identification and innovation processes. Our results indicate that managers' personal characteristics do in fact affect the relationship between organizational promotion oriented measures and innovation efficacy of the firm. Specifically, managers' focus on profit and growth and their engagement in direction behaviors both significantly enhanced the positive effect of entrepreneurial culture on innovation efficacy. Even when efforts are made at the organizational level to foster a culture focused on opportunities, the manager's own motivation to focus on growth and profit plays an important role in the extent to which the culture supports innovation. Additionally, managerial goal-setting appears to reinforce the effects of culture on the entrepreneurial efforts from employees. Particularly interesting is the lack of direct effect for entrepreneurial culture when managerial characteristics are incorporated into the model. While firm culture can facilitate innovation efficacy, the manager has a substantial influence on this relationship. These findings support the need to integrate both organizational and managerial characteristics into models of opportunity identification and innovation, particularly in the small business setting.

Furthermore, strategic orientation more positively affected innovation efficacy when

direction behaviors were low, suggesting that a focus on seeking opportunities compensates for a lack of managerial emphasis on incremental improvements. This compensating relationship also suggests that if the firm is not focused on seeking opportunities, the manager may be able to increase confidence in innovation through goal-setting and continuous improvement. While both strategic orientation and direction behaviors likely encourage a promotion focus in employees, they may focus employees on different types of goals—seeking out new opportunities versus the improvement of existing products and processes.

Third, we contribute to research on innovation in small businesses by examining innovation from a unique perspective. While prior research tends to measure innovation in terms of patents or product development (e.g., George, Zahra, and Wood 2002), we focus on the innovation efficacy measure introduced by Chen, Greene, and Crick (1998). Their innovation efficacy measure allows entrepreneurs to assess innovation from a variety of perspectives, including the venture's efficacy in the realms of product/service development, entering new markets, and introducing new processes to take advantage of opportunities. This measure may be particularly relevant to assessing innovation in the small business setting, where assessing patents or new product releases may not capture the full range of innovative activities. Furthermore, past research has argued that innovation efficacy is an important construct in entrepreneurial firms as it not only reflects past performance in innovation but also increases the likelihood of future innovation (Chen, Greene, and Crick 1998).

Practical Implications

We believe these findings also have three primary practical implications for managers of small businesses who want to build confidence in their firms' abilities to innovate. First, the results support the importance of establishing a strategic orientation focused on opportunity seeking, despite available resources. Often small businesses face resource constraints, which may orient the strategic focus of the firm toward only those opportunities for which tangible resources are obviously available. However, our results indicate that seeking opportunity, in spite of limited resources, increases innovation efficacy. Since perceived measures have been shown to serve as an important proxy for actual behavior (De Clerq and Sapienza 2006), we argue that innovative activities (as proxied by innovation efficacy) are informed by the strategic posture of the firm. Further, strategic orientation of the firm exhibits a more important direct role in determining confidence in innovation than the entrepreneurial culture of the firm; thus, a clear focus on opportunities and creativity orients both the manager and employees toward promotion focus. Such an orientation promotes the communication and harnessing of opportunities, even when resources are constrained.

Second, the findings suggest that small business managers need to evaluate their primary goals for the firm. A high entrepreneurial culture within the firm suggests that managers believe there are many promising ideas to take forward and that they can respond to societal shifts through the business. An entrepreneurial culture also suggests that managers and employees are encouraged to identify a number of opportunities, and clear communication may foster the sharing of promising ideas between employees and managers. To get the greatest benefit from developing an entrepreneurial culture, managers need to support employees by aligning such a focus with clearly communicated growth goals. Clearly promoting firm growth as the primary goal of the firm sends a consistent and distinct promotion focus message to employees, suggesting that entrepreneurial opportunities are valued and rewarded through innovative activities in the firm.

Finally, our results suggest that to get the most out of employee ideas, managers need to foster a promotion focus by engaging in direction behaviors, including communicating goals and setting benchmarks for improvement. High direction behaviors indicate that an individual manager perceives him/herself as one that sets high quality standards and works to continuously improve. Clear communication of such goals appears particularly important when strategic orientation is low and/or when entrepreneurial orientation is high. When strategic orientation is low, opportunities are constrained by the resources in the environment available to the firm; thus, it is important to reassure employees that despite resource constraints, continual improvement and high quality are valued components of the organization's culture. Additionally, these same attributes are important communication subjects in the situation where an entrepreneurial culture is high to confirm the

importance of improvement and the recognition of valuable ideas that arise from employee-manager interactions.

Limitations and Future Research

There are a number of limitations related to both our data and measures. First, we utilize a convenience, non-random sampling method of businesses in the United States; however, this is a common issue across small business research (Barnir and Smith 2002). It is also important to note that each instrument used in this analysis came from a single respondent at one point in time. To combat this limitation, we conducted analyses to demonstrate that common method variance does not appear to provide an impact on our results. Panel data collection across multiple participants in the business would be beneficial to future researchers in assessing the reliability of the findings associated with our hypotheses across time.

Additionally, while we rely on regulatory focus theory as our theoretical base, we did not use a direct measure of promotion or prevention focus of the manager or employees. We did not measure dispositional promotion or prevention focus because we were interested in how promotion focus was influenced by contextual conditions in the specific firm. However, future research should further investigate the role of dispositional promotion focus (Tumasjan and Braun 2012) as well as employee perceptions of manager's promotion focus (Wu et al. 2008) in innovation processes in small businesses. Additionally, other methods, such as experimental methods, may be helpful in further exploring organizational determinants of managerial and employee promotion focus.

Furthermore, our sample is made up of exclusively of firms from the United States, and appears to hold several similarities to nationally available small business data. This leads to two primary issues. First, the generalizability of our results on a global scale is questionable. Since cultural effects may certainly influence both the orientation, culture, and managerial characteristics interacting within the firm (Hofstede 2001), we encourage future researchers to explore our hypotheses across a number of country settings. Although we believe our sample to be roughly generalizable to small businesses within the United States, it is important to note that our data was collected in a large metropolitan area and the results can only certainly be applied to this region. When compared to nationally avail-able data, our data holds many similarities; however, we do see an underrepresentation of retail, and a rather large overrepresentation of firms in industries outside retail, services and manufacturing. Additionally, we have more males in our sample than the national population, and more non-White respondents. Based on data published by the Office of Economic Development (2008), these percentages appear to be closely aligned with those of the metropolitan area in which the data were collected. Despite the limitations associated with our sample, we are able to explore innovation in small businesses in a new way, which we believe to outweigh the issues associated with the sample. Future research could address this limitation by using other data collection techniques, such as a survey distributed nationally to members of a small business professional association.

Conclusion

Prior research suggests that innovation levels separate entrepreneurs from other small business owners. Although research has explored the role of innovation efficacy in the start-up stage, less is known about factors that influence innovation efficacy in the context of established small firms. To address this shortcoming in the literature, we take on a regulatory focus theory lens to examine the effects of strategic orientation and entrepreneurial culture on small business managers' perceived innovation efficacy. Further, we examine the role of two managerial attributes (i.e., manager's primary goal of the business and direction behaviors) as moderators of the relationship between strategic orientation and entrepreneurial culture and innovation efficacy. This study demonstrated that in small businesses the extent to which firms focus on new opportunities, specifically, via strategic orientation and entrepreneurial culture, affects confidence in innovation. Furthermore, managers influence these effects through their own goals for the business and their direction behaviors focusing on improvement and goal-setting. These results provide both important theoretical implications for future small business research and practical implications for entrepreneurs.

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Partner Empowerment and Relationship Failure in Franchising

by Susana López-Bayón and Begoña López-Fernández

Franchisors must empower franchisees to take decisions on a package of peripheral elements in response to pressure for local adaptations and for entrepreneurial autonomy. However, little is known about which specific elements should be decentralized and to what extent adaptation of such elements affects disputes between franchisor and franchisees. This study explores these issues by analyzing which decision rights should be franchisees' responsibility to reduce early terminations instigated by the franchisor. The results show that delegating decision rights on local advertising and personnel reduces early terminations while delegation of pricing tends to increase them, regardless of the size of the system. Interestingly, successful delegation in other decision-areas is contingent on the brand-name value. More specifically, only larger chains seem to benefit from delegating assortment and decoration decisions.

Introduction

Franchising involves running a standardized system with widely dispersed outlets by means of a complex entrepreneurial partnership. Localized operations are often managed by franchisees who are independent owners and not employees, which creates singular opportunities and hazards for both members of the relationship, the franchisor and the franchisees (Davies et al. 2011). In particular, it poses a critical challenge to franchisor headquarters when allocating decision rights to their franchisees: how to achieve consistency for the entire chain (that is, system standardization) while leaving room for franchisee autonomy in the operation of their own entrepreneurial ventures (that is, local adaptation) (Dant and Gundlach 1999; Kaufmann and Eroglu 1999; Winter et al. 2012). The aim of this paper is to explore how the allocation of decision rights within the network may influence conflict between franchisor and franchisees, by altering the balance between standardization and entrepreneurial autonomy.

For this purpose, franchise conflict is conceptualized as problematic differences between franchisor and franchisees arising in response to obstacles that pose a threat to achievement of their respective goals (Weaven, Frazer, and Giddings 2010). For instance, decentralization of certain decision rights might damage franchisors' efforts to achieve process conformity or raise costs because of agency problems (notably franchisee free-riding). If attempts to reconcile the principal's and agent's positions are not successful, conflict may lead to dysfunction and, ultimately, to termination of the relationship (Weaven, Frazer, and Giddings 2010; Winsor et al. 2012; Antia, Zheng, and Frazier 2013). As a result, considerable research has examined the role of conflict in channel relationships and in franchising in particular (Dant and Schul 1992; Spinelli and Birley 1998; Weaven et al. 2010; Winsor et al. 2012; Antia, Zheng, and Frazier

Susana López-Bayón is Associate Professor of Management at the University of Oviedo, Spain.

Begoña López-Fernández is Associate Professor of Management at the University of Oviedo, Spain.

Address correspondence to: Susana López-Bayón, Facultad de Economía y Empresa, University of Oviedo, Avda. del Cristo s/n, Oviedo, Asturias, Spain 33071; Tel.: +34 985 10 28 13; Fax: +34 985 10 37 08. E-mail: sbayon@uniovi.es.

2013). Some of these studies have explored the influence of investments, franchisor support, or life cycle on serious disputes (Frazer 2001; Frazer and Winzar 2005; Spinelli and Birley 1998). However, few studies investigate the allocation of decision rights between franchisors and franchisees (Azevedo 2009; Kidwell, Nygaard, and Silkoset 2007; Mumdziev and Windsperger 2011; Windsperger 2004), and even fewer examine its effects on conflict in franchise systems.

Moreover, there are two divergent approaches concerning the appropriate limits of franchisee control-autonomy. One stream of the literature emphasizes an adaptation perspective by arguing that franchisee empowerment (Bradach 1998; Cox and Mason 2007; Kaufmann and Eroglu 1999; Sorenson and Sørensen 2001) and even franchisees' entrepreneurial orientation (Dada, Watson, and Kirby 2012) are essential to fulfill local customer needs and thus to ensure system success. Alternatively, an emerging stream of the literature supports the standardization perspective, highlighting that franchise networks are, first and foremost, replicator organizations (Knott 2003; Szulanski and Jensen 2008) that develop through the exploitation of a proven business format rather than through continuous innovation. From this perspective, the knowledge for success resides mostly in the headquarters, so that local adaptation instigated by franchisee autonomy may undermine system performance (Szulanski and Jensen 2006, 2008; Winter and Szulansky 2001; Winter et al. 2012). The balance between the system and local knowledge is thus shifted, advocating greater levels of standardization and thus more hierarchical and centralized structures in franchise systems. However, these two streams of research have developed independently and have left gaps in our understanding of how franchisee empowerment may either benefit or harm the franchise partnership.

Accordingly, drawing on agency theory (Brickley, Dark, and Weisbach 1991; Lafontaine 1992) and on standardization/adaptation studies (Kaufmann and Eroglu 1999; Swoboda and Elsner 2013), we develop more fine-grained hypotheses about the consequences of franchisee empowerment on the specific outcome of conflict. In particular, this study addresses two important but under-explored questions. First, what are the implications of delegating different specific decision rights for system conflict? Consistently with Kaufmann and Eroglu (1999), we consider that the balance between control and autonomy may shift depending on the specific component of the business that is being analyzed. The study therefore adopts a list of five different decision-making domains, typically considered as peripheral: pricing, human resource management, two decisions concerning merchandising, that is, assortment and outlet decoration, and local advertising. Our main contribution to the franchising literature is that we analyze and test, for the first time, how local autonomy in each decision area differently affects conflict. The second contribution relates to the following question: what conditions may alter the advantages/shortcomings of delegating such decisions? We recognize that the effectiveness of local adaptation depends on the development of the franchise system (Kaufmann and Eroglu 1999; Szulanski and Jensen 2006, 2008), and provide empirical evidence on how the direct effects of franchisee autonomy on conflict and early terminations may be moderated by the value of the franchisor's brand name.

To address these research questions, we test the effect of particular allocations of decision rights on the number of early terminations of franchise contracts instigated by headquarters (franchisors). Although there are other outcomes of conflict, termination of the contract before its ending date by the franchisor is the most obvious sanction for franchisees' noncompliance with the franchise agreement (Brickley, Dark, and Weisbach 1991; Drahozal and Hylton 2003)—it represents the end of a serious conflict of interest between the franchisor and his franchisee partners. Moreover, contract termination is costly (Ishida and Brown 2010; Szulanski and Jensen 2006) and, as this study highlights, can be noticeably avoided through an informed allocation of decision rights within the chain.

Analytical Background and Hypotheses
Increasing Franchisee Autonomy: Pros and Cons

Franchising is an entrepreneurial partnership (Kaufmann and Dant 1999) that involves a complex cooperation between franchisor and franchisees. On the one hand, franchisors are responsible for designing an original business concept and they should contribute to the partnership by updating the model and exploring new technical, organizational or market possibilities (Peris-Ortiz, Willoughby, and Rueda-

Armengot 2012). On the other hand, franchisees are agents enabled to replicate and exploit the concept along with company-owned outlets. But the franchise business concept cannot remain static; on the contrary, adaptation of the model is needed for at least two reasons. First, consumer tastes change over time and, second, chains must contend with heterogeneous markets and different customer demands (Kaufmann and Eroglu 1999; Sorenson and Sørensen 2001).

The responsibility of adaptation can be shared with franchisees. Franchisees frequently add knowledge or identify opportunities that might be valuable for accommodating local demand or even for the whole system. In fact, as entrepreneurs, they seek to maximize their own returns and are highly committed to success, as they have considerable investment at risk. As past research shows, this pattern of motivation encourages franchisees to explore new knowledge and business opportunities whereas company-owned units replicate existing routines more closely (Bradach 1998; Mellewigt, Ehrmann, and Decker 2011; Sorenson and Sørensen 2001). Accordingly, franchisors may consider that it makes sense to decentralize some decision rights to franchisees to take advantage of their entrepreneurial incentives and their knowledge about local conditions (Windsperger 2004). From this point of view, increasing the level of franchisee autonomy may ultimately enhance their local adaptive capacity (Winter et al. 2012) and thus the efficiency of the franchise system.

Moreover, franchisee empowerment has additional advantages. Franchisees may see the absence of autonomy as an important drawback due to their desire for independence and autonomy (Dant and Gundlach 1999). Furthermore, centralization and close monitoring of standardized activities may signal distrust to the franchisees (Ishida and Brown 2010), establishing wrong behavioral norms between the two parties, franchisee and franchisor, and therefore increasing the probability of misbehaviour (Kidwell, Nygaard, and Silkoset 2007). In summary, franchisee autonomy may provide an efficient organizational solution for both the need for market fit to idiosyncratic local pressures and the need for franchisee motivation.

On the other hand, autonomy and entrepreneurial incentives of franchisees may also have important shortcomings for the franchise system. First, as agency theory points out, franchisees sometimes deviate from standard formats in order to opportunistically withhold effort or costs or to operate in other ways that they consider more profitable because they suppose that they can exercise entrepreneurial initiative (El Akremi, Mignonac, and Perrigot 2015). In this sense, more centralized control over local decision-making may prevent free-riding problems, not only by directly constraining deviations but also by facilitating the identification and documentation of misbehavior (Winter et al. 2012). In fact, as Kaufmann and Eroglu (1999, p. 74) indicate, standardization "provides the operations division with the ability to efficiently and objectively monitor the performance of franchisees."

Second, even if franchisees do not behave opportunistically, their autonomy may foster problems for the image consistency of the franchisor brand name. Every time franchisees make local deviations they may cause fragmentations within the system that prevent regular experiences for consumers (Kaufmann and Eroglu 1999). Consequently, they may jeopardize the uniformity of the franchise system and undermine its brand identity.

Finally, format standardization may also be critical to obtain economies of scale (Caves and Murphy 1976; Kaufmann and Eroglu 1999) in both production and distribution activities. For example, standardization is crucial to achieve large economies of scale due to both high volume purchases of standard inputs, or system-wide advertising (pooled advertising) of common trademarks and products (Grünhagen and Mittelstaedt 2002).

Given these pros and cons, finding the balance between standardization versus local adaptation poses one of the most difficult management issues faced by franchisors (Spinelli and Birley 1998; Kaufmann and Eroglu 1999) when deciding on the level of empowerment of their franchisees. Past research has dealt with this problem by distinguishing between core and peripheral elements of the business format.

Core or strategic organizational features (for example, fundamental values and visions, trademark and logo, locations, basic product range and store format) are critical to system identification. As such, adaptation of core aspects risks being deleterious to performance (Kaufmann and Eroglu 1999; Winter et al. 2012). However, peripheral adaptations of lower level features aimed at a better fit to local markets may yield positive returns.

Thus, a preliminary careful distinction must be made between these core and peripheral aspects to define the basic boundaries of the format. To this end, a number of authors also suggest a number of peripheral factors for retailing firms (Schuiling and Kapferer 2004; Swoboda and Elsner 2013) and, particularly, for the franchise business (Bradach 1998; Michael 1996; Mumdziev and Windsperger 2011; Windsperger 2004; Winter et al. 2012; Yin and Zajac 2004). Above all, they refer to marketing efforts, pricing and personnel management as perfect candidates for local adaptations. However, lower level domains still require considering the benefits from either standardization or adaptation. Specifically, we should bear in mind that adaptation may potentially damage performance (Szulanski and Jensen 2006, 2008), even if the elements are peripheral.

On this basis, this study explores the different consequences that the delegation of decision rights on pricing, labor, merchandising, and local advertising may have on the performance of the franchise relationship. We postulate that these domains differ in their ability to generate a better fit to local markets, to foster franchisee morale or to damage uniformity of the brand by allowing some inconsistent practices or purposeful free riding. Accordingly, the potential of these decision areas to shape the level of conflict within the chain will also differ.

When autonomy leads to detrimental departures from the business concept, the level of conflict between franchisor-franchisee increases. The ultimate solution for conflicts is termination of the franchisee's contract if the franchisor cannot convince the operator to respect franchising standards (Holmberg and Morgan 2003; Marrow 2009). This is not a desirable event. Terminations create ill will not only for the franchisee involved in the conflict but also for the remaining franchisees (Ishida and Brown 2010). Additionally, early terminations are expensive because collecting evidence is often costly and tricky (Jindal 2011; Lal 1990; Szulanski and Jensen 2006) and because they make it necessary to invest anew in set-up costs for the candidate replacing the former franchisee. Moreover, such conflicts may damage the chain's image during the conflict. This paper suggests that wise allocation of decision rights may pre-empt dysfunction and conflicts. Specifically, the following sections elaborate on the early termination consequences of delegating peripheral decision rights related to pricing, labor, merchandising, and local advertising.

Pricing Autonomy

Although EU antitrust laws forbid franchisors to impose prices, they may recommend minimum or maximum pricing structures and use customers' expectations to influence franchisees (Ater and Rigbi 2015). In fact, franchisors can design barriers to price changes such as labels with suggested prices for the products they sell to franchisees or promotional materials such as menus in restaurants that mention the prices of the different meals. Ater and Rigbi (2015) show that chains may use nationwide advertising to inform customers about prices, thereby inducing franchisees to adopt the advertised deals. Rather than seeing this as a problem, this paper argues that both franchisors and franchisees will support such center-led pricing management. Actually, centralization may help to avoid inefficient (too high or too low) price structures in the system.

First, past research has found higher prices in franchised outlets due to double marginalization (Ater and Rigbi 2015; Lafontaine 1999; Lafontaine and Scott Morton 2010). Franchisees may face weak intrabrand competition if franchisors offer them exclusive territories. This enables franchisees to set monopolistic prices, giving rise to a vertical externality known as double marginalization (Spengler 1950). That is, franchisees may overprice (or offer too few services) relative to the level that maximizes chain profits (Zanarone 2009).

Second, price promotions are likely to result in intrabrand competition that will be detrimental for the individual franchisees and also for the franchisor. In fact, Kalnins (2003) found that price promotions in franchise chains were ineffective to gain market share from competitors. Furthermore, he showed that each chain's locations are substitutes for at least some clients. Therefore, franchise outlets that lower prices might be enticing customers away from other outlets of the same brand that did not offer the discount. This possible intrabrand competition is directly prejudicial to the system and, additionally, may be a source of conflict with neighbouring franchisees, which will prefer somewhat uniform prices.

Besides discouraging intrafirm competition, centralizing price decisions affords additional advantages for chain operators. Specifically, franchisors might prefer uniform prices to

maintain image standardization and also to simplify national advertising (Lafontaine 1999).

Summing up, we expect that franchisees that have more autonomy in pricing would tend to be more dissatisfied because delegation can intensify price competition leading to less compliance or worse practices. This will offset the potential advantages of adapting prices to the environment of each location. Moreover, as franchisors also prefer uniform prices, we expect the number of disputes within the chain to increase when decentralization of pricing decisions is high. Therefore, the relationship between pricing autonomy and contract terminations can be stated as follows:

H1: Franchisee autonomy associated with pricing positively influences early terminations.

Human Resource Decisions

Most studies in human resource management (HRM) highlight that human resources is one of the areas usually left to the franchisees' discretion (Brand and Croonen 2010; Grünhagen et al. 2014; Truss 2004), but they also recognize that some HRM domains, such as training or recruitment/selection, typically remain under the influence of the franchisor (Brand and Croonen 2010; Truss 2004). The ultimate reason for centralizing such human resource policies is to reduce the likelihood that franchisees engage in free-riding strategies (for example, through low-cost training practices or by hiring less qualified workers) and to preserve system uniformity.

Nevertheless, to deal with the tension between system standardization and local adaptation, we built on the ideas of Brand and Croonen (2010) and Grünhagen et al. (2014) who establish that allocating more decision rights to franchisees in the field of HRM contributes to the success of the entire franchise system. Explanations from both agency and entrepreneurial views support this proposal.

First, as independent entrepreneurs, franchisees are responsible for their personnel and have incentives to maximize their units' performance by diligently monitoring their employees. Additionally, labor is very difficult to monitor at a distance, so headquarters are generally eager to leave this task to franchisees as a part of their daily operations. In fact, it is widely accepted from an agency perspective that the greater the cost of direct supervision by the franchisor, the more the franchisor will rely on

expansion through franchising (Brickley and Dark 1987; Lafontaine 1992; Lafontaine and Shaw 2005). Second, besides monitoring, franchisees can also use their specific local knowledge to effectively design other human resource practices (Castrogiovanni and Kidwell 2010). For instance, personnel recruitment and retention are more sensitive to the local circumstances of labor markets than to the franchisor's standardized procedures (Windsperger 2004). Restricted autonomy in hiring might also unsettle franchisees as they will lose control over their payroll. Similarly, issues may arise relating to centralized training of workers, taking into account that franchisees are directly responsible for them. Moreover, as HRM comprises practices and procedures that are not directly visible to customers, even significant local adaptations may not affect system uniformity.

Finally, from a legal point of view it may also be advisable to leave HRM to the franchisee's discretion. If the franchisor prescribes specific employment practices, he could be alleged to be the employer of the franchisee's employees with all the corresponding legal responsibilities (Brand and Croonen 2010; Koch and Dodge 2003). As a result, the following testable hypothesis can be posed:

H2: Franchisee autonomy associated with human resources negatively influences early terminations.

Merchandising Decisions

The concept of merchandising discussed in this paper comprises two basic elements of marketing at the point of sale: product assortment and outlet decoration. Past research highlights that these marketing practices are frequently adapted to different locations (Jonsson and Foss 2011; Szulanski and Jensen 2006; Williams 2007; Yin and Zajac 2004). Indeed, these elements are usually considered among the peripheral ones (Bradach 1998; Michael 1996; Windsperger 2004; Winter et al. 2012; Yin and Zajac 2004), so they are sound candidates to be the franchisee's responsibility in order to improve system performance. Various arguments support this recommendation.

First, free riding problems are expected to be less severe in merchandising than in maintaining competitive prices, particularly considering that adaptations in assortment and outlet decoration usually commit larger investments and are not as straightforward to correct as prices are.

Additionally, it is generally accepted that the knowledge required to design efficient marketing and, consequently, merchandising policies is highly dependent on the context (Windsperger 2004). That is, this knowledge has important connections to the local customers. Therefore, as franchisees are aware of local consumer tastes, such policies will be better assessed by them. Decentralizing these decision rights may be equivalent to performing segmentation of the markets which can increase total system demand beyond that resulting from a uniform offer. Indeed, various authors suggest that franchisors should look for franchisee commitment for new offerings to be successful (Bradach 1998; Yin and Zajac 2004). The capacity for deciding in merchandising could foster this type of commitment as long as franchisees believe that they have a say in the service they offer to their clients.

Finally, brand image consistency and large economies of scale can be preserved, even if merchandising decisions are made locally, through a flexible replication strategy. As illustrated by Jonsson and Foss (2011), franchisors may allow lower-level features to vary across franchisees' outlets in response to market-based learning, leaving their central features unchanged. In fact, merchandising decisions are particularly suitable for this kind of adaptation. For instance, headquarters can define a basic offer which includes the flagship products of the franchise and allow franchisees to decide whether or not to expand their product range beyond this standard. Similarly, the franchisor can standardize some core parts of the store format/design (size, layout, logo), which franchisees must copy exactly, while tolerating considerable discretion in the development of additional features to incorporate local knowledge. This flexible adaptation strategy ensures that the system can continue to function taking advantage of large economies of scale from the standardized central features while improving local adaptation and thus franchisee motivation and performance. Summing up, franchisee autonomy in merchandising may reduce conflict by increasing franchisee performance and satisfaction and thus their organizational commitment, without jeopardizing brand name value. So:

H3: Franchisee autonomy associated with merchandizing negatively influences early terminations. Specifically:

$H_{3.1}$: *Franchisee autonomy associated with product assortment negatively influences early terminations.*

$H_{3.2}$: *Franchisee autonomy associated with outlet decoration negatively influences early terminations.*

Local Advertising

Advertising has traditionally been considered a highly contentious issue in franchised chains (Dant and Berger 1996; Mathewson and Winter 1985; Michael 1999; Sigué and Chintagunta 2009). To examine conflicts over this issue and to determine who should take on the advertising function (franchisors versus franchisees), it is important to distinguish between nationwide and local advertising campaigns (Jørgensen, Sigué, and Zaccour 2000; Sigué and Chintagunta 2009).

Usually, franchisors undertake nationwide advertising to maintain a consistent brand image and to take advantage of economies of scale (Rubin 1978; Sigué and Chintagunta 2009). Weaven et al. (2010) report that common opportunistic strategies of franchisees include refusing to honor system-wide promotions (critical for the chain's image consistency), for example, when launching new items/concepts. This hazard makes it advisable to centralize brand-image advertising to indirectly enforce promotions by ensuring that buyers request certain expected conditions of the advertised item (Ater and Rigbi 2015). In addition, decentralization of brand-image advertising to franchisees would result in a free-riding problem. That is, because franchisees do not capture all the benefits generated by their investments, they are likely to opportunistically reduce their brand-image advertising expenditures (Michael 2000; Sigué and Chintagunta 2009).

However, nationwide advertising coexists with local advertising and promotional activities. Such local campaigns aim to stimulate current (local) sales and may even target the specific buyers of a franchisee's store (Dant and Berger 1996; Jørgensen, Sigué, and Zaccour 2000). Along with the two merchandising decisions discussed already (assortment and outlet decoration), local advertising and promotion constitute the third marketing component that has been qualified as peripheral by standardization/adaptation studies (Kaufmann and Eroglu 1999) and is thus a candidate for decentralization. The arguments are threefold.

First, when advertising is at this local store level, franchisees may have knowledge advantages about local conditions that are useful for this marketing function (Windsperger 2004). So franchisors may prefer that franchisees decide when to advertise their establishment, which media to use or which public relations actions to pursue to boost sales. Such delegation of local advertising may allow franchisors to both cope with dissimilar advertising costs (Cebrzynski 2001) and also to be aware of different consumer tastes. Moreover, dissimilarities among local conditions may reduce franchisors' ability to exploit economies of scale for increasing local sales—for instance, both franchisors and franchisees are likely to use the same multiple local media and hence to have the same cost structures (Sigué and Chintagunta 2009). Additionally, if franchisors undertake local advertising and promotion directly, they are likely to promote less than competing franchisees would (Sigué and Chintagunta 2009) because, as such activities are intended to benefit franchisees the most (Dant and Berger 1996), franchisors will be unwilling to invest sufficient effort in them (Sigué and Chintagunta 2009). Ultimately, this moral hazard problem on the franchisors' side will lower franchisees' satisfaction and compliance.

In summary, decentralization of local advertising can be expected to help meet franchisees desire for control over promotions at the local/store level, lowering the conflict over the advertising function. At the same time, the franchisors' need for standardization and economies of scale for image advertising may be preserved through the centralization of nationwide campaigns. Thus:

H4: Franchisee autonomy associated with local advertising negatively influences early terminations.

Moderating and Direct Effects of Franchisor Resources

The influence of franchisee autonomy on standardization/adaptation tension not only depends on the *type* of decision that is delegated. In fact, the costs and benefits of expanding franchisees' decision boundaries may be contingent on other system features, such as the growth and development stage of the franchise chain (Kaufmann and Eroglu 1999). Specifically, in this section, we suggest that the value of the franchisor's brand name operates as a moderating factor that may help explain diverging results in the consequences of franchisee autonomy.

The franchise package essentially consists of two resources: brand name and business practices (Barthélemy 2008; Lafontaine 1992), and indeed franchisors differ significantly depending on the development and the value of such resources. Given these differences, it is expected that the conflict between franchisees' autonomy aspirations versus franchisor efforts to assure process conformity intensifies with the chain's brand value. First, free riding hazards tend to be larger as the brand name value develops and the franchise system grows in a particular territory (Barthélemy 2008; El Akremi, Perrigot, and Piot-Lepetit 2015; Jindal 2011; Lafontaine and Shaw 2005). That is, the penalties born by free riders will decline with the size of the chain, making detrimental departures more profitable, as a larger number of franchisees would share the costs of their misconduct (Shane 2001). This mitigating effect will make free riding more appealing in bigger chains. Consequently, increasing the franchisor's control through higher levels of centralization appears to be more helpful in well-established systems (that is, where the franchisor's exposure to free riding is higher). Likewise, it seems reasonable to presume that more valuable, bigger chains will experience more conflicts than less established ones when they reduce control by decentralizing decision-making power.

Second, strict adaptation by franchisees to the franchise business concept is more beneficial if the template is able to obtain superior results; that is, when franchisor resources are sufficiently proven and developed (Szulanski and Jensen 2008; Winter et al. 2012). In fact, small young chains may have not yet sufficiently tested and stabilized business practices to warrant large-scale replication. For these chains, franchisee-led innovations will be more desirable, as they may be valuable not only to fit specific work environments but also to utilize them elsewhere in the entire organization. From this view, in less developed chains franchisors will apply less severe standards so franchisee autonomy will be a less important source of conflict.

Finally, franchisees' innovative ideas and local adaptations may also alter customer expectations about the franchise and thus the image consistency of the system (Kaufmann and Eroglu 1999). However, there is no agreement in the franchising literature as to how system

growth and consolidation may influence the capacity of franchisees' adaptations to damage image consistency. According to Kaufmann and Eroglu (1999), until a franchise system image is well formed among consumers it is critical to protect a relatively large set of standardized format elements. Consequently, franchisee autonomy should be lower in chains that are not yet well established. The reasoning is that, in the early stages, customers have not yet manifested their expectations about the franchise concept so that minor local deviations are more likely to erode an enduring brand image. In contrast, other authors argue that it is precisely in their early stages when franchise formats will incur fewer costs if there is deviation from uniformity; that is, as formats are not yet well known among consumers, there will be a stronger acceptance of departures (Bradach 1998; Stanworth, Healeas, and Purdy 2002).

Building on these arguments, our contention is that the autonomy and thus the innovation capacity of franchisees will be more problematic in mature and well-established franchise systems. That is, when the system is sufficiently tested and developed, the opportunity to exploit system-scale benefits will be higher and this will demand more coordinated and standardized practices among its associates. Additionally, exposure to free-riding hazards will also increase the claim for more centralized, more rigid controls. Thus, we suggest the following moderating influence of the franchisor's brand name value on the relationship between autonomy and performance:

H5: Brand name value moderates the relationship between franchisee autonomy and conflict. The higher the brand name value, the more positive the relationship between autonomy and early terminations.

Along with the brand name, franchisors' system-specific know-how is the other intangible resource that they put at stake in the relationship (Windsperger 2004). This know-how refers to business practices that cannot be easily codified and transferred because they have an important tacit component and, therefore, a low degree of contractibility. So, such practices cannot be included in operation manuals (Knott 2003), but they may directly influence the fran-

chise success. Particularly, as the importance of specific knowledge increases, it will become more difficult either to write it down or to train someone in a chain's operations (Combs et al. 2011). Chain operators, therefore, are obliged to use different training tools to transmit their tacit business practices to their franchisees (Cochet and Garg 2008). But, as Barthélemy states, because franchisees are independent entrepreneurs, "persuading them (franchisees) to attend training sessions and implement new business practices is often costly in terms of time and effort" (2008, p. 1454). Franchisees are reluctant to attend training meetings because they usually bear both the opportunity cost of their time and the direct costs (for example, travel expenses), which are frequently charged to franchisees (Cochet and Garg 2008).

Moreover, when the importance of tacit practices increases, it can blur the expectations that franchisees should meet. Consequently, in the franchise context we expect that the number of disputes will increase with highly tacit, non-contractible, business practices. This leads us to the following hypothesis:

H6: Tacitness of the franchisor's business practices positively influences early terminations.

Data and Procedures
Data Collection and Sample

The hypotheses were tested in the Spanish franchise sector. The methodology used for data collection was a mail survey. The Likert-type questionnaire items were formulated after in-depth interviews with franchisors, consultants and franchisees, and the preliminary version of the questionnaire was pretested with six franchisors.

The questionnaires were drawn up in 2008 and sent to the 847 franchisor firms previously identified by the two main professional guides edited in Spain (Barbadillo 2008; Tormo and Asociados 2008).[1] In all cases, the individuals asked to fill in the questionnaire were the franchising directors or the CEOs directly responsible for administration of the chain. Data were gathered for purposes of a broader research project on contract design and governance of franchise chains. The request for information

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[1]Four of the respondents were no longer in business. Out of the active firms that responded, 19 used alternative forms of distribution such as licensing.

was closed after receiving questionnaires from 163 chains operating in Spain across many industries. However, the final dataset comprises 71 franchise chains because the analysis only considers firms old enough to have early terminations. The threshold is set at four years in order to eliminate cancellations typically due to the inexperience and beginner difficulties of new franchisors. The results showed in the following sections refer to this reduced dataset.

The methodological approach includes a check for possible biases. First, to test for a potential response bias in our sample, we followed the Armstrong and Overton (1977) procedure. We compared several variables in early-returned questionnaires and late-returned questionnaires. *T-test* analyses indicated that no significant mean differences existed between early and late respondents. Furthermore, we tested for a potential response bias by comparing respondents and nonrespondents on two key features: system size and sub-sector of activity. None of these test results showed significant differences at the 0.05 level.

Second, the use of self-reported data and a single key respondent requires evaluating and controlling for any possible common method variance (CMV). As recommended by Podsakoff et al. (2003), this study used both procedural and statistical remedies. We addressed common method bias a priori by including a number of procedural steps in designing and administering the questionnaire: (1) the questionnaire aimed to avoid any direct connection between measurement of the predictor and the dependent variables by including a psychological separation between them; (2) respondents were assured the study would be both anonymous and confidential; and (3) the questions were formulated as concisely as possible and to reduce item ambiguity, as the pretests noted.

In addition to these procedural techniques, we conducted a confirmatory factor analysis (CFA) to evaluate the possible magnitude of the CMV. In the CFA approach, all the self-reported items are modelled as the indicators of a single factor that represents method effects. Common method bias is assumed to be important if the hypothesized model fits the data. The results showed that the single-factor model did not fit the data well, $\chi^2 = 94.572$ (21 df); $p < 0.05$; CFI = 0.779; NFI = 0.680; NNFI = 0.668; RMSEA = 0.131. While these results do not preclude the possibility of common method bias, they do suggest that it is not of great concern in this study.

Measurement

Dependent Variable. The dependent variable is the number of disputes that result in early termination of franchise contracts, and it is directly built on the franchisor responses for the following item: (i) Number of early terminations initiated by the franchisor over the last four years (NUMBTERM). This is a conservative proxy of conflict, which could even be biased downwards, as we count the cases instigated by franchisors and not by franchisees. Franchisees might leave the system for a number of reasons, such as family issues or an attractive job opportunity, but franchisors should have no other reasons to terminate apart from noncompliance with the franchise agreement or poor performance of the franchisee. Actually, EU as well as American laws in 19 states limit franchisors' freedom to terminate franchises by requiring a "good cause" for mid-agreement termination, so franchisees are already protected against opportunistic ends. Therefore, it can be assumed that early terminations by the franchisor denote serious conflicts and poor franchisee performance.

Decision Making Authority. We considered the aspects highlighted in previous literature as suitable for delegating, namely marketing efforts, pricing and personnel management (Bradach 1998; Michael 1996; Mumdziev and Windsperger 2011; Schuiling and Kapferer 2004; Swoboda and Elsner 2013; Windsperger 2004; Yin and Zajac 2004; Winter et al. 2012), as discussed already. Specifically, franchisors rated their franchisees' authority regarding the five operational decision areas identified in the second section.

We operationalized decentralization of decision-making by requesting franchisors to rate their franchisees' authority regarding the five operational decision areas identified in the second section. These measures consisted of six items on a Likert scale adapted from Windsperger (2004) and Kidwell, Nygaard, and Silkoset (2007). The wording of the items measuring decentralization was: "To what extent is the following decision made by the franchisee?" (1 = no extent, 5 = to a very large extent). (See Survey Appendix.) These items served as indicators for the constructs of: (1) pricing (DELEGPricing); (2) human resource decisions comprising two items, recruitment and training policies (Windsperger 2004). By adding the scale

values for the two items, we obtained a summated index for the level of franchisee autonomy in this area (DELEGPersonnel); (3) product assortment (DELEGAssortment); (4) decoration (DELEGDecor); and (5) local advertising (DELEGAdvertising). The higher the score, the higher the franchisees' influence on that particular decision issue and the higher the degree of decentralization of the franchising network.

Brand Name Value. To proxy the chain's market reputation, we used the SIZE of the system, namely, the total number of outlets held by each franchisor including both company-owned and franchised stores. Past research has used this measurement concept very often (see, for example, Agrawal and Lal 1995; Arruñada, Garicano, and Vázquez 2001; Baucus, Baucus, and Human 1993; Lafontaine 1992; Penard, Raynaud, and Saussier 2003; or Solís and González 2012). It is assumed that the value of the trade name will increase with the number of establishments displaying it (Lafontaine 1992). This relationship has been tested in Spain by Solís and González (2012), who found significant and important correlations between the estimated brand name values of franchisable businesses in Spain and their chain size.

Tacitness. Compared to explicit knowledge, which is easy to codify and to transfer through operation manuals, tacit practices are difficult to transmit to franchisees and must be acquired through experience or face-to-face training (Barthélemy 2008; Knott 2003; Windsperger 2004). We therefore consider that the length of the headquarters' annual training programs (TRAININGtime) may be a proxy of business practice tacitness[2] (Combs et al. 2011; Mumdziev and Windsperger 2011; Windsperger 2004). Accordingly, our proxy is built on franchisors' answers to the following item: (i) Annual training time that your current franchisees must undergo to maintain and/or develop the franchise business practices (weeks per year).

Control Variables. To strengthen empirical tests, we controlled for franchisor experience in both operating the business and franchising, for the sector and for the size of the system.

First, previous research has shown that experience affects the probability of chain survival and conflict (Kosova and Lafontaine 2010; Lafontaine and Shaw 2005; Michael 2000; Shane 1998) and therefore may affect early terminations. We differentiated between business experience (AGE), calculated as the number of years as the chain started its first company outlet; and franchising experience (FRANEXP), calculated as the number of years the chain has been running the franchise system. Previous studies discriminate between these two variables to examine the influence of learning effects on franchising (see, for example, Baena and Cervino 2012). On the one hand, Lafontaine and Shaw (1998, p. 108) show that companies that spend more time in the marketplace "developing their prototype and their operating procedures and documentation are more likely to succeed in franchising." Previous business experience also signals legitimacy and thus increases the potential number of qualified applicants (Baena and Cervino 2012). Moreover, it may be a substitute for experience in franchising. On the other hand, franchising expertise (years franchising) may not only help franchisors to identify and select appropriate franchisees, but also to detect and prevent potential free riding and to develop capabilities to better routinize and transfer their knowledge (Castrogiovanni, Justis, and Julian 1993; Holmberg and Morgan 2003; Winter and Szulanski 2001). Maturity or age is progressive and subject to a diminishing effect, as the increment slows down from year to year (Holmberg and Morgan 2003). Therefore, the operationalization of the variable uses the logarithm for age.

To control for the sector, an industry dummy variable (RETAIL) was added to distinguish between retailing and services. It takes value 1 for retail-type chains so accounts for variations idiosyncratic to retailing vs. service sectors (Barthélemy 2008; Windsperger 2004).

Note that this model also controls for the influence that the size of the population of franchisees may have on the dependent variable. That is, franchise chains with higher number of franchisees are simply more exposed to conflicts (when measured as total of terminations). This

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[2]Aside from transferring their know-how, franchisors may also use training programs to monitor franchisees. This supervision function is particularly valuable where tacit knowledge is concerned, as tacit business practices are not readily codified so cannot be supervised using other low-cost alternatives, such as reviewing periodic reports or accounts. We are thankful to an anonymous reviewer for raising this point.

difference among system dimensions is controlled by the SIZE variable.

Analytical Procedure

To examine the effect of franchisee empowerment on terminations of franchise contracts, a Generalized Linear Model (GLM) was performed. Given that the dependent variable, early terminations, is a count data that takes on positive discrete values, the ordinary least squares (OLS) method is inefficient and may be biased. Consequently, we fitted a Poisson model to our dataset (Cameron and Trivedi 1986; Greene 1997; Winkelmann 2008). The Poisson model assumes that the variable of interest (y_i = number of early terminations) occurs at a rate, μ_i, over a certain period of time. Given the vector of explanatory variables, $\boldsymbol{x_i}$, the basic probability function of the Poisson distribution is:

$$\text{Prob } (Y_i = y_i | \boldsymbol{x_i}) = \mu_i^{y_i} \times \frac{e^{-\mu_i}}{y_i!} \text{ for } y = 0, 1, 2 \ldots \quad (1)$$

One restrictive assumption of the Poisson distribution is that the conditional mean and variance of the count variable are both equal to the rate parameter μ.[3] However, empirical practice has suggested that count data often display overdispersion—a situation where the variance of the dependent variable exceeds the mean (Cameron and Trivedi 1986, 2013). Here, overdispersion in the rate μ_i might take place if the probability of one early termination within a franchise system is affected by the presence of other early terminations in the system. Nevertheless, a prestest showed that our dependent variable does not display overdispersion, which implies that the Poisson regression model is appropriate.[4]

The equation of interest here is that of the rate parameter μ_i, the mean number of early terminations per period given the independent variables, and it is formulated as:

$$\ln \mu_i = (\boldsymbol{\beta'X_i}) \quad (2)$$

where i indexes franchisors, $\boldsymbol{X}$ is a matrix of independent variables, and $\boldsymbol{\beta}$ is the vector of

coefficients to be estimated (Greene 1997). In this equation (2), the coefficient on Pricing autonomy (b_6) is predicted to be positive (Hypothesis 1), the coefficient on HR decentralization (b_7) is expected to be negative (Hypothesis 2), the coefficients on Assortment, Decoration and Local advertising autonomy (b_8 to b_{10}) are expected to be positive (Hypothesis 3), and the coefficients on the moderator effects of brand name value (b_8 to b_{10}) are expected to be positive (Hypothesis 4). The regression coefficients on the control variables log Age (b_1) and log Years Franchising (b_2) are expected to be negative, and on the control variables Training (b_1) and Chain Size (b_1) to be positive.

Table 1 reports the means, standard deviations, and correlations between the independent and control variables.

The dependent variable shows a relatively low number of terminations during the period (mean = 1.3, SD = 1.83). Some firms did not have any terminations, and the variable revealed truncation on the left hand of the distribution and a skew to the right, with 8 being the maximum number of terminations in our sample. Mean values for the variables measuring the business and franchise experience of the chain are relatively high because, as explained already, we sampled firms more than four years old.

Table 1 also shows bivariate Pearson correlations. To reduce potential problems with multicollinearity between the interaction terms and their components we used the conventional mean-centering procedure suggested by Aiken and West (1991). The *condition index* of all predictors is below 20, as recommended by Greene (1997), suggesting that multicollinearity is not a major issue in this research.

Results

Table 2 reports the results of using a moderated hierarchical Poisson regression. Model 1 includes only the control variables, Model 2 adds the delegation variables, and Model 3 (full model)

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[3]Specifically, under the Poisson distribution the expected number of early terminations in each period verifies that: $E(y_i|\boldsymbol{x_i}) = Var(y_i|\boldsymbol{x_i}) = \mu_i = e^{\boldsymbol{\beta'x_i}}$

[4]The Negative Binomial model has been widely suggested to handle the overdispersion situation. Consequently, we performed a *likelihood ratio test* between the Poisson and the Negative Binomial regression with all other settings equal (Cameron and Trivedi 1986). This test equals 0.512 (1df), not significant at $p<0.05$. Moreover, Aikake's Information Criterion (AIC) and Bayesian Information Criterion (BIC) for the Poisson Model (AIC: 226.39; BIC: 262.59) are smaller than the AIC (227.88) and the BIC (266.34) for the Negative Binomial model, which also indicates that it does not offer any improvement over the Poisson regression.

Table 1
Means, Standard Deviations, and Correlations

	Mean	SD	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Early terminations	1.3	1.84	1	-.13	-.17	.10	.35	.16	-.02	.18	-.00	.13	-.09
BusinessExp (AGE)	21.8	22.51	-.13	1	.51	.00	-.15	.10	.16	.13	.15	.03	-.09
FRANEXP	10.8	7.38	-.17	.51***	1	.03	-.06	.29	.11	.19	.27	.01	.00
RETAIL−type chain	0.5	0.50	.10	.00	.03	1	-.03	.20	.26	-.32	.08	-.02	-.00
Training Time	1.8	2.01	.35***	-.15	-.06	-.03	1	.29	.00	.02	-.08	.08	.09
ChainSIZE	52.9	70.59	.16	.10	.29***	.20**	.29***	1	.00	-.08	.03	-.03	.03
DELEGPersonnel	8.2	1.44	-.02	.16	.11	.26**	.00	.00	1	.20	.11	.30	.29
DELEGPricing	2.8	1.29	.18	.13	.19	-.32***	.02	-.08	.20**	1	.41	.43	.31
DELEGAssortment	3.0	1.29	-.00	.15	.27**	.08	-.08	.03	.11	.41***	1	.43	.34
DELEGDecor	2.3	1.07	.13	.03	.01	-.02	.08	-.03	.30***	.43***	.43***	1	.56
DELEGAdvertising	3.7	1.11	-.09	-.09	.00	-.00	.09	.03	.29***	.31***	.34***	.56***	1

Note: $N = 71$ chains; Correlations greater than $|0.19|$ are significant: **$p < 0.05$ ***$p < 0.01$.

Table 2
Poisson Regression of Early Terminations by the Headquarters
(Standard Errors in Parentheses)

Variables	Conditional Mean of Early Terminations		
	Model 1	Model 2	Model 3
(Constant)	0.757	0.817	1.354
	(0.527)	(0.570)	(0.668)
Log AGE (Business Experience)	0.688	0.533	0.349
	(0.432)	(0.474)	(0.523)
Log FRANEXP (Years Franchising)	−1.931***	−2.107***	−2.296***
	(0.635)	(0.664)	(0.691)
RETAIL−type chain	0.277	0.619**	0.270
	(0.215)	(0.249)	(0.285)
Training Time	0.161***	0.166***	0.131*
	(0.045)	(0.047)	(0.069)
ChainSIZE	0.002	0.002	0.003
	(0.001)	(0.001)	(0.002)
DELEGPricing		0.356***	0.260**
		(0.107)	(0.121)
DELEGPersonnel		−0.155*	−0.163
		(0.089)	(0.100)
DELEGAssortment		0.022	0.064
		(0.103)	(0.113)
DELEGDecor		0.148	0.062
		(0.136)	(0.159)
DELEGAdvertising		−0.313**	−0.401***
		(0.125)	(0.143)
ChainSIZE × DELEGPricing			0.000
			(0.002)
ChainSIZE × DELEGPersonnel			0.002
			(0.002)
ChainSIZE × DELEGAssortment			−0.005***
			(0.002)
ChainSIZE × DELEGDecor			−0.009**
			(0.003)
ChainSIZE × DELEGAdvertising			−0.001
			(0002)
Chi−Squared test (for all coefficients zero)	28.14***	50.63***	68.98***
D (Residual deviance)	135.083	112.591	94.240
*Deviance analysis****	–	22.492***	18.351***
AIC (Akaikés Information Criterion)	247.234	234.742	226.392
AICC (Finite Sample Corrected AIC)	260.810	239.217	236.466

$N = 71$ chains; *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.
***ΔDeviance $(D_0 - D_1) \sim \chi^2 \Delta df, p$.

adds the interaction terms to analyze moderator effects.[5] The three estimated equations are significant at the 1% level.

Model 1 includes all the variables except for the decision and interactive ones. The results show that one out of the three control variables was statistically significant. Thus, the number of early cancellations bears little relation either to the business experience of the franchisor or to the governance difficulties that might arise in service-type compared to retail-type chains. However, the number of years franchising (FRANEXP) significantly tends to reduce the number of early terminations ($b_2 = -1.931^{***}$). This effect remains in all the estimated models.

Conversely, the influence of franchisor assets (brand name and know how) is mixed. First, if the SIZE of the system captures its brand name value, apparently, this value does not directly affect the incidence of conflicts. Second, according to our predictions, the regression coefficient of TRAINING, which proxies tacitness of franchisor knowhow, is positive and statistically significant ($b_4 = 0.161^{***}$), and this result is maintained in the three models ($b_4 = 0.166^{***}$ in Model 2; $b_4 = 0.131^*$ in Model 3). That is, the difficulties involved in transferring implicit knowledge through different training tools increase the number of early terminations.

Model 2 adds the main decision variables studied, that is, the variables measuring the degree of franchisees' decision-making autonomy (DELEGPersonnel, DELEGPricing, DELEGAssortment, DELEGDecor and DELEGAdvertising). Inclusion of these variables significantly improves the model (ΔDeviance = 22.492^{***}), supporting the general contention that the degree of conflict that ends up in termination is actually sensitive to the decision-making structure. Two out of the five decision variables studied are significant— pricing decisions and local advertising decisions—and, as predicted, their coefficients differ in sign. These results build on the findings of Kidwell, Nygaard, and Silkoset (2007), who found a negative impact of centralization on free riding but without distinguishing among different decision areas. Specifically our research supports that the relationship between franchisee autonomy and conflict is not always positive. Moreover, the results indicate that analysis of the effect of autonomy on early terminations must focus on each particular decision right instead of focusing on the level of delegation as a whole.

First, H1 proposes a positive effect of pricing autonomy on early terminations. The coefficients for this variable (DELEGPricing) are significant and positive in Model 2 ($b_6 = 0.356^{***}$) and also in Model 3 ($b_6 = 0.260^{**}$), which includes the moderating effects of brand name. Thus, H1 is supported, indicating that to allow franchisees to set their own prices without restrictions is a significant source of conflict within the chain. That is, it significantly increases the number of early terminations.

Second, the DELEGAdvertising variable has the expected negative sign and is significant in all the models ($b_{10} = -0.313^{**}$ and $b_{10} = -0.401^{***}$). That is, as postulated in H4, the greater the franchisee autonomy in local advertising decisions, the smaller the number of early terminations. This result suggests that franchisors may enhance the franchise relationship and benefit from franchisees' local experience by allowing franchisees to use their own marketing ideas in advertising. However, the decision variables regarding merchandising (product-mix and outlet decoration) are not significant. Hence, H3.1 and H3.2 are not supported.

Finally, the DELEGPersonnel variable has a significant coefficient with the expected negative sign in Model 2 ($b_9 = -0.155^*$). Thus it appears that the decentralization of human resources decisions regarding hiring and training may lower conflict. One note of caution is that the coefficient for this variable is insignificant when the interaction terms are added to the model (Model 3). This means that the negative influence of DELEGPersonnel on early terminations is not significant at a certain level of the moderator variable. More specifically, this influence is insignificant in medium-sized chains.[6]

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[5]As *R-squared* is not part of the maximum-likelihood estimates of the basic Poisson model, a *deviance test* was performed to compare the three models and to determine whether the inclusion of variables of interest improved the prediction of the dependent variable (Cameron and Windmeijer 1996; Cameron and Trivedi 2013).

[6]In Model 3, the regression coefficient b_9 represents the effect of the predictor variable (DELEGPersonnel) on the dependent variable (Early terminations) when the moderator variable (ChainSIZE) is coded "0" (Cohen et al. 2013). As the predictor and moderator variables used to create the interaction terms are centered, we have a meaningful zero point, that is, the mean for ChainSIZE (in our dataset, the average level of ChainSIZE is 52.9).

Model 3 adds interactions between franchisee autonomy and the value of the franchisor's brand name (SIZE). The model provides general support for the argument that the number of cancellations is contingent on the fit between the importance of the brand name and the level of franchisees' authority (there is a significant improvement in the deviance $\Delta D = 18.351$*** between Models 2 and 3). Results for the interactive effects also vary with the type of decision right considered.

The interaction of SIZE and the degree of delegation of both assortment and decoration decisions have a negative and significant effect on contractual terminations $b_{13} = -0.005$*** and $b_{14} = -0.009$**. This suggests that, as the chain becomes larger, differences in market conditions make local marketing adaptations more advisable in those areas. Employing a contingency logic on the effect of decentralization on early terminations seems particularly valuable according to the significant interactive effects obtained. Specifically, without a contingency logic (and its empirical referent, the interaction term), one plausible conclusion would have been that delegating decisions on decoration and assortment is useless. However, the negative interaction effect between these two variables and the size of the system suggests a more subtle interpretation of the effects of decentralizing. Similarly, without the interaction effects, one would have concluded from the data analysis that the value of the brand has no effect on the design of the system's decision-making structure, when in fact the value of the brand name governs the advisability of delegating issues such as decoration and assortment decisions.

So, in light of the results, and, contrary to our expectations, the advantages of decentralizing decision-making may counterbalance its hazards as brand value increases. Hence, as pointed out by Kaufmann and Eroglu (1999), centralization of these decision rights (assortment and decoration) seems to be more critical in the early stages (when the franchisor still has a low-value brand) to ensure uniformity and achieve consistent business formats.

Moreover, it seems that, instead of increasing free-riding hazards and, consequently, the potential costs of delegation, a high-valued brand may increase the franchisee's exit costs, diminishing the danger of franchisee non-compliance and, therefore, making delegation less risky for the franchisor.

Conclusions

This paper analyzes the relationship between the decision-making structure of franchise chains and the number of conflicts that ends up in early terminations by franchisors.

Chain operators may try to achieve system-wide efficiency and mitigate franchisees' misbehavior by constraining their decision-making capacity. However, besides being costly to implement, such restrictions might damage franchisees' motivation and their ability to adapt to local variations. It is important to realize that the operational decisions that can be delegated strategically differ in their capacity to address this conflict of interests, a consideration that has often been disregarded.

In fact, this research argues that, unlike pricing, the delegation of local advertising, merchandising (assortment and decoration) and personnel decisions will upgrade the relationship between franchisor and franchisees, reducing early terminations. The investigation also claims that these effects will be moderated by the value of the franchisor brand name.

The results partially support both arguments. First, there are direct effects of different signs for our decision variables. Actually, delegation of pricing decisions increases terminations within the chain, whereas franchisee autonomy in local advertising decisions and human resources have the opposite effect. These results are coherent with those of Windsperger (2004) regarding the degree of centralization in franchising. A descriptive analysis of his data shows that local marketing decisions are more decentralized whereas price decisions are more centralized. Moreover, Windsperger (2004) forecasts that future research will find a positive relationship between this pattern of decentralization and the performance of the franchise network. This research answers his call, among other issues, and the results are mostly those previously predicted.

Specifically, our findings regarding pricing decisions support the claim that, within the antitrust legal framework, pricing policies should be controlled by the franchisor and thus integrated throughout the chain to some extent. This result is coherent with Kalnins (2003) who found that intrabrand price competition is directly prejudicial to the system and, additionally, may be a

source of conflict with neighboring franchisees. In contrast, our results regarding local advertising and human resources support the contention that delegating these decision areas to franchisees allows franchisors to reduce conflict (see, for example, Sigué and Chintagunta 2009).

Second, the results also enrich the current standardization-adaptation literature by demonstrating that a contingent analysis is necessary to weigh up the pros and cons of franchisee empowerment. Specifically, delegating assortment and decoration decisions to franchisees is less dangerous to larger chains than to other less-valued and less-developed ones. These results support the view expressed by Kaufmann and Eroglu (1999) that it is relatively more important to protect and standardize such format elements (product range and outlet decoration) in the earlier stages of the chain's development. Such issues will be easier to delegate as the chain matures and its brand image gains in value. But, as mentioned already, large chains experience lower degrees of conflict, compared to small ones, depending on the decision right considered. Actually, decentralizing the chain's price policy leads to the same level of conflict in all chains, whether large or small.

Another contribution of this paper to the literature on conflict in the franchise system refers to the effect of tacit knowledge on early terminations. We observe that the degree of tacitness of the franchisor's business practices significantly increases early terminations. This result suggests that transferring franchisors' specific knowledge is particularly problematic for franchise relationships. That is, the duty to attend training sessions to learn tacit business practices may be too onerous, or may be regarded by franchisees as undesired monitoring and lead to dissatisfaction and conflict. This outcome seems to contradict the argument of Michael (2000) who suggested that franchisor training programs might encourage franchisee socialization while also increasing franchisees' switching costs, which in turn might induce greater compliance. One plausible explanation could be the type of training program considered in our study. Unlike Michael (2000), we focused on ongoing annual training instead of initial training and presumably franchisee socialization is more related to initial training programs. The socialization function would therefore be less important in ongoing training programs, which in turn would probably focus more on transferring the franchisor's (intangible) knowledge to

franchisees (Windsperger 2004). Summing up, our results on annual training support the idea that tacit business practices are difficult to articulate and transfer within the franchise organization, and may therefore become a source of conflict between franchisors and franchisees (Windsperger 2004; Barthélemy 2008).

Finally, although analyzing the influence of franchisor age or experience on franchise conflict is not the target of this paper, a few comments on the coefficients of this variable may be of interest. Particularly, in contrast to prior business experience in the marketplace, franchisor expertise in franchising seems to be relevant in preventing franchisee failure. Actually, the results suggest that franchisor experience (years franchising) produces a significant learning effect that may reduce franchisee exits. That is, as franchisors acquire expertise in governing the chain, they refine quality controls and system routines which, in turn, reduce franchisees' mistakes and free riding. These results apparently contradict those of Michael (2000), who found that the number of years franchising significantly increases the number of litigations as a result of life-cycle effects (namely, as the franchisor ages, the proportion of franchised outlets increases and so does the risk of litigation). However, this author considers the total number of suits, regardless of whether they were initiated by the franchisor or the franchisees and regardless of whether the lawsuits end up in a contract termination.

Managerial Implications

This study offers implications for both franchisors and franchisees. The results show that the distribution of decision rights affects the quality of the relationships in the chain. Although franchisors sell a turnkey business to selected candidates, delegation of some decision rights tends to minimize conflict and reduce costly terminations. Therefore, the paper provides franchisors with some guidelines for determining which decisions should be allocated to the franchisees. These ideas may be of use to franchisors, for example when updating versions of their contracts, or when deciding on the informal empowerment of their franchisees in terms of monitoring intensity.

Particularly, franchisors should consider that the type of decision delegated to the franchisees is possibly more important than the absolute level of empowerment given to them. On the

one hand, leaving some leeway to franchisees in the area of local advertising may reduce contract terminations. This delegation may promote better behavior of their franchisees, leverage their local knowledge and consequently improve local service. The same applies to the fields of outlet decoration and assortment but only in extensive and consolidated chains. However, regarding price setting, franchisors may reduce system conflict by centralizing pricing within the legal restrictions that prohibit direct imposition of fixed prices, regardless of the size of the system. Finally, franchisors may avoid serious conflict if they decentralize human resource practices, such as personnel recruitment and development, delegating it at outlet level. For instance, leaving HR management to the franchisees' discretion prevents the franchisees' workers from being considered as employees of the franchisor with all the legal consequences this would entail (such as taxation and insurance fees).

The results offer some other general suggestions for reducing litigation and early terminations. First, tacit knowledge is a resource that is difficult to imitate, so it may be highly valuable from a strategic point of view. However, as highlighted by Barthélemy (2008), tacit business practices are a two-edged sword for chain operators: they are difficult to transfer to franchisees, and become a significant source of controversy. Encouraging franchisees' compliance with the system may be of special interest to induce them to participate in the multiple interactions and costly training sessions needed to absorb the franchisor's tacit knowledge. For example, allowing ownership of multiple units (multiunit franchising) or granting exclusive territories might represent a significant commitment on the part of the chain to the individual franchisees (Michael 2000) and might provide them with the necessary incentives to undertake costly training programs.

Second, experienced franchisors are likely to face fewer terminations. Whereas industry experience does not appear to have any influence on conflict, learning effects in the management of franchise chains have a strong impact on reducing contract terminations. Accordingly, new franchise chains are advised to recruit managers experienced in franchising, though not necessarily in the industry, to deal with franchisees and avoid costly terminations in the early stages of the franchise life cycle.

As regards potential franchisees looking for a suitable chain, they may consider that firms with a longer track record in franchising are less prone to terminate their franchisees. As mentioned already, experience in business does not have an impact on this issue, although it may have a positive influence in other aspects of business performance as shown in past research (Kosova and Lafontaine 2010). Once they join the chain, franchisees should prioritize their demands for autonomy and restrict them to particular fields. Particularly, their efforts to adapt HR management and local advertising to their local markets would be positively valued and welcomed by franchisors. Autonomy in pricing, however, involves higher levels of conflict which may result in an increased probability of termination. If franchisees follow these recommendations, they might enhance their possibilities of enjoying a durable relationship.

Limitations and Further Research

Our study has some limitations. First, more detailed measures of franchisees' autonomy would be of value in future research. Conversely, access to contract information could add further insight into the formal degree of delegation, by both complementing the data collected through survey methods and validating survey findings. Conversely, our data sources are restricted to the chain's headquarters. Another possibility to improve the validity of the research would be to collect information from franchisees (and not only from franchisors) regarding the level of empowerment that they perceive in the different decision fields.

Second, it might be useful to investigate if the results vary depending on who initiates the litigation process. In this paper, we have focused on terminations instigated by the franchisor. However, franchisors and franchisees may differ in their perception of the reasons for terminating their relationship. Likewise, the delegation of certain decision rights might be valued differently by franchisees and franchisors. The subject of which decision areas differ most from the two perspectives merits further investigation.

Third, our model has controlled for various features and resources of franchisors (experience, tacit know-how, brand-name value...), however we have not explored the influence of franchisees' characteristics in our model. An additional line of research is to analyze if franchisees' previous experience moderates the effects of delegating decision rights on terminations. Franchisees' desire for autonomy in the

operation of their business may change as they become more experienced (Kaufmann and Eroglu 1999). In fact, past research reveals that franchisees' expectations vary with the passing of time (Frazer 2001). Moreover, earlier studies show that franchisees' experience has a positive influence on litigation (Michael 2000). However, it remains to be explored how such experience may alter the relationship between franchisees' empowerment and franchise conflict.

Finally, this study is limited in scope. Our sample comprises different industries which may increase its validity, but this may also obscure the specifics of particular industries. As Kaufmann and Eroglu (1999) highlight, what is a core decision right in one industry may be peripheral in another one. Future research in individual industries could explore this issue. Furthermore, due to our focus on serious conflicts that end up in terminations, other types of disruption have been disregarded. Future research could increase the generalization of these results by investigating the effects of delegation on other outcomes of conflict, such as non-renewals, outlet conversions or redirections.

Acknowledgments

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Appendix

To what extent are the following business decisions made by the franchisee?					
	Not at all	To a Slight Extent	To Some Extent	To a Considerable Extent	To a Very Large Extent
Outlet assortment	☐	☐	☐	☐	☐
Pricing	☐	☐	☐	☐	☐
Local advertising	☐	☐	☐	☐	☐
Outlet decoration and image	☐	☐	☐	☐	☐
Recruitment	☐	☐	☐	☐	☐
Training	☐	☐	☐	☐	☐

How many franchising contracts have been terminated early during the last four years by the franchisor?

The Moderating Effect of Perceived Effectiveness of SMEs' Marketing Function on the Network Ties—Strategic Adaptiveness Relationship*
by Richard Benon-be-isan Nyuur, Ružica Brečić, and Antonis Simintiras

This study examines the critical role of perceived effectiveness of the Marketing function (MF) in small and medium-sized enterprises (SMEs) in leveraging entrepreneurial network ties to improve strategic adaptiveness (SA). The study tests whether a MF perceived as effective by SMEs' managers/ owners moderates the relationship between SMEs network ties and SA required for improved performance. Findings of a moderated regression analysis on a sample of 263 Croatian SMEs indicate that network ties contribute significantly to their SA, and that a MF perceived as effective only moderates the impact of customer and competitor ties on SMEs' SA. Research and practical implications are discussed.

Introduction

It is generally argued that small and medium-sized enterprises (SMEs) have limitations that make it difficult for them to plan, develop, and implement effective marketing functions (MFs) involving the traditional marketing mix variables of Product, Price, Promotion, and Place (4Ps), like established and large firms (Bettiol, Di Maria, and Finotto 2012; Coviello, Brodie, and Munro 2000; Gilmore, Carson, and Rocks 2006). Their inability to plan and integrate the 4Ps concept into their marketing activities is attributed to key constraints such as limited resources in the form of lack of finance, time, and good market information (Gilmore, Carson, and Rocks 2006). To survive and succeed in the competitive, complex, and uncertain business environment, SMEs are therefore said to heavily rely on building both business and political ties with stakeholders as an important marketing strategy (Sheng, Zhou, and Li 2011; Wu 2011).

The underlying assumption is that ties with stakeholders enable SMEs to overcome their disadvantages through the access and use of external resources, which would not otherwise have been available to them (Havnes and Senneseth 2001; Jorgensen and Ulhoi 2010; Peng and Luo 2000). A number of empirical studies have indeed established that SMEs actively network (Carson, Gilmore, and Rocks 2004), and that network ties have a positive impact on SMEs' strategic choices and performance (Bruderl and Priesendorf 1998).

Consequently, much of the studies on network ties tend to bypass the role of the MF, suggesting that network ties per se may be good enough for superior performance of SMEs.

Recent research into entrepreneurial marketing has, however, shown that SMEs do engage in developing marketing strategies (Bettiol, Di Maria, and Finotto 2012; Lado, Duque, and Bassi 2013; O'Dwyer, Gilmore, and Carson 2009). Varadarajan (2010) defined marketing strategies as the integrated pattern of decisions, choices, and activities that are associated with the boundary spanning role of the MF in organizations. Varadarajan (2010) further observed that the MF and marketing strategies are sometimes used interchangeably in the literature and refer to firms' market behaviors in terms of the 4Ps. SMEs' performance can be enhanced by information and experience gathered from networks, although this influence can be moderated by their marketing strategies (Gilmore, Carson, and Rocks 2006; Polo Peña, Frías Jamilena, and Rodríguez Molina 2011; Wu 2011). This strand of research thus suggests that SMEs marketing strategies have indeed been playing a central role in strategically adapting their goods or services in answering to changes in demand (Grünhagen and Mishra 2008; Miles and Arnold 1991). Peng and Luo (2000), therefore, note that network ties alone are necessary but insufficient for good performance, and that developing effective MFs by SMEs is required to maximize the impact of network ties on their performance. This suggests that both networking ties and effective MFs are important in explaining SMEs' ability to strategically adapt and enhance their performance, rather than network ties alone (Miles and Arnold 1991). Gilmore, Carson, and Grant (2001) propose that when SMEs finally develop an effective MF their confidence levels in terms of not relying on ties may increase.

Yet we know much less about the impact of network ties on SMEs' strategic adaptiveness (SA) in respect to MF effectiveness level perceived. SA is a core entrepreneurial philosophy and refers to the ability of SMEs to strategically respond to challenges or crises caused by environmental turbulence (Miles and Arnold 1991). It is surprising that given the substantial literature on network ties, MFs, and firms' performance (Acquaah 2007; Kemper, Engelen, and Brettel 2011), no research has been devoted to integrating these perspectives in examining the relationship between SMEs' network ties and SA when SMEs' MF is perceived to be effective. Fur-

ther research is, therefore, required that integrates both perspectives and examines whether the perceived effectiveness of SMEs' MF moderates the impact of network ties on SMEs' SA. Ruekert, Walker, and Roering (1985) conceptualized SA as an important element of performance. In this paper, we empirically investigate these issues and address these gaps in the context of a transition economy.

The empirical setting is considered appropriate given that scant attention has been given to the issue in developing and transition economies considering cultures and dynamics in these business environments are different (Miller, Besser, and Malshe 2007). Scholars have, therefore, made calls for further research in transition and developing countries to improve our understanding of how networks impact on SMEs' SA, and hence their performance (Peng and Luo 2000). Specifically, our main objectives in this study are to examine (1) the relationship between network ties and SMEs' SA, and (2) the impact of SMEs owners/managers' perceived effectiveness of their MF on the "stakeholder ties"—SMEs' SA relationship in the context of a transition economy.

Theory and Hypotheses

Stakeholder theory is linked to business and political networks as it specifies the extent to which a corporation treats its stakeholders appropriately (Driver and Thompson 2002). Mitchell, Agle, and Wood (1997) argue that stakeholders are those groups that are necessary for corporate survival. In the case of SMEs, findings in the literature indicate that managers/owners should develop ties with stakeholders such as customers, suppliers, competitors, and governments (Peng and Luo 2000; Sheng, Zhou, and Li 2011; Wu 2011; Zhang and Li 2009). This paper adopts this stakeholder theoretical perspective in examining the critical role of perceived effectiveness of MF in leveraging SMEs' network ties with different stakeholders to improve SA.

The issue of SA is extremely important in the dynamic and contemporary globalized business environment (Krohmer, Homburg, and Workman 2002; Miles and Arnold 1991). Markets are more global and technologically sophisticated, competition is more intense, and consumers are more demanding (Coviello, Brodie, and Munro 2000). Firms are, therefore, facing increasingly turbulent, complex, and threatening environments (Miles and Arnold

1991). All these underscore the importance of a firm's ability to strategically adapt to this changing business environment.

The concept of SMEs network ties has also gained recognition and importance in academic enquiry (Miller, Besser, and Malshe 2007; Scott et al. 2012). The entrepreneurial marketing literature reveals that networks enable entrepreneurs to proactively and strategically posture themselves for survival and enhance performance (Moreno and Casilas 2008). While studies exist that have examined diverse stakeholder ties (Zhang and Li 2009), the two main ties identified in the literature are business ties and political ties (Peng and Luo 2000; Sheng, Zhou, and Li 2011; Wu 2011). Business ties refer to those that SMEs build with key business stakeholders, notably customers, suppliers, and competitors (Hoang and Antoncic 2003; Peng and Luo 2000; Wu 2011). Political ties conversely refer to SMEs–government officials relationships (Sheng, Zhou, and Li 2011; Wu 2011). The institutional-based view suggests that in transition economies, where market-supporting institutions are underdeveloped, firms heavily rely on both political ties and business ties (Peng and Luo 2000).

Studies in marketing strategy (Gilmore and Carson 1999), entrepreneurship (Havnes and Senneseth 2001; Hoang and Antoncic 2003; Scott et al. 2012), innovation, and international business (Xu, Lin, and Lin 2008), all concur that networking improves the performance of SMEs. Specifically, networking increases their innovation rate, competitive advantage, internationalization, and in the long run, their survival and profitability (Havnes and Senneseth 2001; Sheng, Zhou, and Li 2011). In addition, strategic adaptation could be attributed to an effective MF. For example, SMEs with effective MFs allow them to maintain a self-sustaining position in the marketplace. Strategic adaptation capabilities and good performance outcomes that might be perceived to be the result of an effective MF may lead to a diminishing role of network ties for identifying opportunities for survival and growth.

We argue that through network ties, SMEs acquire vital information, knowledge, and experience that enable them to strategically adapt. The extent to which SMEs' managers/owners perceive their resulting MFs to be effective will influence their level of reliance on network ties, which would perhaps impact the contribution of these ties to their SA. Thus, the core of our argument is that perceived effectiveness of SMEs' MF moderates the relationship between their network ties and SA. To enhance the clarity of presentation, in the next sections the hypotheses pertaining to the effects of network ties on SA and the moderating effects of the MF on the stakeholder ties—SA for each stakeholder are bundled together and presented first followed by the hypothesis pertaining to the MF.

Network Ties with Customers

The importance of building and maintaining relationships with customers has been underscored by Peng and Luo (2000) who note that such ties tend to spur customer loyalty, sales volume, and reliable payment. Gilmore, Carson, and Grant (2001) also emphasize that building relationships with customers is vital to SMEs success. Arguably, ties with customers (TCu) enable SMEs to know customers' needs and demands, and respond appropriately to satisfy them (Wu 2011). Recent studies offer further evidence that customer ties enable SMEs to derive important insight into more timely information, and customer changing needs. Moreover, such ties reduce SMEs' vulnerability to environmental threats, and also help them strategically adapt to meet customers' demands (Kemper, Engelen, and Brettel 2011; Sheng, Zhou, and Li 2011). As such, relevant knowledge about customers, necessary for developing effective marketing strategies better, is acquired through interaction with customers and maintaining those relationships (Acquaah 2007). Thus

H1-1: Relationships (ties) with customers are positively associated with SMEs' strategic adaptiveness.

Arguably, customer ties are necessary but not sufficient for survival and superior performance of SMEs without an effective MF. Carson and Gilmore (2000), therefore, suggest that from the onset, SMEs' marketing decisions are usually uncontrollable, haphazard, informal, loose, unstructured, spontaneous, reactive, and less effective because of their constraints and heavy reliance on network ties. At this stage, network ties have a dominant impact on SMEs' SA, as they mainly react to customer inquiries and market changes (Gilmore and Carson 1999). Yet as a business develops and becomes more established, alongside an entrepreneur gaining more

experience and knowledge, SMEs are able to develop their own marketing style that is competitive, efficient, and controlled (Gilmore and Carson 1999).

An SME marketing model developed by Gilmore, Carson, and Rocks (2006) underscores this argument. The model suggests that when SMEs finally develop, implement, and perceive their marketing activities as effective, and then the impact of network ties on their performance will diminish. At this point, SMEs' confidence levels in terms of not relying only on their network ties increase and the impact of ties on the firms' SA is reduced (Rocks, Gilmore, and Carson 2005). However, managers may prematurely or wrongly perceive their MFs to be effective at one point and lessen their reliance on network ties. This will also reduce the positive impact of the network ties on their SA. This discussion leads to the following hypothesis

H1-2: *The more effective the MF is perceived to be, the lower the impact of customer ties on SMEs' strategic adaptiveness.*

Network Ties with Suppliers

Ties with suppliers (TSu) help a firm acquire quality materials, good services, and timely delivery (Luo and Chen 1997; Peng and Luo 2000). They are also essential in developing trust and belief in the reliability of others, in terms of fulfilment of their obligations (Hoang and Antoncic 2003). This, in turn, results in actions that are predictable and mutually acceptable to both parties, which in turn enhance the quality of resource flows, as well as reduce bureaucratic mechanisms and transaction costs (Das and Teng 1998; Hoang and Antoncic 2003). TSu are also observed to be influential in SMEs' internationalization strategies and subsequent performance (Zain and Ng 2006). Wu (2011) further notes that TSu can contribute to product innovation, by offering more knowledge pool, more choices to solve problems, as well as finding new combinations among different elements. Havnes and Senneseth (2001) thus argue that network TSu enable SMEs easy access to resources that would not have been readily available to them, and would have been more costly to access them. The argument is that network TSu help reduce the cost of transaction, as well as improve reliability, efficiency, quality, and SMEs' performance. Thus, we hypothesize that

H2-1: *Relationships (ties) with suppliers have a positive impact on SMEs' strategic adaptiveness.*

Carson and Gilmore (2000), however, suggest that in the absence of a structured and successful MF, SMEs rely heavily on network ties, including TSu, to strategically adapt and compete. This particularly holds true at the onset of the business operation (Gilmore and Carson 1999), when SMEs mainly react to suppliers' activities, such as promotion activities (Gilmore, Carson, and Rocks 2006). However, when SMEs are eventually able to develop sophisticated MF that is perceived as effective (Gilmore, Carson, and Rocks 2006), then the need to rely on TSu may diminish. A sophisticated MF will allow SMEs to strategically adapt by seeking to gain value added options beyond those gained by cultivating TSu alone (Rocks, Gilmore, and Carson 2005). For instance, a sophisticated MF may help SMEs plan and make informed marketing decisions regarding issues such as quality inputs for product innovations and supply chain considerations. This will allow SMEs' SA to be mainly driven by marketing competencies, as opposed to supplier input. Based on this line of argument, we hypothesize that

H2-2: *The more effective the marketing function is perceived to be, the lower the impact of supplier ties on SMEs' strategic adaptiveness.*

Network Ties with Competitors

Developing good relationships with competitors has been considered as a common component in SMEs network structure (Xu, Lin, and Lin 2008). Others go further to note that such ties facilitate efficient information flow, which in turn leads to emerging innovative ideas and opportunities (Xu, Lin, and Lin 2008). Gilmore, Carson, and Grant (2001) highlight that another reason for SMEs collaborations with competitors is to ensure clients do not take work out of the domestic market to a different company. Miller, Besser, and Malshe (2007) also discovered SMEs' willingness to network and collectively share efforts toward influencing policy formulation. A number of studies support the view that network ties with competitors (TCo) broaden SMEs' opportunities for knowledge sharing, deemed necessary for sustainable innovation (Havnes and Senneseth 2001; Jorgensen and Ulhoi 2010). It is, therefore, widely established

that SMEs make substantial efforts to developing and maintaining ties with their competitors for their collective gain. Accordingly, we hypothesize that

H3-1: *Relationships (ties) with competitors have a positive impact on SMEs' strategic adaptiveness.*

We argue that network ties, including TCo, have a significant and dominant impact on SMEs' SA (Gilmore and Carson 1999; Gilmore, Carson, and Rocks 2006). However, when SMEs perceive to have a sophisticated and effective MF, the influence of network TCo on their SA diminishes. TCo could lead to better strategic positioning, innovation, new products/service development, and hence, SA (Krohmer, Homburg, and Workman 2002). Perceived effectiveness of the MF may lead to undermining the role of competitor ties on SA. In this sense, the relationship between TCo and SA will be weaker for higher levels of perceived MF effectiveness. Based on these arguments, we hypothesize that

H3-2: *The more effective the marketing function is perceived to be, the lower the impact of competitor ties on SMEs' strategic adaptiveness.*

Network Ties with Government Officials

The impact of ties with government officials (TGo) on SMEs' performance has been keenly disputed. For instance, Wu (2011) suggests that TGo may lead to good performance. Rocks, Gilmore, and Carson (2005) found limited or no effort in Irish SMEs for developing TGo with the aim of improving their performance. Peng and Luo (2000) explain that in transition economies, SMEs tend to rely on network TGo to succeed. In such environments, (the) states' regulatory regimes tend to be complex, unpredictable, and influential in firms' performance (Hillman and Hitt 1999). Political ties can help firms gain more information on government regulations and emerging policies, which can help reduce policy uncertainty surrounding important issues, as well as improve firms' policy influence (Wu 2011). TGo can also help firms to source valuable resources, such as finance, subsidies, tax rebates, and research funding from government, all of which are critical to innovation and SMEs survival (Hillman and Hitt 1999). Given the need to strategically adapt and protect the business against uncertainty in transition

economies business environments, SMEs naturally maintain a "disproportionately greater contact" with government officials (Luo and Chen 1997). This argument gives rise to the next hypothesis

H4-1: *Relationships (ties) with government (political ties) have a positive impact on SMEs' strategic adaptiveness in transition economies.*

SMEs' survival and success are found to be dependent on their overall marketing efficiency as lack of it has been cited as a key cause of company failure (Blankson and Stokes 2002). Planning and implementing a strategic marketing programme are considered as key activities for good performance and SA (Miles and Arnold 1991). It is thus worth arguing that the more sophisticated and efficient the MF of SMEs is perceived to be, the less they rely on political ties, and hence the lower the impact of political ties on their SA. In the absence of a competitive MF, political ties, particularly in transition and developing economies, are seen as an equivalent and economical replacement. However, meeting customer needs with the help of an effective MF will lower the need to rely on government ties for strategic adaptation. Thus, with a MF perceived as effective, the reliance on political ties reduces, and its impact on SA weakens.

H4-2: *The more effective the marketing function is perceived to be, the lower the impact of government ties on SMEs' strategic adaptiveness in transition economies.*

SMEs' Marketing Function

Extant literature suggests that SMEs find it difficult to develop an effective MF involving the four variables of the marketing mix (Coviello, Brodie, and Munro 2000). Consequently, SMEs' MFs are observed to be simplistic, haphazard, ineffective, often responsive, and reactive to competitor activity. Hisrich (1992), for instance, notes that managers/owners in SMEs are often poor planners with limited understanding of marketing, and as a result, their marketing practices are typically nontraditional, nonstrategic, and noncomprehensive. Coviello, Brodie, and Munro (2000) therefore suggest that SMEs tend to use network ties in their marketing activities for survival and performance.

Figure 1
Moderating Effect of SMEs' MF on Ties–SA Relationship Proposed Model
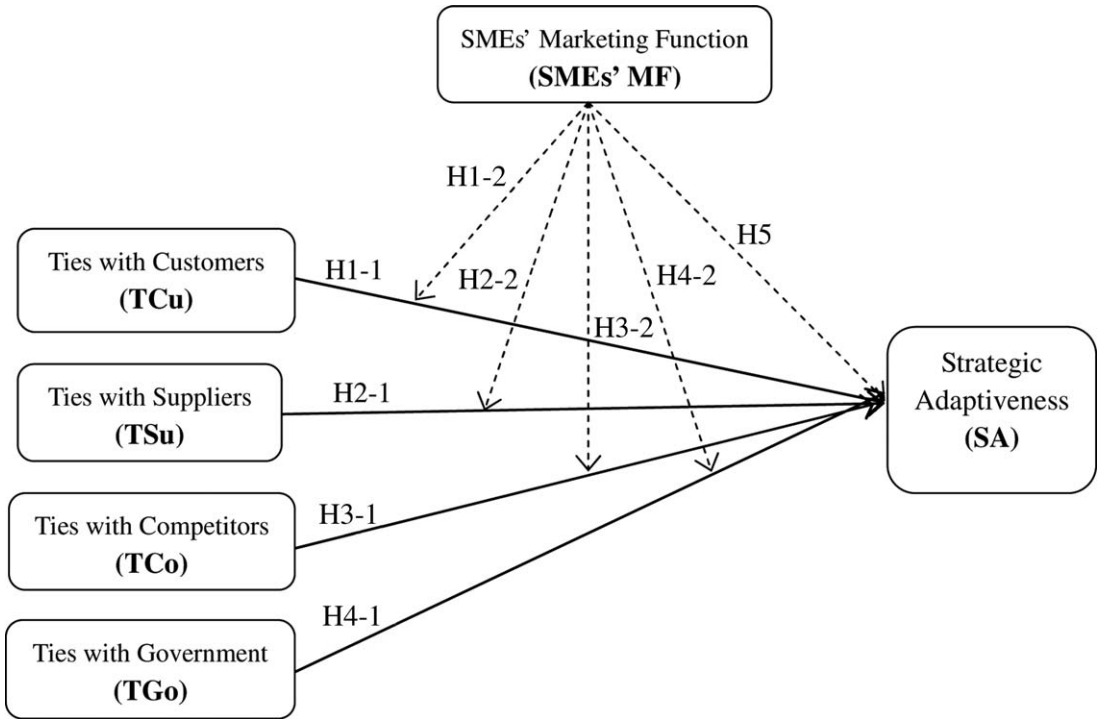
Gilmore, Carson, and Rocks (2006), however, found that even though some MFs are selective or limited because of these constraints, others are able to develop sophisticated marketing to compete. It may, therefore, be misleading to maintain the view that in the absence of the traditional or formal marketing strategies, SMEs do not engage in marketing. Recent streams of literature in entrepreneurial marketing have shown that SMEs do engage in marketing, but that their marketing strategies differ from the conventional MF observed in large organizations (Bettiol, Di Maria, and Finotto 2012; Hills, Hultman, and Miles 2008). Such studies suggest that SMEs' MFs are more product- and price-oriented (Coviello, Brodie, and Munro 2000). O'Dwyer, Gilmore, and Carson (2009) reveal that relative to larger firms, SMEs place more emphasis on the product/service offering and pricing issues in their planning activities, and that their marketing activities are driven by product innovation. Miles and Darroch (2006) also suggest that SMEs/entrepreneurs tend to concentrate on incremental innovations in their marketing practices.

Grünhagen and Mishra (2008) emphasize that marketing strategies in SMEs have indeed been playing a central role in their understanding of the complex business environment and strategically adapting their products or services in answering to changes in demand. We argue that SMEs' MFs have an impact on their SA. We are also of the view that different levels of perceived MF effectiveness allow for different levels of SA. This leads us to the next hypothesis

***H5:** Perceived effectiveness of SMEs' marketing function will have a positive impact on their strategic adaptiveness.*

Based on the extensive literature review in SMEs networking, a conceptual model containing the hypotheses is developed as depicted in Figure 1. In line with the model, we first test the impact of network ties and MF perceived as effective on SMEs' SA. Furthermore, we test

whether SMEs' MF perceived as effective moderates the relationship between ties and SA.

Methodology

Sample

Our sample was randomly drawn from a pool of SMEs in Croatia. We focus on Croatia in response to calls for further studies in transition economies on network ties to improve our understanding of the impact of network ties on SMEs' performance (Peng and Luo 2000). The SMEs in the sample (with names and contact details of owners/managers) were identified through a database of the official Croatian Finance agency known as "Business Croatia." The database used was the 2009 edition, specifically, the Poslovna Hrvatska 2009. The researchers used the database to identify a total of 11,989 SMEs operating in the country. Out of this population, a decision was made to randomly select 1/5 of the entire population of SMEs in Croatia (11,989 $\times$ 0.20 = 2,398). The decision was based on the assumption that a very conservative response rate of 10 percent in Croatia would produce a return of approximately 240 replies. A sample of this size is considered appropriate for the purpose of this study. The study uses a survey design, as in many network ties studies (Coviello, Brodie, and Munro 2000; Peng and Luo 2000; Sheng, Zhou, and Li 2011). Thus, a questionnaire (with a self-addressed envelope) was subsequently sent via post to the randomly selected 2,398 companies at the beginning of April 2009. To ensure confidentiality and to encourage participants to be candid in their responses, each respondent was asked to enclose and seal their survey in the envelope provided together with the questionnaire before mailing it back to one of the researchers.

The data collection took place from the beginning of April until the end of July 2009. A total of 313 questionnaires were returned, 263 of which were complete, amounting to a 10.97 percent response rate. The participating firms in our sample were geographically dispersed. A broad spectrum of firms was represented in the final sample of 263 respondents, including construction (21 percent), tourism (15 percent), manufacturing industries (15 percent), wholesale (9 percent), and miscellaneous (40 percent). Also, 7 percent of the companies were micro businesses with no more than 10 employees, 28 percent were small-sized firms employing a maximum of 50 employees, and 65 percent were medium companies with more than 50 employees. Sixty-seven (67) percent of firms were privately owned, 16 percent government owned, 8 percent mixed with foreign and domestic ownership, and 6 percent mixed with government and private ownership. Thirty-one (31) percent of individual respondents were the directors of the firm, 24 percent owners of the firm, 10 percent were sales managers, and 35 percent reported their position as "other."

Conceptualization and Operationalization of the Constructs

The questionnaires completed by respondents contained measures designed to elicit information about network ties, SA, and SMEs' MF (price and product quality) as well as firm size (FS) and ownership status (OS). Operationalizations of the constructs are provided below.

Firm Size. We controlled for FS as prior studies show that FS may influence networking ability (Coviello, Brodie, and Munro 2000; Peng and Luo 2000). FS was equated with the total number of employees in a firm (Peng and Luo 2000) and measured in this study as 1 = micro companies (0–10 employees), 2 = small companies (11–50 employees), and 3 = medium-sized companies (51–250 employees).

Ownership Status. Extant literature also shows that firms' OS may influence networking ability. The OS involves non-state-owned and state-owned enterprises (SOEs). In transition economies where non-SOEs tend to lack formal institutional support, managers in these firms may be strongly motivated to search for ways to compensate for such lack of support and improve performance by socially investing in both business and political ties (Xin and Pearce 1996). Ownership was measured by a dummy variable, coded 1 for non-SOEs and 2 for SOEs.

Strategic Adaptiveness. The dependent variable was measured using a four-item scale developed by Krohmer, Homburg, and Workman (2002). Respondents indicated on a seven-point scale (1 = strongly disagree to 7 = strongly agree) how accurately each statement described the adaptive ability of the firm. Table 1 provides information of items in each construct.

Table 1
Varimax Rotated Factor Analysis for the Six Constructs

Construct Code: Factor	Reference	Measurement Variable	Factor Loadings
Strategic adaptiveness (SA)	SA1	We adapt our marketing strategy adequately to changes in the business environment	0.814
	SA2	We adapt our marketing strategy adequately to changes in competitors' marketing strategies	0.833
	SA3	We adapt our products quickly to the changing needs of customers	0.632
	SA4	We react quickly to market threats	0.569
Ties with customers (TCu)	TCu1	We network with customers to continuously try to discover their needs	0.815
	TCu2	We network with customers to provide solutions to their needs	0.864
	TCu3	We network with customers to identify how they use our products and services	0.745
	TCu4	We network with customers to find areas of product/service innovation even at the risk of making our current products obsolete	0.730
	TCu5	We network with customers and work closely with lead users who try to recognize customer needs months or even years before the majority of the market may recognize them	0.687
Ties with suppliers (TSu)	TSu1	We network with suppliers and in this network both parties believe they should cooperate well because we share the same interests	0.797
	TSu2	Networking with suppliers precisely defines the roles of each partner	0.852
	TSu3	Networking with suppliers is related to the profitability of our firm	0.860
	TSu4	Networking with suppliers is related to product quality, technical skills, and financial strength	0.824
Ties with competitors (TCo)	TCo1	We network with a selective group of competitors in an attempt to rapidly respond to their actions that threaten us	0.805
	TCo2	We network with a selective group of competitors in an attempt to regularly collect information concerning their activities	0.862
	TCo3	We network with a selective group of competitors in an attempt to diagnose their goals	0.884

Table 1
Continued

Construct Code: Factor	Reference	Measurement Variable	Factor Loadings
	TCo4	We network with a selective group of competitors in an attempt to identify areas where they have succeeded or failed	0.867
	TCo5	We network with a selective group of competitors and look for market opportunities that do not threaten them	0.750
Ties with government officials (TGo)	TGo1	We feel indebted to government officials for what they have done for us	0.713
	TGo2	Our interactions with government officials can be defined as "mutually gratifying"	0.837
	TGo3	Maintaining a long-term network with government officials is important to us	0.834
	TGo4	Our business network with government officials could be described as "cooperative" rather than an "arm's-length" network	0.827
	TGo5	We expect to be interacting with government officials far into the future	0.839
SMEs' Marketing Function Effectiveness (SMEs' MF)	MF1	We think we have maximum expertize in our product\service portfolio (i.e., quality, reliability and innovativeness) to meet customer needs and make necessary adjustments when required.	0.777
	MF2	We always monitor the appropriateness of our pricing policy and make necessary adjustments when required.	0.772

Ties with Customers. TCu were measured using six-items borrowed from the scales developed by Peng and Luo (2000) and Narver, Slater, and MacLachlan (2004), and adjusted accordingly to fit the purpose of this study. First, an item was taken from Peng and Luo's (2000) study pertaining to managerial ties and performance in a transition economy, and then, five items were taken from Narver, Slater, and MacLachlan (2004) scale measuring proactive customer orientation (see Table 1 for the items of the construct).

Ties with Suppliers. The five-items measuring TSu were adapted from scales developed by Peng and Luo's (2000) and Wuyts and Geyskens (2007). This consisted of one item taken from Peng and Luo's (2000) study and four items taken from Wuyts and Geyskens (2007) scale on supplier (partner) role formalization.

Ties with Competitors. To develop the scale for measuring TCo, six items were borrowed from three earlier studies. One item was taken from Peng and Luo (2000), another from Porter (1980), and four items were borrowed from Narver and Slater (1990) and adjusted accordingly for this study. The adjusted scale measured the extent to which SMEs utilized network connections with competitors.

Ties with Government Officials. The four-item scale for measuring TGo was adapted from Rindfleisch and Moorman (2003) scale on relational embeddedness. This scale lends itself for measuring SMEs networking with government officials because relational embeddedness cancels out power asymmetries that can be found in such relationships (Uzzi 1997).

SMEs' Marketing Function. To develop a scale for measuring MF, SMEs' owner/managers were interviewed. A total of 20 interviews were conducted with managers in SMEs (8 micro, 6 small, and 6 medium), operating in different sectors (4 construction, 6 tourism, 8 production sector, and 2 trade). The rationale for the interview was based on the general argument that SMEs' MF differ significantly from the traditional marketing mix paradigm (Coviello, Brodie, and Munro 2000; Gilmore and Carson 1999). From the interviews, we found that product quality and pricing issues were the most dominant in a sophisticated MF of SMEs. This is supported by extant literature that suggests that the MF in SMEs is more product and price-oriented (Coviello, Brodie, and Munro 2000), and that SMEs place more emphasis on product/service offering and pricing issues in their marketing activities relative to larger firms (Gilmore, Carson, and Rocks 2006; Miles and Darroch 2006; O'Dwyer, Gilmore, and Carson 2009). As a result, a two-item scale covering product innovation and price differentiation issues was developed.

The items for each of the ties (TCu, TSu, TCo, and TGo) and MF were measured using a seven-point scale ranging from 1 = strongly disagree to 7 = strongly agree. Respondents indicated on this seven-point scale how accurately the statements described their firms' TCu, TSu, TCo, TGo, and MF (see Table 1 for the items of all constructs).

Data Analysis

Initially, exploratory factor analysis (EFA) was used to assess the extent to which the measurement variables represented their underlying factors. The sample size ($N = 263$) was considered to be appropriate (Hair et al. 2006) for EFA. In survey research, common method variance (CMV) may lead to erroneous conclusions about relationships between variables by inflating or deflating findings. To test for CMV, Harman's single factor test was used. The presence of a substantial amount of CMV is indicated by either a single factor emerging from factor analysis or by one general factor that accounts for the majority of covariance in the dependent or criterion variables (Huang, Chen, and Stewart 2010, p. 293; Podsakoff and Organ 1986). EFA was first used with all 25 variables and the results indicated a six-factor solution. Furthermore, constraining the number of factors extracted in the EFA to one, the resulting single factor only accounted for 28.52 percent of the variance in the model. The above findings indicate that CMV is not an issue of concern in this study. The factor loadings of all 25 variables on the six-factor solution extracted (using a VARIMAX orthogonal rotation) appear in Table 1.

Given the results of the EFA in terms of factor solution and the intuitively reasonable interpretability of factors we then proceeded to undertake a CFA. Although confirmation of the factor structure should, ideally, be done using a different data set, using a CFA on the same data allows for an examination of the appropriateness of (a) criteria for determining the number of factors, (b) rotation methods, and (c) factor analytic procedure used (Van Prooijen and Van Der Kloot 2001).

The CFA resulted in a *CMIN/DF* = 1.428 and the other measures of the fit indexes exceeded the critical levels suggested by Bentler and Bonnet (1980); comparative fit index CFI = 0.971; goodness-of-fit index GFI = 0.923; incremental fit index IFI = 0.971; and root mean square error of approximation RMSEA = 0.040. Each scale was also subjected to a reliability and validity analysis. Reliability was assessed using Cronbach's alpha and construct reliability (CR) whereas the convergent validity was evaluated using the average variance extracted (AVE) statistic. The results of the four-item SA scale have shown acceptable levels of reliability (Cronbach's $\alpha = 0.793$; CR = 0.77), whereas the convergence validity (AVE = 0.47) was found to be marginally below the cut-off point of 0.50. The remaining scales, that is, the five-item TCu (Cronbach's $\alpha = 0.867$; CR = 0.79; AVE = 0.75), four-item TSu (Cronbach's $\alpha = 0.90$; CR = 0.89; AVE = 0.67), five-item TCo (Cronbach's $\alpha = 0.919$; CR = 0.91; AVE = 0.68), and the five-item TGo (Cronbach's $\alpha = 0.881$; CR = 0.92; AVE = 0.56) have all met the acceptable levels of 0.7 reliability for the alpha values (Nunally 1978; Pallant 2007). In addition, they have all met the recommended levels for CR (Hair et al. 2006) and 0.5 validity (Chin 1998). Furthermore, no confidence interval of the phi values

contained a value of one ($p < .01$) indicating that the constructs possessed discriminant validity (Bagozzi and Phillips 1982).

Results

To test the research hypotheses, the data analyses were completed using correlation and moderated hierarchical multiple regression. The correlation amongst the constructs indicated that TCu, TSu, TCo, TGo, and MF are positively correlated with the SA construct, with Pearson correlation r values ranging from 0.076 to 0.412. All correlations except the ones between SA and TGo, and MF and TGo were statistically significant (see Table 2). The mean scores on Table 2 also reveal that TGo and TSu are on average lower and higher, respectively, than any other type of ties (see Table 2). The results of the correlation analysis provided the basis for undertaking the moderated hierarchical regression analysis.

Hypotheses H1-1, H2-1, H3-1, and H4-1

The two control variables (CVs; size of firm and OS of firm) were examined to determine whether they significantly influence the relationship between TCu, TSu, TCo, and TGo within the firm and SA. The results presented in Table 3 indicate the variance explained by the different constructs. Model 1 contains only the CVs and reveals that the CVs explain 2.4 percent of the variance in the SA of SMEs. The coefficient for FS is not significant whereas that of OS is significant and positive. Model 2 depicts that TCu is positively and significantly ($\beta = 0.415$,

$p < .001$) related to SA. The model with the TCu included explains 19.7 percent of the variance in SA ($R^2 = 0.197$, Adjusted $R^2 = 0.187$, F change $= 53.569$). This finding supports our H1-1. Examination of the CV reveals that only OS is significantly associated with SA ($\beta = 0.153$, $p < .05$).

In Model 3 (Table 3), the coefficient of TSu is positive and significant ($\beta = 0.323$, $p < .001$), and the model explains 12.8 percent of the variance in SA ($R^2 = 0.128$, Adjusted $R^2 = 0.117$, F change $= 29.629$). This outcome also supports hypothesis H2-1. None of the CVs in this model are significant. As presented in Model 4 (Table 3), TCo is positively and significantly ($\beta = 0.270$, $p < .001$) related to SA and the model explains 9.7 percent of the variance in SA ($R^2 = 0.097$, Adjusted $R^2 = 0.086$, F change $= 20.064$). The coefficients of the CVs in the model also reveal that only OS is significantly related to SA ($\beta = 0.145$, $p < .05$). The results support H3-1 as TCo has a significant positive effect on SA after controlling for the effects of the other variables in the equation.

Similarly, Model 5 depicts a positive and significant ($\beta = 0.146$, $p < .05$) relationship between TGo and SA, with the model explaining 4.3 percent of the variance in SA ($R^2 = 0.043$, Adjusted $R^2 = 0.031$, F change $= 4.750$). Thus, Model 5 results confirm H4-1. Again, the coefficients of the CVs reveal that only OS is significantly related to SA ($\beta = 0.179$, $p < .05$). Finally, the results in Model 6 reveal that MF has an impact on SA. The coefficient is positive and significant ($\beta = 0.386$, $p < .001$) with the model explaining 17.1 percent of the

Table 2
Means, S.D., and Correlations

Variable	Mean	S.D.	1	2	3	4	5
1. Strategic Adaptiveness (SA)	4.91	0.95					
2. Ties with customers (TCu)	4.92	1.14	0.412***				
3. Ties with suppliers (TSu)	5.61	1.10	0.337***	0.402***			
4. Ties with competitors (TCo)	4.40	1.31	0.267***	0.363***	0.384***		
5. Ties with Government (TGo)	3.90	1.40	0.106	0.131*	0.155*	0.266***	
6. Marketing Function effectiveness (MF)	5.41	0.99	0.399***	0.343***	0.261***	0.200***	0.076

$N = 263$.
*$p < .05$.
**$p < .01$.
***$p < .001$.

Table 3
Main Effects of TCu, TSu, TCo, and TGo on SA (Standardized Coefficients)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control variables						
Hypothesis		*H1-1*	*H2-1*	*H3-1*	*H4-1*	*H5*
Firm size	0.105	0.098	0.082	0.095	0.076	0.083
Ownership status	0.137*	0.153*	0.107	0.145*	0.179*	0.088
Main effects						
Ties with customers (TCu)		0.415***				
Ties with suppliers (TSu)			0.323***			
Ties with competitors (TCo)				0.270***		
Ties with Government officials (TGo)					0.146*	
Marketing Functions (MF)						0.386***
R^2	0.024	0.197	0.128	0.097	0.043	0.171
Adjusted R^2	0.017	0.187	0.117	0.086	0.031	0.161
F Change	3.147	53.569***	29.629***	20.064***	4.750*	44.260***
Durbin Watson	1.521	1.700	1.537	1.522	1.544	1.598

*$p < .05$.
**$p < .01$.
***$p < .001$.

variance in SA ($R^2 = 0.171$, Adjusted $R^2 = 0.161$, F change $= 44.260$). H5 is, thus, supported. None of the CVs are significant in this model. The results so far have provided support for H1-1, H2-1, H3-1, H4-1, and H5 that TCu, TSu, TCo, TGo, and MF significantly influence SMEs' SA. TCu has the most significant impact on SA, but given the significance of all independent variables (IVs) and the lack of collinearity (see Table 2) it has been decided to use the complete set of variables in developing the model further. The relatively strong influence of MF on SA gives further evidence that it would moderate the effect of the set of TCu, TSu, TCo, and TGo on SA, which is the focus of the rest of our hypotheses.

Hypotheses H1-2, H2-2, H3-2, and H4-2

To examine the moderating effects of MF on the relationship between TCu, TSu, TCo, TGo, and SA, a moderated regression analysis was conducted. This method was adopted because of its wide usage and consideration as the most straightforward method for testing hypotheses in which an interaction is implied (Huang, Chen, and Stewart 2010; Mohr, Fisher, and Nevin 1996). According to the results in Model

2, TCu, TSu, and MF are statistically significant. In Model 3, when the interaction effects have been included in the model, only TCu and MF remained statistically significant. In H1-2, H2-2, H3-2, and H4-2, we implied that MF would influence the relationship between the IVs (i.e., TCu, TSu, TCo, and TGo) and SA. The results of the moderated regression models are presented in Table 4.

Model 3 shows that the interaction effect of MF with some IVs is significant at the $p < .01$ level ($R^2 = 0.337$, Adjusted $R^2 = 0.307$, F change $= 4.665$). The results, therefore, reveal that the inclusion of the interaction terms significantly improves the variance explained (R^2 value) in Model 3 than the variance explained in Model 2, which excludes them. Specifically, Model 3 explains 33.7 percent of the variance in SA whereas Model 2 explains 28.6 percent. A change in the R^2 value of 0.02 due to the inclusion of the interaction effects is considered to be an acceptable cut-off point (Huang, Chen, and Stewart 2010). The change of the R^2 value (i.e., 0.051 increase) in this study is, however, higher than the threshold figure, demonstrating a reasonable interaction effect and the importance of the moderating effects of MF on the IVs–SA relationship.

Table 4
Moderating Effect of MF on TCu, TSu, TCo, and TGo with SA (Standardized Coefficients)

Variables	Model 1	Model 2	Model 3
Hypothesis			H1-2, H2-2, H3-2, and H4-2
Step 1: Control variables			
Firm size	0.105	0.068	0.051
Type of ownership	0.137*	0.117	0.106
Step 2: Independent (IV) and Moderator Variable (MV)			
Ties with customers (TCu)		0.248***	0.235***
Ties with suppliers (TSu)		0.125*	0.100
Ties with competitors (TCo)		0.071	0.052
Ties with government (TGo)		0.039	0.047
Marketing Function (MF)		0.248***	0.290***
Step 3 Interaction terms			
TCu × MF			−0.120*
TSu × MF			−0.122
TCo × MF			0.142*
TGo × MF			0.104
R^2	0.024	0.286	0.337
Adjusted R^2	0.017	0.265	0.307
ΔR^2	—	0.261***	0.051**
F Change	3.147	18.000***	4.665**
Durbin Watson			1.673

*$p < .05$.
**$p < .01$.
***$p < .001$.

Specifically, the results reveal a significant moderating effect of MF on the association between TCu and SA ($\beta = -0.120$, $p < .05$). A plot of this interaction in Figure 2(a) confirms that the perceived effectiveness of an SME's MF significantly influences the impact of TCu on SMEs' SA, thus supporting H1-2. The negative coefficient indicates that for a more efficient MF, TCu has a smaller effect on SA. The interaction between TSu and MF is not significant ($\beta = -0.122$, $p > .05$), thus rejecting H2-2 that when the MF is perceived as effective the influence of TSu on SA diminishes. The results further reveal a positive and significant ($\beta = 0.142$, $p < .05$) moderating effect of MF on the relation between TCo and SA. The results do not provide support for H3-2, and the graphical depiction of this relationship in Figure 2(b) reveals that TCo has a stronger effect on SA when SMEs perceive their MF to be effective. Finally, H4-2 does not receive statistical support as the moderating effect of MF on the relationship between TGo and SA is not significant ($\beta = 0.104$, $p > .05$). Also, the CVs in both Models 2 and 3 are not significantly related to SA.

Discussion and Implications

Building on the network ties literature, the results and findings have several theoretical and managerial implications.

Theoretical Implication

Theoretically, the study has made a number of contributions to the SMEs' literature. First, this research extends the network literature and builds bridges between the traditional

Figure 2
Ties With Stakeholders (TCu & TCo) and Perceived Marketing Function Effectiveness Interactions
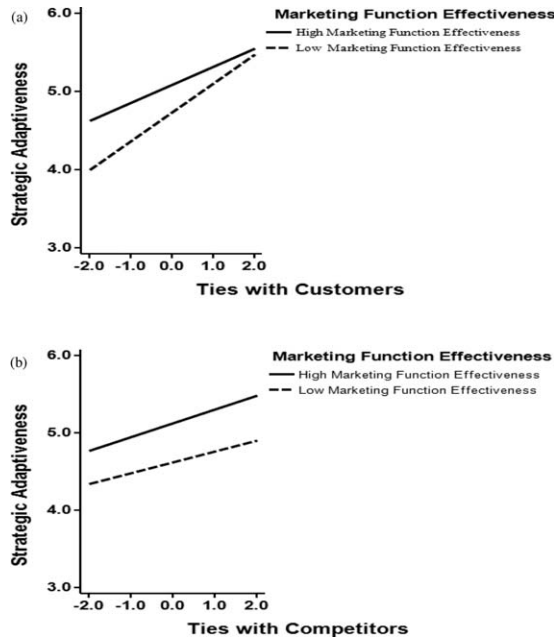
marketing and the relational marketing theoretical perspectives. It does this by integrating network ties, MF and SA in a single model to examine the moderating effects of perceived effectiveness of MF on the relationship between network ties and SMEs' SA. By proposing and testing a set of interconnected relationships, the present study adds and extends previous research that examined these issues separately. The integrative nature of this study also underscores that research on SMEs' marketing can bring together both MF and networks perspectives to examine important issues, instead of the usual narrow focus on these perspectives ordinarily adopted in the marketing literature. Accordingly, this study also provides a basis for scholars to further evolve and develop an even more integrative perspective of these issues.

Second, the introduction of SA as an important concept in the SMEs' and general marketing literature has important theoretical relevance. Although SA has been mentioned in few previous studies (Krohmer, Homburg, and Workman 2002; Miles and Arnold 1991; Ruekert, Walker,

and Roering 1985), its conceptualization and examination has not been systematic and detailed. The study, therefore, provides a basis for scholars to further examine and develop an even more robust perspective on SMEs' SA.

Third, the finding that TGo makes the least contribution to SMEs' SA is unexpected and presents a contrary view to the general institutional theoretical argument. This finding reveals that not across all developing or transition economies should more emphasis be placed on developing and sustaining political ties than business ties, as suggested by Peng and Luo (2000). In general, developing and sustaining TGo might be important, but when restricted specifically to SMEs' SA in Croatia, its impact is not significant. It is possible that Eastern European countries are much better regulated and their regulations are less complex than other transition economies. Our result is, however, in line with Rocks, Gilmore, and Carson (2005) finding that TGo plays the least important role among U.K. SMEs. Theoretically, therefore, the dominance of TGo's influence on SMEs' performance is context specific and should not be

generalized to all developing and transition economies.

The findings further suggest that at high levels of perceived MF effectiveness the importance of TCu on SA will be diminished though the importance of TCo on SA will be increased. This finding is also novel and significantly contributes to our understanding of the impact of SMEs network ties and marketing activities on SA. Especially, the finding that developing TCo is indispensable to SMEs' SA, even when they have an effective MF is an important contribution to the literature. The increasing impact of TCo at high levels of perceived MF effectiveness is suggestive that at such levels, SMEs' MF might serve as a mechanism for monitoring and identifying the right competitors to select and develop ties with for a maximum impact, and at a minimum effort. It could also serve as a good conduit for effectively capturing the right information and resources from TCo, and translating them appropriately for improving their SA. Moreover, the relevance of continuously developing TCo is because collaboration among competitors tends to enhance their innovation capabilities and their ability to compete against the large players in the same industry (Gnyawali and Park 2009). In transition economies, particularly with institutional inefficiencies and high risk levels, ties with TCos will enable SMEs to better mitigate risks by combining their complementary strengths (Morris, Kocak, and Özer 2007).

Finally, we further show that developing both networking ties and MFs are vital to the survival and performance of SMEs. A number of researchers have previously highlighted that developing MFs are undertaken mainly by large companies, with limited empirical studies commenting that marketing activities could also be developed by SMEs. The findings from this study underscore the view that SMEs can and should develop MFs in addition to their network ties to enable them effectively adjust to the fast changing business environment. In this sense, this finding extends the previous research claims that networks may be more important to SMEs performance than MFs (Coviello, Brodie, and Munro 2000).

Practical Implications

The findings from this study also have a number of practical implications. First, the level of impact that each of the network ties have on SMEs' SA is different. TCu is observed to contribute more to SMEs' SA followed by MF, TSu, TCo, and TGo, respectively. The dominant contribution of TCu is in line with the study by Narver, Slater, and MacLachlan (2004), which found that network TCu are most important to companies. The finding, however, contradicts the argument by O'Donnell (2004) that all stakeholders are equally important for SME networks. Our study, therefore, suggests that TCu is very critical in helping SMEs derive important insight into their external environment, and managers/owners should pay attention to ties with their customers.

Second, the findings underscore that with a MF perceived as effective, TCo's impact on SMEs' SA increases. Developing and maintaining TCo still remains significantly important to SMEs' efforts to strategically adapt and compete. This is in line with the strategic alliance literature, which places emphasis on close networking and collaboration even among competing firms to succeed in the global business environment (Das and Teng 1998). It practically implies that a perceived effective MF would lead to an increase in the impact of TCo on SMEs' SA and would not deter SMEs from continuing to develop and maintain TCo as it is still quite important in their efforts to understand the competitive landscape for strategic adaptation.

Third, the nonsignificant effect of MF on the TSu–SA relationship may be due to the limited focus of the MF (product and price dimensions) in SMEs. This implies that the inclusion of issues pertaining to the supply chain (place dimension) on MF may significantly enhance its impact on the TSu–SA relationship. Unless SMEs' MF is fully developed to include supply chain functions SMEs would be better if they channel their resources on supplier ties development rather than marketing competencies. Perceived effectiveness of a MF that largely overlooks supply chain considerations is unlikely to act as a moderator in the TSu–SA relationship. Furthermore, the nonsignificant impact of MF on the TSu–SA relationship may imply that supply chain considerations in SMEs are limited to the availability and range of suppliers for sourcing materials. Also, dependence on a single source might be preferred to multiple-source purchasing where competition between vendors can decrease prices and improve service offered. For the MF to leverage existing capabilities with suppliers, the relevance of including supply chain issues in MF decisions need to be clearly understood for gaining new capabilities and increasing SA.

Fourth, the nonsignificant effects concerning the moderating role of MF in the TGo–SA relationship implies that the MF in SMEs may not be as advanced as it should to significantly reduce the impact of TGo on SA. Similarly, TGo may occur at the level of removing potential barriers and avoiding cumbersome hurdles that Government control could impose on them. With an advanced or competitive MF, political ties in transition economies may still be relevant to SMEs' SA although not at a significant level. The above factors may have contributed to the result. A MF perceived as effective should not be seen as an equivalent and economical replacement of TGo in transition and developing economies.

Finally, the findings further imply that for SMEs, continual effort in developing network ties (particularly with competitors) is critical to their SA. The study further underscores that SMEs' managers/owners should direct more efforts toward developing customer ties and less efforts toward developing TGo in Croatia, and perhaps in other transition economies in Eastern Europe. In addition, developing an efficient MF is relevant for their SA. However, such a MF that focuses more on product quality and pricing issues, rather than all the traditional marketing mix elements, could still be effective enough to enable them understand the business environment and make appropriate decisions to adjust and compete effectively. With a MF, much effort should be made in sustaining and augmenting TCo, as the MF will increase the effect of these ties on the SMEs' SA.

Limitations and Areas for Future Research

This study is not without limitations. First, we borrowed items from different scales in this study to measure the constructs. Although these items have been subjected to validity and reliability tests, they have not been subjected to rigorous psychometric testing. Additionally, borrowed items are mainly from studies focusing on U.S./Western (developed) countries. Using them in the context of a transition economy (Croatia) without establishing construct equivalence is thus a limitation and should be addressed adequately by future studies.

Second, the study used only two dimensions (product and price) to measure the MF. In the traditional marketing literature, the 4Ps are usually employed in measuring the MF of organiza-

tions. Despite the justification provided in this study regarding the use of the two dimensions, it limits the generalizability of the findings. It would be useful for future studies to again investigate the factors that determine SMEs' MF and ensure a more comprehensive measurement of SMEs' MF.

Third, it is possible that network ties and MF are not the only factors that determine SMEs' SA and researchers could explore the other factors that could affect SMEs' SA. Previous research suggests that factors such as network centrality, density, flexibility, size, level of formality, and stability are also relevant to SMEs' performance (Provan, Fish, and Sydow 2008; Soda, Usai, and Zaheer 2004). Thus, issues pertaining to these factors could play a significant role on SMEs' SA and excluding these factors is another limitation of the study. Further studies could examine these factors separately with each stakeholder group and the moderating effect of actual SMEs' MF that is effective on the network—SA relation as this study only focused on the MF perceived as effective.

Fourth, the results indicate that developing an effective MF will enhance the SA capability of SMEs. It is, however, worth suggesting that, SMEs need to have an efficient mechanism in place that adequately measures the effectiveness of their MF rather than merely relying on the perceptions upheld by the owner/manager in determining the effectiveness of the MF. This will enable owner/managers of SMEs to accurately determine when to rely more on their network ties or MF. In this sense, their reliance on network ties will not be wrongly reduced based on a wrong perception that the MF is effective enough to ensure their SA capability when it is not.

Finally, we collected our data from a single transition country in Eastern Europe (Croatia). Variations in the business environments of different transition countries, which may require different SA response, may limit the generalizability of the findings in this study. To enhance the generalizability of findings, future studies should be based on samples from different transition countries from different continents. This research could also be replicated in other countries, and the findings compared with the findings in this study.

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Founding Family Firms, CEO Incentive Pay, and Dual Agency Problems
by Mieszko Mazur and Betty H.T. Wu*

This paper contributes to the literature on agency theory by examining relations between family involvement and CEO compensation. Using a panel of 362 small U.S. listed firms, we analyze how founding families influence firm performance through option portfolio price sensitivity. Consistent with the dual agency framework, we find that family firms have lower CEO incentive pay, which is further reduced by higher executive ownership. Interestingly, such incentive pay offsets the positive impact that families have on firm valuation. Collectively, our results show that, compared with nonfamily firms, lower incentive pay adopted by family firms due to lower agency costs mitigates the direct effect of family involvement on firm performance. Once accounting for CEO incentive pay, we do not observe performance differences between family and nonfamily firms.

Introduction

In modern corporations, there exists a common organizational form characterized by dispersed ownership, atomistic shareholders, and separation between ownership and control. Demsetz and Lehn (1985) and Shleifer and Vishny (1986) have long argued that this type of firm is not a comprehensive form of publicly traded corporation. In the past two decades, the economic importance of family firms around the world has been widely recognized in the literature (e.g., Claessens, Djankov, and Lang 2000; Faccio and Lang 2002; La Porta, Lopez-de-Silanes, and Shleifer 1999; Morck, Stangeland, and Yeung 2000), motivating an emerging body of research on family firms with respect to various issues (e.g., Anderson, Duru, and Reeb 2012; Anderson, Mansi, and Reeb 2003; Koropp, Grichnik, and Kellermanns 2013). This study examines the relationships between different types of family firms, nonfamily firms and agency costs through the pay incentive mecha-

nisms of Chief Executive Officer (CEO) compensation schemes. Although academic literature on family firms and executive compensation is proliferating, it focuses largely on cash incentives (e.g., Block 2011; Michiels et al. 2013; Schulze, Lubatkin, and Dino 2003) and/or current-year compensation based on firm stock (e.g., Li and Srinivasan 2011; McConaughy 2000; Sapp 2008). Our paper complements and extends the existing literature by considering not only stock options granted in the current year but also all other stock options and equity-based compensation awarded to CEOs during their tenures. This approach is especially attractive because it allows us to utilize the information on the total power of CEO performance-based incentive pay.

Outstanding executive stock options, that have not yet been exercised, together with ownership of firm equity as held by executive, comprise executive's wealth portfolio. We estimate the sensitivity of the value of this portfolio to

changes in a firm's stock price (*delta*), relying on the high accuracy method developed by Core and Guay (2002), and used extensively in the literature (see, e.g., Brockman, Martin, and Unlu 2010; Kim, Li, and Zhang 2011; Liu and Mauer 2011). Empirically, it has been shown that the greater is the sensitivity of an executive's option portfolio to changes in the firm's stock price (*delta*), the greater are its value-enhancing incentives. Moreover, recent research documents that value-improving incentives are positively and significantly related to firm value (see, e.g., O'Connor and Rafferty 2010).

We address our research question, which is rooted in the agency theory, using a sample of 362 small publicly listed U.S. firms during the period of 2001–2005. Among U.S. public firms, family firms are prevalent and persistent forms of organization (see, e.g., Anderson and Reeb 2003; Holderness 2009). Similar to, for example, Villalonga and Amit (2006) and using hand-collected data, we classify our sample firms into active family firms (run by family member CEO), passive family firms (run by outside CEO), and nonfamily firms. Under the dual agency framework, we posit that family and nonfamily firms have different agency costs. More specifically, due to severe owner–manager conflict, agency costs are higher in nonfamily firms while active and passive family firms have comparable agency costs. Therefore, nonfamily firms should have higher CEO incentive pay than family firms. Next, we examine the impact of equity ownership on the level of the granted pay incentives. We hypothesize that high equity stake, which provides value-enhancing incentives per se, reduces the need for additional incentives created by executive stock options. Lastly, we use the structural equation model (SEM) to investigate the relation between performance measures and pay incentives. We conjecture that incentives which stem from executive stock option grants and other equity-based instruments mediate the mere impact of family firms on performance.

Our study adds to the literature in several aspects. First, we analyze relations between family firms and agency costs through a direct incentive pay metric (option portfolio *delta*), rather than using absolute pay levels as in Bartholomeusz and Tanewski (2006) and Gomez-Mejia, Larraza-Kintana, and Makri (2003) and pay-for-performance sensitivity in McConaughy (2000). Hence, this paper contributes to this line of literature regarding CEO com-

pensation in family firms using a better construct for incentive-alignment purposes. Unlike Gomez-Mejia, Larraza-Kintana, and Makri (2003) and McConaughy (2000), our analysis includes nonfamily firms too. Second, we refine the typical categorization of "family versus nonfamily" firms in terms of degree of ownership by family members. Similar to, for example, Anderson and Reeb (2003) and Barontini and Caprio (2006), we classify firms into three different types that reflect varying degrees of family involvement both in ownership structure and in the management. We argue that the CEO's identity regarding family affiliation matters as well. Indeed, we find that the incentive pay appears to differ significantly across different types of family firms, a result which could not be produced by the traditional family firm categorization. Lastly, our study also adds to the literature on the determinants of CEO incentive compensation as well as the literature on corporate policies and firm valuation. This paper shows that once accounting for CEO incentive pay adopted by firms under varying degrees of family control, we do not observe performance differentials across different types of firms. Besides, our results provide evidence that the influence of family ownership is beyond that of typical concentrated ownership. Therefore, research on incentive compensation and firm valuation without considering family presence could result in spurious relations and false implications.

The remainder of this paper proceeds as follows: (1) a brief literature review on family firms relating to dual agency problems and CEO compensation, which is followed by development of hypotheses to be tested; (2) a description of data collection, sample formation, and methodology of empirical analyses; (3) results of the empirical tests; (4) discussion and practical implications; and (5) concluding remarks.

Hypothesis Development

Modern organizations are plagued by agency problems. In a diffusely held firm, the major agency problem emerges as a conflict of interest between managers and shareholders. Managers control the resources and run the firm, whereas dispersed shareholders own the firm but are excluded from management. Because equity ownership by managers is typically low, they pay only a fraction of the costs related to misuse of firm resources for their own benefits. Consequently, managers do not always act in the best

interests of shareholders (Fama and Jensen 1983; Jensen and Meckling 1976). This type of agency problem is called a "classic owner–manager conflict" (Villalonga and Amit 2006) and is prevalent among firms characterized by separation between ownership and control. Throughout the paper, we refer to this type of agency problem as Agency Problem I.

Another type of agency problem arises between large shareholders and minority shareholders. Large shareholders may pursue interests that are at odds with the objectives of the remainder of shareholders who are a minority. Expropriation of the minority may be feasible owing to the controlling position that large shareholders have in such firms (Shleifer and Vishny 1997). This type of agency problem dominates in closely held firms, for example, firms controlled by families. In this paper we label this type of agency problem Agency Problem II.

Clearly, agency problems intertwine, such that family firms are not entirely free of owner–manager conflicts, and diffusely held firms are not entirely free of the expropriation by large shareholders. Recent empirical research documents that ownership of a typical U.S. firm is fairly diffuse; however, it cannot be considered atomistic (see, e.g., Helwege, Pirinsky, and Stulz 2007). For instance, Holderness (2009) shows that 89 percent of his sample S&P500 firms have at least one blockholder. Concentration of ownership by blockholders (financial institutions, corporations, etc.), gives rise to Agency Problem II as defined in the section above, which is arguably more severe in a typical U.S. firm than what it would otherwise be if the equity ownership of the firm was atomistic. Nevertheless, if a firm has e.g., an institutional blockholder, private benefits extracted from the remaining dispersed shareholders by that blockholder are split among a few independent owners (Villalonga and Amit 2006). Consequently, the incentives to expropriate shareholders in a diffuse ownership firm with an institutional or a corporate blockholder are lower as compared to a closely-held firm with a controlling blockholder (e.g., a family) because this controlling blockholder can divert all private benefits of control to itself. In other words, nonfamily firms, especially with blockholders, are not exempt from Agency Problem II, but such agency costs are generally lower compared to family-controlled firms.

The magnitude of agency costs that stem from different types of agency problems varies depending on the relationship between owner-ship and control. Existing research shows that family firms in which CEOs are members of the controlling families significantly outperform nonfamily firms (see, e.g., Anderson and Reeb 2003; Barontini and Caprio 2006; Maury 2006; Villalonga and Amit 2006). In addition, family firms with outside professional CEOs have been shown to be more valuable than nonfamily firms (see, e.g., Anderson and Reeb 2003; Barontini and Caprio 2006; Villalonga and Amit 2006). The empirical evidence leads us to conclude that family firms have agency costs that are lower than agency costs of nonfamily firms. Arguably, this difference in the magnitude of agency costs is attributable to the negative effects of owner–manager conflicts in diffuse ownership firms. For instance, Villalonga and Amit (2006) argue that outperformance of family firms suggests that divergent interests of managers and shareholders are more damaging to shareholder wealth than conflicting objectives of minority and large shareholders.

Building on the above arguments, we conjecture that, due to differences in the degree of owner–manager conflicts, family firms have lower agency costs as compared to nonfamily firms. The reasons for this are twofold. First, firms controlled and run by families do not have owner–manager conflicts and thus agency costs that result from divergent interest between management and shareholders. Second, family-controlled firms with hired professional CEOs incur agency costs that stem from separation of ownership and control; however, the families involved are typically large controlling shareholders that can monitor management more effectively than disperse shareholders can. Hence, family firms with outside CEOs have lower agency costs associated with owner–manager conflicts than nonfamily firms. With regard to the magnitude of agency costs that result from conflicts with large shareholders, we posit that in nonfamily firms, these costs are significantly lower as compared to family firms. Furthermore, existing theoretical and empirical research provides no clear indication that this type of agency costs should differ across different types of family firms. We speculate that the level of Agency Problem II increases with the fraction of equity ownership held by large shareholder beyond a given threshold at which entrenchment effect begins to dominate (Morck, Shleifer, and Vishny 1988). However, we cannot conjecture that families should hold higher/lower equity ownership in active family firms as vis-à-vis passive family firms. Theory and prior empirical

work do not provide a consensus view on the relationship between the size of family equity stake and the identity of management in family firms. These arguments together suggest that agency costs related to Agency Problem II in active and passive family firms could be of comparable magnitude.

To diminish the owner–manager conflict and thus the magnitude of agency costs, firms should adopt incentive compensation systems (Jensen and Meckling 1976). More specifically, firms should use executive call options on firm stock and/or option-like instruments to better align managers' interests with those of outside shareholders (Haugen and Senbet 1981; Smith and Stulz 1985). The theoretical arguments advanced above are consistent with existing empirical evidence. For example, Jensen and Murphy (1990), Hall and Liebman (1998), and Frydman and Saks (2010) show that firms extensively use executive stock options to incentivize top management. Moreover, these studies indicate a positive and significant relationship between firm performance and value-increasing pay incentives.

Furthermore, previous research documents that both family CEOs and outside CEOs in family firms receive value-enhancing incentives based on firm equity. For example, McConaughy (2000) reports positive pay-performance sensitivity of executive stock options for family and nonfamily CEOs. Michiels et al. (2013) find that pay-for-performance plays a significant role in privately-held family firms run by families and outside CEOs. From a somewhat different perspective, Schulze, Lubatkin, and Dino (2003) argue that altruism in family firms compromises the ability of family CEOs to monitor and discipline other family members in top management, thus family firms should grant value-enhancing pay incentives to all family senior executives.

In light of the above discussion of theoretical predictions regarding both types of agency problem and the empirical evidence that the classic ownership-manager conflict in nonfamily firms is more costly than the conflict between family and nonfamily shareholders in family firms, we posit that nonfamily firms should adopt greater value-increasing pay incentives relative to family firms. This conjecture stems from the fact that, as compared to family firms, nonfamily firms have higher agency costs attributable to agency conflicts between management and disperse shareholders. The above predictions can be formalized as follows:

H1: Non-family firms have higher agency costs than family firms, hence non-family firms should adopt higher value-enhancing pay incentives than family firms.

Agency problems can be alleviated by equity ownership which provides incentives to maximize shareholder wealth. Therefore, equity ownership can be viewed as a substitute for incentive pay. According to Jensen and Meckling (1976), low stock ownership may be the most important source of manager–shareholder conflict. In diffusely held firms, manager ownership is accumulated mainly through the exercise of executive stock options. Typically, option awards are granted to senior executives on a regular basis throughout their job tenures at firms. It is not uncommon, however, for grants to be made several times during the fiscal year. Interestingly, new CEOs, when assuming office, receive exceptionally large stock option awards of firm shares to instantly provide them with a critical mass of equity ownership. Overall, managers' ownership stake should increase with the length of their tenures, thus increasing their value-enhancing incentives. However, despite the use of stock options and other types of stock-based compensation for the purpose of providing senior executives with a stake in the firm, Ofek and Yermack (2000) show that executives accumulate stock ownership only up to a certain point, after which they actively trade their holdings.

In a typical family-controlled firm, low equity ownership by management is not a major concern. Family firms usually own a substantial fraction of equity enabling them to exercise control over the firm. The size of the average ownership stake for the largest U.S. family firms is approximately 17 percent (Anderson and Reeb 2003; Villalonga and Amit 2006). Moreover, Holderness (2009) reports that blockholders (including families) own on average 39 percent of the common stock of publicly listed firms in the U.S. Such concentrated ownership provides incentives to monitor outside CEOs and reduces the need to load managers with executive stock options to boost equity ownership. In light of the above discussion, we formulate our next hypothesis:

H2: Equity ownership provides value-enhancing incentives per se, hence high equity ownership should markedly reduce the need for value-increasing pay incentives.

As noted above, firms with high agency costs should adopt value-enhancing incentive pay. In other words, such incentive pay is viewed as a remedy to typical agency problems, and thus should effectively improve performance ex-post. For the purpose of this study, we believe that it is crucial to account for value-increasing pay incentives when assessing the impact of family control on firm performance. Prior research on family firms largely ignores the role of compensation incentives in value creation and typically does not include information on pay incentives in empirical specification (see, e.g., Barontini and Caprio 2006; Maury 2006; Villalonga and Amit 2006). We conjecture that if controlled for performance-enhancing incentives, the mere effect of family control on performance could diminish. The above discussion motivates the final hypothesis in our study:

H3: Incentive pay mediates the relation between family involvement and firm performance, hence the difference in performance between different types of family firms and non-family firms should be less pronounced.

Methods

Data and Sample

Our analysis focuses on small firms because, in addition to their economic significance,[1] small firms tend to be young and have more concentrated ownership, as it has been shown that a decrease in insider ownership is a positive function of time elapsed after an IPO (Helwege, Pirinsky, and Stulz 2007). Therefore, among small firms we should expect a higher proportion of family firms. As family firms have less severe agency problems than nonfamily firms, a typical small firm should have lower agency costs than a typical large firm. Besides, a well-known stylized fact about executive compensation is that the value of executive pay packages rises with firm size. Large firms are more complex, often diversified, and thus more difficult to manage. Accordingly, large firms attract top talent who are granted high levels of total compensation as compared to top executives in small firms (Gabaix and Landier 2008). In the

context of our study, nevertheless, there is little theoretical and/or empirical literature indicating different compensation structures with firm size.

We form our sample from companies in the S&P600 SmallCap Index between 2001 and 2005, the most recent period with no major disruptive economic events. Our sample starts in 2001, so that we can avoid market-based performance measures that were significantly inflated in 2000 when the dot-com bubble reached its climax. Our sample ends in 2005 because in 2006, the U.S. Securities and Exchange Commission introduced new disclosure rules on executive pay, so that the most recent compensation data are not fully compatible with the pre-2006 format. Hence, our sample period is also relatively free of major financial or regulatory events. We exclude firms in this Index that did not survive the full sample period, ensuring that our sample firms remain relatively small. We further exclude utility (Standard Industrial Classification [SIC] codes 1311, 4911 to 4991) and financial firms (SIC codes 6020 to 6799) because these firms are typically under government regulations that might affect their investment policies and ownership structures. We also exclude spin-off firms. These sample selection criteria result in 1,756 firm-year observations representing 362 unique firms. We match our final sample with available accounting data in Compustat, compensation data in ExecuComp, and corporate governance data in RiskMetrics.

To identify family firms, we manually check proxy statements for each company along with other sources when needed,[2] providing us with the following information: identity, ownership, tenure, and biographies of founder(s), board members, blockholders, and the top-five managers when such information is available. We classify family firms based on two dimensions, i.e., family affiliation of board members (control) and of CEOs (management). Following Anderson and Reeb (2003) and Villalonga and Amit (2006), we classify a firm with family control as long as one of the following two criteria is met: (1) the founder or a descendant of the founder sits on the board and/or is a blockholder; (2) at least two board members are related either by blood or marriage. Overall, 48.46 percent of the sample observations are affiliated with founding

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[1]According to OECD (2009), small and medium-sized enterprises (SMEs) account for more than 99 percent of all enterprises in the European Union and more than half of the labor force in the private sector in the OECD area.

[2]We utilize several online sources, such as http://www.fundinguniverse.com/.

families, 46.41 percent are run and owned by outsiders, and 5.13 percent are affiliated with nonfounding families. We include nonfounding family firms among family-controlled firms in our sample (e.g., Miller et al. 2007).[3] Among our 1,756 firm-year observations, 546 (31.09 percent) are of active family firms, 395 (22.49 percent) are of passive family firms, and 815 (46.41 percent) are of nonfamily firms. It is true that in our sample (of small publicly-traded firms), family firms are more common than nonfamily firms compared to their more established counterparts. But this does not affect our analysis because our main focus is the comparison between family and nonfamily firms.

Measures

Incentive Pay. Our main estimator of incentive pay is the CEO option portfolio price sensitivity *delta*. Generally, we follow Core and Guay (2002) and Brockman, Martin, and Unlu (2010) in using this estimate, which is defined as the change in the value of a CEO's stock holding and option portfolio in response to a 1 percent change in the firm's stock price. Partial derivatives of the option price with respect to stock price (*delta* δ) are based on the Black-Scholes model (Black and Scholes, 1973) for valuing European call options, adjusted for dividend payouts by Merton (1976).[4] In our study, we assume that incentive pay serves as a remedy for agency problems. In other words, incentive pay captures the magnitude of agency costs for different types of firm in our sample.

Performance. We use two measures of firm performance, namely, return on assets (ROA) and Tobin's Q (Q), which summarize information on operating and market performance, respectively. ROA is calculated by dividing the earnings before interest and taxes by total assets. This ratio is an accounting measure of performance, where performance can also be viewed as realized performance (backward-looking). Q is the market-to-book ratio, defined as the market value of assets scaled by their book value. In contrast to ROA, Q is viewed as a measure of firm valuation (forward-looking). Bartholomeusz and Tanewski (2006) argue that Q can be used to measure deviations from wealth maximization. In this paper, we adopt

both measures, providing us with different perspectives on firm performance.

Control Variables. In our regression analysis, to avoid confounding effects, we include several control variables that have been found to influence incentive pay and/or performance (e.g., Coles, Daniel, and Naveen 2006; Kale, Reis, and Venkateswaran 2009). For incentive pay, we use CEO age and ownership, firm size, firm age, leverage, investment, and a set of corporate governance proxies for minority shareholder protection and board structure/independence. To measure minority shareholder protection, we use the GIM Index (Gompers, Ishii, and Metrick 2003) and the Entrenchment Index (Bebchuk, Cohen, and Ferrell 2009). Higher index scores imply that more antitakeover provisions have been adopted by firms, suggesting less protection for minority shareholders. For performance, we include firm size, firm age, firm risk, leverage, investment, dividend payouts, and three corporate governance proxies for board structure/independence. We provide detailed definitions and data sources for all variables in the regression analysis in the Appendix.

Empirical Specification

To analyze the relations between incentive pay (*delta*) and family firm type (to test H1 and H2), we employ a Tobit model (e.g., Hartzell and Starks 2003) due to the intermittent feature of option grants as compensation. The main model specification is as follows:

$$
\begin{aligned}
\text{Incentive Pay} = {} & \beta_1 * \Delta(\text{MV}) + \beta_2 * \Delta(\text{MV}) \\
& * D(\text{Passive Family Firm}) + \beta_3 \\
& * \Delta(\text{MV}) * D(\text{Active Family Firm}) \\
& + \beta_4 * D(\text{Passive Family Firm}) \\
& + \beta_5 * D(\text{Active Family Firm}) \\
& + \sum \beta_k (\text{Control Variables})
\end{aligned}
$$

where $\Delta(\text{MV})$ is the change in market capitalization in the current year. Two dummy variables proxy for family firm types. In each specification, we control for year fixed effects and industry fixed effects, using 1-digit SIC codes. Standard deviations are clustered at the 1-digit

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[3]In some cases, we cannot obtain founder information. It is also likely that we lose track of founding family members. Thus, we underestimate the true proportion of family firms in the sample. This would potentially work against our testing hypotheses.

[4]For instance, see Brockman, Martin, and Unlu (2010) for a detailed description of the computation of the option delta.

SIC level. Our main coefficients of interest are β_4 and β_5, which are both predicted to have negative values, according to H1.

To examine whether (family) ownership has differential effects on incentive pay, for each firm type, we form two subgroups based on ownership and run separate regressions. Estimates of the ownership variable capture the direct effect of ownership in six different subgroups. Specifically, we simplify our aforementioned model specification as follows:

$$\text{Incentive Pay} = \beta_1 * \Delta(\text{MV}) + \beta_2 * \text{Ownership} + \sum \beta_k (\text{Control Variables})$$

Our main coefficient of interest is β_2, which is expected to differ (in terms of magnitude and/or sign) in the two subgroups for each type of family firm, according to H2.

Next, to test H3, that is, whether value-enhancing incentive pay adopted by families effectively addresses agency problems, we adopt a SEM that encompasses a wide range of models by considering various paths (causality) and correlations between variables, both dependent and independent. Relevant to our purposes, a properly specified SEM can be used to address endogeneity issues and produce esti-mates similar to those of seemingly unrelated regression or simultaneous equation analyses, among other desirable features (Tomarken and Waller 2005). The path diagram in our structural model is displayed in Figure 1. A path, shown as an arrow drawn from one variable to another, indicates a (causal) relationship between two variables.

As shown in Figure 1, there are two sets of linear regressions in the model, one related to performance (direct effect) and one related to decisions regarding incentive pay, which are allowed to further affect performance (indirect effect). We also specify variables to be corre-lated (based on the correlations between varia-bles of interest). Standard deviations are clustered at the industry-level. Note that, to test our hypothesis properly, family presence is allowed to directly impact performance. This can capture the effects of missing variables or any channels other than incentive pay through which families may affect performance. Accord-ingly to H3, the direct and indirect effects of family presence on performance should have opposite signs. The sum of the direct and indi-rect effects (i.e., the total effect) should not be significantly different from zero. Specifically, the model specification is as follows,

$$\begin{cases} \text{Performance} = \beta_1 * \text{Incentive Pay} + \beta_2 * D(\text{Passive Family Firm}) + \beta_3 * D(\text{Active Family Firm}) \\ \qquad + \sum \beta_i (\text{Firm-Specific Control Variables}) \\ \text{Incentive Pay} = \gamma_1 * D(\text{Passive Family Firm}) + \gamma_2 * D(\text{Active Family Firm}) + \gamma_3 * \text{CEO Age} \\ \qquad + \sum \gamma_j (\text{Firm-Specific and Corporate Governance Control Variables}) \end{cases}$$

The direct effect of family presence on per-formance is β_2 (passive) and β_3 (active), and the indirect effect of family presence on performance is $\beta_1 * \gamma_1$ (passive) and $\beta_1 * \gamma_2$ (active). Therefore, the total effects are $\beta_2 + \beta_1 * \gamma_1$ and $\beta_3 + \beta_1 * \gamma_2$ for passive and active family firms, respectively.

Results

Descriptive Statistics

Table 1 presents summary statistics for selected CEO- and firm-specific attributes for the whole sample. Table 2 presents between-sample comparisons of these attributes.

Generally, CEOs in active family firms have the lowest median cash-based and total compen-sation. The CEO option *delta* (including stock holdings) is highest in active family firms while on average option *delta* (without stock holding) is lowest in passive family firms. In addition to the compensation components, we find that CEOs in active family firms are older and have much larger equity stakes.

With regard to firm-specific characteristics, there is, as a whole, no significant difference among the three firm types in terms of firm size, investment level, and operating performance.

Table 1
Summary Statistics: CEO and Firm Characteristics

	Mean	Median	Std. Dev.	Min	P25	P75	Max
Panel A: CEO Characteristics							
Cash Compensation ($M)	870.04	680.55	920.19	0.00	469.25	1,015.12	21,119.34
Total Compensation ($M)	2,232.51	1,449.36	6,358.65	0.00	836.79	2,462.38	245,016.90
Equity-based Incentive Pay ($M)	299.19	132.14	582.82	0.00	58.14	298.85	8,277.63
Option-based Incentive Pay ($M)	102.34	59.22	185.87	0.00	22.80	124.63	4,319.91
CEO Age	55.48	55.00	7.71	29.00	50.00	61.00	84.00
CEO Equity-based Ownership (percent)	8.23	2.50	14.47	0.00	1.26	7.38	81.20
CEO Stock Ownership (percent)	3.50	0.68	7.59	0.00	0.19	2.50	62.76
Panel B: Firm Characteristics							
Firm Size ($MM)	805.40	503.41	1,004.71	0.00	249.22	905.70	10,973.32
Firm Age	47.35	36.00	35.01	0.00	21.00	60.00	230.00
Firm Risk	0.55	0.51	0.21	0.18	0.39	0.67	1.53
Leverage	0.18	0.16	0.17	0.00	0.01	0.31	1.62
Investment	0.08	0.06	0.08	0.00	0.03	0.12	0.82
Dividend Payout	0.01	0.00	0.02	0.00	0.00	0.01	0.45
ROA	0.08	0.08	0.12	−1.65	0.04	0.13	0.66
Tobin's Q	1.78	1.45	1.08	0.39	1.14	2.05	11.13
GIM Index	8.76	9.00	2.63	2.00	7.00	10.00	17.00
Entrenchment Index	2.20	2.00	1.29	0.00	1.00	3.00	5.00
Board Size	7.89	8.00	1.94	1.00	6.00	9.00	15.00
Inside Director	0.22	0.20	0.12	0.00	0.13	0.29	1.00
CEO Duality (0/1)	0.54	1.00	0.50	0.00	0.00	1.00	1.00
CEO on Compensation Committee (0/1)	0.01	0.00	0.11	0.00	0.00	0.00	1.00

This table presents summary statistics for selected CEO and firm characteristics of small public firms between 2001 and 2005. Raw scores are reported, and all variables are defined in Appendix.

Compared with nonfamily firms, family firms (active and passive) have higher Q and issue less debt. Passive family firms pay higher dividends. Firms managed by founding families tend to be young and face higher firm risk. In addition, such firms are less entrenched than other firms, with fewer antitakeover provisions and smaller boards of directors, which are generally viewed as more effective (Yermack 1996). However, their boards are less independent, and their CEOs are more likely to serve as chairman and sit on compensation committees. Note that it is least likely that an outside CEO serves as chairman when there is family control within the firm which tends to have largest board size. These results are consistent with Bartholomeusz and Tanewski (2006) and family firms adopt corporate governance structures that differ substantially from those of nonfamily firms.

Primary Findings

Table 3 presents standardized coefficients, estimated by a Tobit regression, for the determinants of CEO incentive pay.

Table 2
Comparisons of Selected Characteristics among Firm Types

Variable	Active Family Firm (I) Mean	Median	Passive Family Firm (II) Mean	Median	Non-Family Firm (III) Mean	Median	Mean and Median Tests I–II	II–III	I–III
Panel A: CEO Characteristics									
Cash Compensation ($M)	898	611	842	694	865	700	0.7698 [0.4416] (0.0031)	−0.5615 [0.5745] (0.2488)	0.6099 [0.542] (0)
Total Compensation ($M)	1,937	1,332	1,942	1,419	2,572	1,610	−0.0284 [0.9774] (0.0018)	−1.4069 [0.1597] (0.0176)	−1.6038 [0.109] (0)
Equity-based Incentive Pay ($M)	611	311	144	99	165	92	9.8953*** [0] (0)	−1.6502* [0.0992] (0.1994)	13.2298*** [0] (0)
Option-based Incentive Pay ($M)	113	50	81	57	106	64	2.1616** [0.0309] (0.2032)	−3.566*** [0.0004] (0.0037)	0.6347 [0.5257] (0)
CEO Age	57	58	54	54	55	55	4.3313*** [0] (0)	−1.3823 [0.1671] (0.0945)	4.342*** [0] (0)
CEO Equity-based Ownership (percent)	20.09	12.27	2.57	1.50	3.04	1.80	17.0808*** [0] (0)	−1.2793 [0.201] (0.0001)	23.0923*** [0] (0)
CEO Stock Ownership (percent)	9.01	4.61	1.13	0.33	0.96	0.39	13.4701*** [0] (0)	1.0688 [0.2854] (0.113)	20.0021*** [0] (0)
Panel B: Firm Characteristics									
Firm Size ($MM)	838	418	806	533	783	547	0.4195 [0.6749] (0.0027)	0.4736 [0.6359] (0.963)	0.9634 [0.3355] (0.0003)

Table 2
Continued

Variable	Active Family Firm (I)		Passive Family Firm (II)		Non-Family Firm (III)		Mean and Median Tests		
	Mean	Median	Mean	Median	Mean	Median	I–II	II–III	I–III
Firm Age	38	30	48	38	53	44	−4.8505*** [0] (0.0001)	−2.454** [0.0143] (0.0157)	−8.0974*** [0] ()
Firm Risk	0.587	0.570	0.527	0.478	0.528	0.483	4.4056*** [0] ()	−0.1132 [0.9099] (0.8458)	5.0507*** [0] ()
Leverage	0.167	0.117	0.163	0.134	0.196	0.188	0.3674 [0.7134] (0.8537)	−3.1894*** [0.0015] (0.0012)	−3.0008*** [0.0027] (0.0002)
Investment	0.084	0.068	0.090	0.060	0.083	0.061	−1.0476 [0.2951] (0.6628)	1.5589 [0.1193] (0.6828)	0.3373 [0.736] (0.8777)
Dividend Payout	0.006	0.000	0.010	0.002	0.006	0.000	−3.1419*** [0.0017] ()	2.6443*** [0.0083] ()	−0.4561 [0.6484] (0.1565)
ROA	0.081	0.086	0.077	0.083	0.079	0.083	0.4842 [0.6283] (0.9407)	−0.3097 [0.7569] (0.4473)	0.2744 [0.7838] (0.4808)
Tobin's Q	1.826	1.540	1.891	1.475	1.700	1.403	−0.8659 [0.3868] (0.8369)	2.8842*** [0.004] (0.0046)	2.227* [0.0261] (0.005)
GIM Index	7.99	8.00	8.94	9.00	9.17	9.00	−4.8697*** [0] ()	−1.1729 [0.2412] (0.3927)	−6.8996*** [0] ()
Entrenchment Index	1.73	2.00	2.17	2.00	2.53	3.00	−4.2792*** [0] ()	−4.0744*** [0.0001] (0.0003)	−9.9148*** [0] ()

Table 2
Continued

Variable	Active Family Firm (I)		Passive Family Firm (II)		Non-Family Firm (III)		Mean and Median Tests		
	Mean	Median	Mean	Median	Mean	Median	I–II	II–III	I–III
Board Size	7.56	7.00	8.38	8.00	7.87	8.00	−5.3589*** [0] (0)	4.0696*** [0.0001] (0.0008)	−2.5663** [0.0104] (0.0006)
Inside Director	0.27	0.25	0.22	0.20	0.19	0.17	5.1317*** [0] (0)	3.5876*** [0.0004] (0.0004)	9.8187*** [0] (0)
CEO Duality (0/1)	0.68	1.00	0.36	0.00	0.53	1.00	9.1772*** [0] (0)	−4.7587*** [0] (0)	5.1887*** [0] (0)
CEO on Compensation Committee (0/1)	0.03	0.00	0.01	0.00	0.00	0.00	2.3089** [0.0212] (0.0213)	0.2831 [0.7772] (0.777)	3.2988*** [0.001] (0.001)

This table presents means and medians of selected characteristics of subgroups of small public firms between 2001 and 2005. Raw scores are reported, and all variables are defined in Appendix. *p*-values of the mean (median) tests are reported in brackets (parentheses). The statistical significance at the 0.1, 0.05, and 0.01 levels of t-values of the mean tests are represented by symbols *, **, and ***, respectively.

Figure 1
Simple Illustration of Structural Equation Model
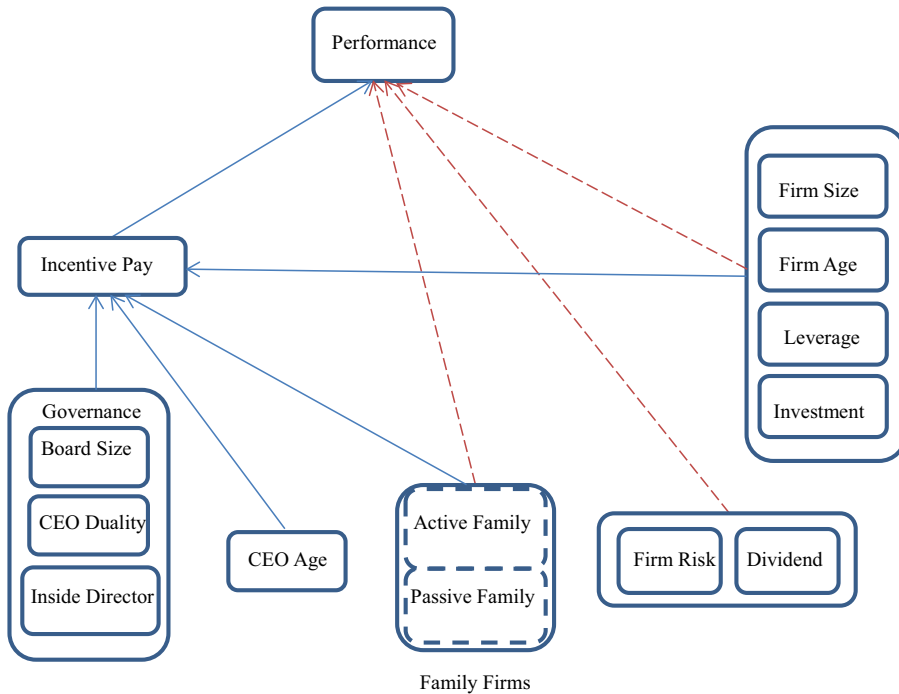
Models (1)–(7) use option-based incentive pay (option *delta* only) as the dependent variable. The reasons we adopt option-based incentive pay, rather than equity-based incentive pay (sum of stock *delta* and option *delta*), as our main measure of incentive pay are as follows.[5] First, we expect founding family CEOs to have the highest equity-based incentive pay because of the high degree of family ownership of such firms. This positive relationship may arise for control purposes more than incentive purposes. Moreover, downside risk entails greater misalignment of managerial incentives when executives receive options rather than straight equity (Chidambaran and Prabhala 2003). Therefore, option grants appear to reflect incentive pay more effectively than straight equity. Another benefit of using option-based incentive pay is that it enables us

to separate the effect of family influence from that of concentrated ownership. Model (1) is the baseline model, which does not take family influence and corporate governance into consideration. Models (2)–(4) include family influence and different measures of corporate governance. In addition to pooled regressions, we conduct subsample regressions in Models (5) and (6), based on CEO (family) ownership, to examine whether concentrated ownership has varying effects on the determinants of CEO incentive pay. Finally, Model (7) includes the square of ownership as an additional explanatory variable to test whether ownership effects are nonlinear.

At first glance, the explanatory power of the main models appears to be much greater than that of the baseline model, suggesting that family influence and corporate governance help

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[5]As a robustness check, we use equity-based incentive pay as one alternative measure of incentive pay.

explain CEO incentive pay. In general, portfolio price sensitivity is positively related to changes in shareholder wealth (although the relation is not statistically significant). This positive relationship, however, weakens once family involvement and/or corporate governance are taken into account. Moreover, when key control variables are accounted for, conditional on past performance, CEOs have similar incentive pay, regardless of family involvement. As shown in Model (1), ownership itself, independently of family involvement and corporate governance, is negatively correlated with incentive pay. This supports the notion that ownership creates incentives and thus reduces the need for incentive pay. Controlling for ownership and unconditional on past performance, option-based incentive pay is significantly lower for family firms than for nonfamily firms, with similar estimates (lower levels) for active and passive

Table 3
Family Firm and CEO Incentive Pay

	Option-based Incentive Pay						
	Baseline	Main			Ownership		
	(1)	(2)	(3)	(4)	(5): Low	(6): High	(7): Pooled
△(Shareholder Wealth)	0.072	0.025	0.028	0.033	0.051	0.067	0.037
	(1.07)	(0.27)	(0.31)	(0.37)	(0.41)	(1.48)	(0.4)
△(Shareholder Wealth)* Passive Family Firm		0.034	0.032	0.055*	0.07	0.029	0.055
		(1.32)	(1.18)	(1.68)	(1.47)	(1.42)	(1.54)
△(Shareholder Wealth)* Active Family Firm		0.055	0.049	0.064**	0.029	0.046	0.057
		(1.28)	(1.1)	(2.06)	(1.1)	(1.23)	(1.59)
Passive Family Firm		−0.189***	−0.167***	−0.122***	−0.162***	−0.063**	−0.1***
		(−8.21)	(−8.25)	(−4.35)	(−3.49)	(−2.6)	(−3.69)
Active Family Firm		−0.199**	−0.18*	−0.167*	−0.088*	−0.116	−0.186**
		(−2.31)	(−1.76)	(−1.96)	(−1.9)	(−1.14)	(−2.08)
CEO Age	−0.092**	−0.068*	−0.064**	−0.076**	−0.096***	−0.087*	−0.074**
	(−2.19)	(−1.79)	(−1.97)	(−2.23)	(−2.89)	(−1.71)	(−2.4)
CEO Equity-based Ownership	−0.111**	0.023	0.048	0.009	0.315***	−0.195**	1.002***
	(−2.26)	(0.36)	(0.75)	(0.15)	(9.53)	(−2.03)	(13.57)
CEO Equity-based Ownership^2							−1.012***
							(−7.14)
Firm Size	0.151***	0.24***	0.221***	0.213***	0.338***	0.132**	0.219***
	(4.53)	(6.4)	(5.83)	(7.8)	(20.9)	(2.25)	(6.47)
Firm Age	−0.126*	−0.181***	−0.175***	−0.178***	−0.224***	−0.1	−0.148**
	(−1.73)	(−3.21)	(−3.27)	(−2.61)	(−4.97)	(−1.2)	(−2.49)
Leverage	0.013	0.000	−0.004	−0.011	−0.072	0.012	−0.025
	(0.48)	(0.01)	(−0.14)	(−0.32)	(−1.39)	(0.21)	(−0.91)
Investment	0.129***	0.2***	0.192***	0.158***	0.137***	0.153***	0.145***
	(3.8)	(14.12)	(22.56)	(5.26)	(5.24)	(4.85)	(5.16)
GIM Index		0.046*					
		(1.73)					
Entrenchment Index			0.163***				
			(4.22)				
Board Size					−0.065***	−0.092**	−0.027	−0.058***
					(−2.98)	(−2.41)	(−1.16)	(−3.12)
Inside Director					−0.167***	−0.078	−0.178***	−0.129***
					(−4.1)	(−1.3)	(−4.53)	(−3.45)

Table 3
Continued

| | Option-based Incentive Pay | | | | | | |
| | Baseline | Main | | | Ownership | | |
	(1)	(2)	(3)	(4)	(5): Low	(6): High	(7): Pooled
CEO Duality				0.106***	0.049	0.062*	0.069***
				(4)	(1.52)	(1.8)	(3.15)
CEO on Compensation Committee				−0.034*	0.007	−0.047**	−0.032**
				(−1.96)	(0.52)	(−2)	(−2.04)
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.0355	0.0542	0.0612	0.0614	0.1118	0.0789	0.0838
Number of Observations	1,742	1,216	1,216	1,356	701	655	1,356

This table provides the standardized coefficient estimates for the Tobit regression of CEO incentive pay against the change in shareholder wealth while controlling for some executive- and firm-specific attributes. All control variables, except for the dummy variables, are winsorized at the 1 percent and 99 percent levels, respectively, and are defined in the Appendix. Low (Model 5) versus high (Model 6) refer to two separate regressions for the subsamples formed using the median ownership over the whole sample as the cutoff point. Industry fixed effects adopt 1-digit SIC code. Standard deviations are clustered at the 1-digit SIC level. t-values are reported in parentheses, and the symbols *, **, and *** represent statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

family firms. This finding supports H1. Meanwhile, managerial ownership itself is no longer related to incentive pay. Additionally, CEO age is negatively associated with incentive pay.

With respect to firm-specific control variables, our results show that larger firms with higher investment levels tend to have higher incentive pay, which is also observed in young firms with less debt. With regard to the relationship between corporate governance and incentive pay, our findings are mixed. On the one hand, the estimated coefficients for the GIM and Entrenchment indexes are positive for incentive pay. In other words, weaker minority shareholder protection is associated with higher incentive pay, which suggests that these two governance mechanisms are substitutes. On the other hand, smaller boards with greater independence (except in cases of CEO duality)—a mode of corporate governance typically viewed

as superior—are likely to implement higher incentive pay, which suggests that these mechanisms are complements. Hence, our results indicate that corporate governance is a complex system in which the underlying mechanisms cannot be simply described as substitutes or complements. In summary, when option portfolio price sensitivity is viewed as an incentive-alignment mechanism, our results suggest that both active and passive family firms have lower agency costs than nonfamily firms. This supports the notion that the classic ownership-manager conflict (Agency Problem I) in nonfamily firms is more costly than the conflict between family and nonfamily shareholders (Agency Problem II) in founder-CEO firms, a finding that is consistent with Villalonga and Amit (2006).

Although we find no linear relationship between managerial ownership and incentive pay when family presence is taken into account,

the relationship could be nonlinear. To examine this possibility, we form two subgroups based on different levels of ownership (low versus high, with median ownership over the whole sample providing the cutoff point) and conduct similar analyses. Interestingly, in Models (5) and (6), we find that the relationship between managerial ownership and option-based incentive pay is not symmetric. Ownership increases incentive pay in the low ownership subgroup, whereas it decreases incentive pay in the high ownership subgroup. This also shows that the negative overall relationship between ownership and incentive pay in Model (1) is driven by the high ownership subgroup. In Model (7), we find a concave relationship between managerial ownership and option-based incentive pay, as the estimate of ownership is positive, and the estimate of its square is negative.

To further investigate whether ownership creates value-enhancing incentives that reduce the need for value-enhancing pay incentives, we divide our sample into six subgroups based on varying degrees of family involvement and (managerial/family) ownership and conduct similar analyses for each of these groups. Table 4 provides standardized coefficient estimates for the Tobit regression of incentive pay in active family, passive family, and nonfamily firms, contingent on CEO ownership.

We focus here on the CEO equity-based ownership variable. In general, the results for family firms are similar to those for Models (5) and (6) in Table 3. In terms of absolute value, a CEO with high ownership tends to have high incentive pay, regardless of family presence.[6] However, for family firms, the incremental effect of ownership on incentive pay is negative when the CEO has high ownership and positive otherwise, as shown in Models (1)–(4). This asymmetric or nonlinear pattern appears to be more pronounced in passive family firms than in active family firms, perhaps reflecting effective monitoring by board members who are members of founding families. In Models (5) and (6), we do not observe this pattern in nonfamily firms, where the rela-

tionship between ownership and incentive pay appears to be unaffected by managerial ownership. In sum, our results suggest that high equity ownership by CEOs provides value-enhancing incentives. Equity ownership by CEOs thus appears to alleviate concerns about misaligned incentives or agency issues, resulting in lower incentive pay, especially in family firms and to a lesser degree in nonfamily firms. This finding supports H2.

CEO Incentive Pay and Performance

In this section, we examine how incentive pay in family firms affects performance or firm valuation while controlling for important determinants of both incentive pay and firm valuation. Following the SEM discussed above (Figure 1), Table 5 reports coefficient estimates representing the direct, indirect, and total effects of our variables of interest on firm performance.

Overall, incentive pay enhances firm performance. Therefore, value-enhancing incentive pay itself is effective *ex-post*. Interestingly, the indirect effect of family involvement via incentive pay is negative, offsetting the positive direct effect of family involvement on firm valuation. In other words, lower incentive pay set by families mediates the direct relationship between family involvement and firm performance compared with nonfamily firms. With regard to control variables, we find that managerial ownership does not affect performance. In addition, we find that firm size is positively associated with ROA but negatively associated with Q. Firm age, firm risk, and leverage are negatively related to firm performance. Corporate investment enhances Q, while higher dividend payout is associated with better firm performance.[7] Moreover, the total effect of family involvement on either ROA or Q is not significantly different from zero, suggesting that family presence is neither value enhancing nor detrimental to corporate performance. This finding also indicates that family firms have market valuations similar to those of nonfamily firms, after accounting for the mediating effect of incentive pay and controlling for key factors that drive firm valuation. Altogether, these results support H3.

[6]In both the high and low ownership groups, the level of incentive pay is lower among passive family firms than among both active family and nonfamily firms. These results are not tabulated but are available on request.

[7]Our two-stage-least-squares regression estimates for these control variables are similar to the SEM estimates, which are available on request.

Table 4
Family Firm, CEO Ownership, and Incentive Pay

	Option-based Incentive Pay					
	Active Family Firm		Passive Family Firm		Non-Family Firm	
	(1): Low	(2): High	(3): Low	(4): High	(5): Low	(6): High
Δ(Shareholder Wealth)	0.256***	0.117***	0.137***	0.232***	0.076	0.036
	(6.87)	(3.49)	(7.47)	(2.99)	(0.49)	(1.33)
CEO Equity-based Ownership	0.288***	−0.224***	0.368***	−0.345**	0.284***	0.224***
	(5.18)	(−3.83)	(6.21)	(−2.03)	(6.88)	(5.42)
CEO Age	0.129	−0.087*	−0.137	−0.252***	−0.006	−0.013
	(1.44)	(−1.65)	(−1.48)	(−5.05)	(−0.19)	(−0.13)
Firm Size	0.296*	0.14***	0.255***	−0.227**	0.396***	0.354***
	(1.79)	(3.51)	(5.12)	(−2.35)	(7.33)	(2.7)
Firm Age	−0.289**	−0.13***	−0.295***	0.087	−0.191**	0.108
	(−2.43)	(−2.94)	(−3.38)	(0.82)	(−2.56)	(0.52)
Leverage	−0.199*	0.008	0.006	0.193**	−0.123**	−0.374***
	(−1.89)	(0.17)	(0.07)	(2.3)	(−2.18)	(−6.85)
Investment	0.033	0.224***	0.17	−0.04	0.111**	0.158
	(0.24)	(6.97)	(1.41)	(−0.4)	(2.4)	(0.84)
Board Size	−0.26**	−0.036	0.046	−0.012	−0.174***	0.026
	(−2.07)	(−0.72)	(0.75)	(−0.1)	(−3.16)	(0.37)
Inside Director	−0.754***	−0.207***	−0.049	−0.271***	−0.043	0.033
	(−4.52)	(−4.18)	(−0.55)	(−5.42)	(−0.88)	(0.36)
CEO Duality	0.013	0.018	0.077	0.123	0.035	0.039
	(0.13)	(0.43)	(1.6)	(0.68)	(0.48)	(0.68)
CEO on Compensation Committee	−0.039	−0.051**	0.089**		−0.053***	0.029***
	(−1.33)	(−2.11)	(1.98)		(−6.23)	(3.94)

Table 4
Continued

	Option-based Incentive Pay					
	Active Family Firm		Passive Family Firm		Non-Family Firm	
	(1): Low	(2): High	(3): Low	(4): High	(5): Low	(6): High
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.5436	0.0993	0.1356	0.1956	0.1216	0.0844
Number of Observations	38	392	249	66	414	197

This table provides the standardized coefficient estimates for the Tobit regression of CEO incentive pay against the change in shareholder wealth while controlling for some executive- and firm-specific attributes. All control variables, except for the dummy variables, are winsorized at the 1 percent and 99 percent levels, respectively, and are defined in the Appendix. Low (Models 1, 3, 5) versus high (Models 2, 4, 6) refer to six separate regressions for the subsamples formed using the median ownership over the whole sample as the cutoff point. Industry fixed effects adopt 1-digit SIC code. Standard deviations are clustered at the 1-digit SIC level. t-values are reported in parentheses, and the symbols *, **, and *** represent statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

Table 5
Family Firm, CEO Incentive Pay, and Performance

	(1): ROA			(2): Tobin's Q		
	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
Option-based Incentive Pay	0.007***		0.007***	0.14***		0.14***
	(5.26)		(5.26)	(6.84)		(6.84)
Passive Family Firm	0.000	−0.002**	−0.001	0.128**	−0.035**	0.092
	(0.04)	(−2.07)	(−0.18)	(2.57)	(−2.3)	(1.53)
Active Family Firm	0.008	−0.003*	0.005	0.116***	−0.065**	0.05
	(0.65)	(−1.9)	(0.35)	(3.05)	(−2.09)	(0.78)
CEO Age		−0.008***	−0.008***		−0.17***	−0.17***
		(−2.99)	(−2.99)		(−3.4)	(−3.4)
CEO Equity-based Ownership		0.000	0.000		0.004	0.004
		(0.36)	(0.36)		(0.36)	(0.36)
Firm Size	0.017***	0.002***	0.019***	−0.177***	0.046***	−0.131*
	(3.55)	(3.52)	(4.02)	(−2.65)	(3.9)	(−1.95)
Firm Age	−0.023***	−0.003**	−0.026***	−0.214***	−0.052**	−0.266***
	(−3.21)	(−2.14)	(−3.14)	(−3.33)	(−2.24)	(−3.18)
Firm Risk	−0.158***		−0.158***	−0.552		−0.552
	(−6.8)		(−6.8)	(−1.5)		(−1.5)
Leverage	−0.086***	−0.003*	−0.089***	−1.117***	−0.063	−1.18***
	(−2.64)	(−1.65)	(−2.89)	(−4)	(−1.6)	(−4.46)
Investment	−0.025	0.013	−0.011	3.037***	0.272	3.309***
	(−0.3)	(1.48)	(−0.15)	(4.79)	(1.53)	(4.66)
Dividend Payout	0.511**		0.511**	7.06***		7.06***
	(2.38)		(2.38)	(2.96)		(2.96)
Board Size		−0.000*	−0.000*		−0.005	−0.005
		(−1.69)	(−1.69)		(−1.64)	(−1.64)
Inside Director		−0.017***	−0.017***		−0.35***	−0.35***
		(−5.05)	(−5.05)		(−5.26)	(−5.26)

Table 5
Continued

	(1): ROA			(2): Tobin's Q		
	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
CEO Duality		0.003***	0.003***		0.051***	0.051***
		(3.25)	(3.25)		(3.26)	(3.26)
Equation-level R2: Incentive Pay		0.127			0.126	
Equation-level R2: Performance		0.216			0.282	
Model R2		0.302			0.343	
Number of observations		1,756			1,756	

Structural equation model (SEM) estimates are reported. The total effect is the sum of the direct effect (related to performance) and the indirect effect (related to performance through incentive pay). All control variables, except for the dummy variables, are winsorized at the 1 percent and 99 percent levels, respectively, and are defined in the Appendix. z-values are reported in parentheses, and the symbols *, **, and *** represent statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

Table 6
Robustness Checks

Panel A: Family Firm and CEO Incentive Pay

| | Option-based Incentive Pay | | | | | |
| | Main | | | Ownership | | |
	(1)	(2)	(3)	(4): Low	(5): High	(6): Pooled
Δ(Shareholder Wealth)	0.045	0.046	0.051	0.062	0.081*	0.057
	(0.46)	(0.48)	(0.55)	(0.48)	(1.67)	(0.57)
Δ(Shareholder Wealth)*	0.032	0.028	0.03	0.035	0.025	0.026
Passive Family Firm	(1.19)	(1.09)	(1.19)	(0.96)	(0.81)	(1.05)
Δ(Shareholder Wealth)*	0.063	0.06	0.065*	0.022	0.055	0.054
Active Family Firm	(1.29)	(1.17)	(1.66)	(0.96)	(1.06)	(1.2)
Passive Family Firm	−0.178***	−0.152***	−0.145***	−0.143***	−0.017	−0.09***
	(−6.39)	(−6.06)	(−5.43)	(−3.95)	(−0.57)	(−3.38)
Active Family Firm	−0.396***	−0.372***	−0.371***	−0.047	−0.218	−0.281**
	(−5.57)	(−4.23)	(−5.42)	(−1.26)	(−1.47)	(−2.59)
CEO Age	−0.078**	−0.076**	−0.077**	−0.089*	−0.088*	−0.077***
	(−2.12)	(−2.29)	(−2.6)	(−1.77)	(−1.86)	(−2.63)
CEO Equity-based	0.214***	0.231***	0.222***	0.293***	−0.084	0.955***
Ownership	(3.64)	(3.97)	(4.11)	(8.46)	(−0.52)	(6.52)
CEO Equity-based						−0.816***
Ownership^2						(−3.4)
Firm-specific Control Variables,						
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.0608	0.0650	0.0644	0.1063	0.0716	0.0785
Number of Observations	1,194	1,194	1,227	658	569	1,227

Panel B: Family Firm, CEO Incentive Pay, and Performance

	(1): ROA	(2): Tobin's Q
Lagged Performance ($t-1$)	0.585***	0.178*
	(4.59)	(1.88)
Option-based Incentive Pay	−0.003	0.275*
	(−0.22)	(1.94)
Passive Family Firm	−0.033	−0.028
	(−1.12)	(−0.07)
Active Family Firm	−0.020	0.350
	(−0.49)	(0.86)
CEO Age	−0.225*	0.320
	(−1.97)	(0.26)
CEO Equity-based Ownership	−0.006	−0.519**
	(−0.37)	(−2.59)
Firm-specific Control Variables	Yes	Yes
AR(1) test (p-value)	0.001	0.001

Table 6
Continued

Panel B: Family Firm, CEO Incentive Pay, and Performance		
	(1): ROA	**(2): Tobin's Q**
AR(2) test (*p*-value)	0.613	0.696
Hansen test (*p*-value)	0.332	0.289
Difference-in-Hansen test (*p*-value)	0.901	0.197
Number of Observations	1,101	1,101

Panel A provides the standardized coefficient estimates for the Tobit regression of CEO incentive pay against the change in shareholder wealth while controlling for some executive- and firm-specific attributes. The two family dummy variables are fitted values predicted by logit regressions with a set of explanatory variables. Low (Model 4) versus high (Model 5) refer to two separate regressions for the subsamples formed using the median ownership over the whole sample as the cutoff point. Following Table 3, firm-specific control variables include firm size, firm age, leverage, investment, GIM Index, Entrenchment Index, board size, inside director, CEO duality, and CEO on compensation committee. Industry fixed effects adopt 1-digit SIC code. Standard deviations are clustered at the 1-digit SIC level. Panel B reports GMM estimates. Following Table 5, firm-specific control variables include firm size, firm age, firm risk, leverage, investment, dividend payout, board size, inside director, and CEO duality. All control variables, except for the dummy variables, are winsorized at the 1 percent and 99 percent levels, respectively, and are defined in the Appendix. t-values are reported in parentheses, and the symbols *, **, and *** represent statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

Sensitivity Analyses

In this section, we conduct robustness checks of the incentive pay analysis (H1 testing) and the performance analysis (H3 testing) by applying alternative estimation models.

First, one concern regarding the relationship between family presence and incentive pay is possible reverse causality. For example, family members might only be appointed to CEO positions in firms with particular pay packages, in which case, causality would run from incentive pay to family control. To address this endogeneity concern, we follow the two-stage strategy employed by Pindado, Requejo, and de la Torre (2012) in the context of dividend policy. Specifically, we run first-stage logit regressions of our sample for each year from 2001 to 2005 to estimate the probability that a firm is family-controlled. Consistent with Pindado, Requejo, and de la Torre (2012), we use ownership, dual share class, firm size, firm risk, and Q as explanatory variables. We then estimate the empirical specifications in the incentive pay models (Models (2)–(7) in Table 3) using the fitted family dummies[8] in the Tobit regressions. Similarly to Table 3, Panel A in Table 6 provides standardized coefficients for the determinants of CEO incentive pay, estimated by a Tobit regression. We do not report estimates of the firm-specific control variables for simplicity.

Overall, our main results hold under this alternative estimation method. When we control for reverse causality, the explanatory power of the main models (Models (1)–(3)) is slightly higher than Models (2)–(4) in Table 3. The estimates of the two family dummy variables, our main variables of interest, have similar values and the same signs as the estimates presented in Table 3. The nonlinear or concave relationship between managerial ownership and incentive pay also remains.

Second, we use a dynamic panel generalized method of moments (i.e., system GMM) to

[8]Two separate logit regressions and one multinomial logit regression all yield the same fitted values.

replicate the performance analysis in the previous section. Specifically, we follow Wintoki, Linck, and Netter (2012) in using a dynamic GMM estimator to alleviate endogeneity concerns, which are rampant in corporate governance research, i.e., unobserved heterogeneity and simultaneity. The system GMM model potentially helps us estimate the governance-performance relationship while simultaneously controlling for past performance and fixed-effects. Including past performance in the data generating process accounts for the dynamic aspects involved. At the same time, the fixed-effects capture time-invariant unobservable heterogeneity that may characterize such a relationship. Panel B in Table 6 reports the GMM coefficient estimates for our variables of interest, the results of the specification tests, and the results of a test of the exogeneity of a subset of our instruments.[9] We do not report estimates of the firm-specific control variables for simplicity.

The system GMM estimates suggest that incentive pay increases Q but not ROA. Thus, incentive pay effectively enhances market valuation but not accounting or realized performance after some endogeneity issues in the model have been addressed. The differences in performance between family and nonfamily firms are not statistically significant, a finding that is consistent with our main results for the previous structural models. Overall, family firms and nonfamily firms exhibit similar performance after controlling for important determinants such as past performance and fixed-effects. We cannot reject the hypothesis that our instruments are valid because the *p*-value for the Hansen test of over-identification is above the 10 percent threshold in all four model specifications.

As a final part of the sensitivity analyses, we use equity-based incentive pay as an alternative measure of incentive pay to test the robustness of our findings. Basically, our results are qualitatively the same (not tabulated and available on request). One main difference is that, unconditional on past performance, equity-based incentive pay is highest among active family firms and lowest among passive family firms. This is not surprising, as family CEOs own substantial equity stakes in family-controlled firms, likely for the control purposes as noted before. In addition, CEO age is positively associated with equity-based incentive pay. Lastly, the indirect effect of active family firms via incentive pay is positive, although the total effect on performance or firm valuation is not significantly different from zero.

Discussion and Implications

In this paper, we have revisited agency theory and examined the relationship between founding families and agency costs via the design of CEO compensation. Rather than the absolute level of CEO compensation, we have focused primarily on the option *delta* because it more accurately captures the degree of incentive alignment between managers and shareholders. Although family control is one means of solving the conflict of interest between ownership and control, it creates another agency problem through the private benefits of control or the potential expropriation of minority shareholders. CEO compensation is one potential remedy for the dual agency problems. We posit that family firms (run either by the families or outside CEOs) are less prone to these problems than firms without family control or involvement. This conjecture predicts lower CEO incentive pay in family firms than in nonfamily firms.

We find that, when stock holdings are excluded, both active and passive family firms have lower incentive pay than nonfamily firms, even after controlling for the effects of important CEO- and firm-specific factors. This suggests that, consistent with our conjecture, firms under family control are less subject than other firms to dual agency problems, a fact that manifests itself in lower incentive pay among family-controlled firms. Also consistent with our conjecture, we do not observe significant differences in incentive pay between active and passive family firms. Thus, both types of family firms evidently have comparable agency costs, in spite of different sources of agency costs. In addition, we find a nonlinear (specifically, a concave) relationship between managerial ownership and incentive pay.

Moreover, without considering family presence or involvement, executive ownership is negatively related to incentive pay because ownership itself creates incentives and thus reduces the need for incentive-alignment mechanisms. Once family involvement is taken into account,

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[9]We use xtabond2 in Stata to generate the system GMM estimators and the test results.

however, ownership no longer matters. This suggests that family control consists of more than concentrated ownership. Nonetheless, this nonresult is due to the offsetting forces from different ownership subgroups. More specifically, executive ownership has different incremental effects on incentive pay, depending on the ownership stakes of CEOs—negative for high ownership CEOs and positive for their low ownership CEOs, especially in family firms. Therefore, executive ownership weakens the need for incentive alignment only when ownership reaches a certain threshold. Taken together, our findings suggest that, given family control, managerial ownership reduces the need for incentive pay only when the CEO already has a sufficient equity stake. Furthermore, this nonlinear relationship generally holds irrespective of the degree of family involvement but with different intensities depending on firm type. Specifically, the relationship appears to be more pronounced for (passive) family firms than for nonfamily firms, findings that are consistent with the predictions of the dual agency cost hypothesis.

Other things equal, higher agency costs should result in lower firm performance or valuation. Using a simultaneous equation framework, we find that incentive pay is value-enhancing. In addition, there appears to be no significant relationship between degree of family involvement and operating performance (ROA) and market valuation (Q) after controlling for important factors that potentially explain both performance measures. This is because the direct and indirect effects (through incentive pay) on both measures have opposing signs that cancel each other out, a finding that accords with our hypothesis that incentive pay should provide a remedy for agency issues. On the one hand, nonfamily firms may experience higher agency costs than family firms because the classic ownership-manager conflict in nonfamily firms is more costly than the conflict between family and nonfamily shareholders in active family firms. On the other hand, passive family firms might have lower agency costs as a result of effective family monitoring. Our findings are in line with the extant literature on performance of family firms (e.g., Anderson and Reeb 2003; Barontini and Caprio 2006; Maury 2006; Villalonga and Amit 2006).

In summary, we find that family firms and nonfamily firms have different corporate governance structures. Specifically, we find that active family firms have better protection for minority shareholders and smaller boards but less board independence. These results indicate that corporate governance is a complex system in which the mechanisms involved are neither simple substitutes nor complements. In addition, incentive pay in family-controlled firms is lower than in nonfamily-controlled firms because the former are less subject to dual agency problems and thus have lower agency costs. Higher equity ownership reduces the need for value-enhancing incentive pay because ownership itself provides incentives that reduce the need for incentive alignment. Through pay incentives, family presence has a mediating effect on the relationship between family control and performance. Higher incentive pay, adopted by nonfamily firms due to higher agency costs, effectively enhances performance, resulting in performance levels similar to those of family firms. Overall, our study shows that the incentive pay of family firms differs from that of nonfamily firms, reflecting different agency costs that correspond to varying degrees of family involvement and different sources of agency costs. We do not observe differences in performance between family and nonfamily firms once we account for differences in incentive pay adopted by these firms.

Conclusion

To conclude, family firms are a prevalent and ubiquitous organizational form in the financial landscape. Owing to differing considerations and preferences of families, decision-making processes within firms can differ, leading to differences in firm value. Our study provides evidence that family firms experience different kinds of agency cost, which are manifested in different CEO incentive compensation policies. The paper also demonstrates the importance of CEO family affiliation, in addition to family ownership, in classifying family firms. We find that firms with differing degrees of family involvement implement differing executive equity-based compensation policies. With respect to option-based incentive pay, active and passive family firms alike differ from nonfamily firms. Nevertheless, similar levels of such pay observed in both types of family firm suggests that the two different types of firm experience different magnitudes and/or types of agency costs. As a result, research based on the standard family firm classification, which

considers only family ownership, may lead to spurious relationships and implications.

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Appendix

Variable Labels and Definitions

Variable	Definition	Data Source
CEO Characteristics		
Cash Compensation	Total current compensation comprised of salary and bonus	ExecuComp item *total_current*
Total Compensation	Total compensation (salary + bonus + other annual- + restricted stock grants + LTIP payouts + all other + value of option grants)	ExecuComp item *tdc1*
Equity-based Incentive Pay	The change in the value of CEO's stock holding and option portfolio in response to a 1 percent change in the firm's stock price, scaled by natural logarithm	
Option-based Incentive Pay	The change in the value of CEO's option portfolio (only) in response to a 1 percent change in the firm's stock price, scaled by natural logarithm	
CEO Age	Age of CEO, scaled by natural logarithm	ExecuComp item *age*
CEO Equity-based Ownership	Percentage of CEO equity holding, including options and equity holding of family members, if applicable, scaled by natural logarithm	Proxy statements (DEF 14A)
CEO Stock Ownership	Percentage of CEO shareholding (excluding options and equity holding of family members)	ExecuComp item *shrown_excl_opts* scaled by Compustat item *shrsout*
Firm Characteristics		
Ownership Structure		
Active Family Firm	A dummy variable that is assigned to one if a firm is controlled and managed by the founding family member(s), and zero otherwise	Proxy statements (DEF 14A)
Passive Family Firm	A dummy variable that is assigned to one if a firm is controlled but not managed by the founding family member(s), and zero otherwise	Proxy statements (DEF 14A)
Nonfamily Firm	A dummy variable that is assigned to one if a firm is neither controlled nor managed by the founding family member(s), and zero otherwise	Proxy statements (DEF 14A)

Appendix
Continued

Variable	Definition	Data Source
Corporate Governance		
GIM Index	Follows Gompers, Ishii, and Metrick (2003)	RiskMetrics Governance Legacy item *gindex*
Entrenchment Index	Follows Bebchuk, Cohen, and Ferrell (2009)	RiskMetrics Governance Legacy items *cboard* *+supermajor+ppill* *+goldenparachute* *+lachtr+labylw*
Board Size	Number of directors on the board, scaled by natural logarithm	RiskMetrics Directors Legacy
Inside Director	The percentage of inside directors on the board	RiskMetrics Directors Legacy
CEO Duality	A binary variable that equals one when CEO serves as company chairman	RiskMetrics Directors Legacy
CEO on Compensation Committee	A dummy variable that is assigned to one if CEO serves on the compensation committee, and zero otherwise	RiskMetrics Directors Legacy
Others		
ROA	A ratio of earnings before interest and taxes scaled by total assets	Compustat items *ebit/at*
Tobin's Q	Market-to-book ratio, defined as total assets plus the market value of common stock less the sum of book value of common equity and balance sheet deferred taxes scaled by total assets	Compustat items *(at+csho*prcc_f-ceq-txdb)/at*
Firm Size	Annual sales, scaled by natural logarithm	Compustat item *sale*
Firm Age	Difference between the founding year and the data year, scaled by natural logarithm	Online sources (e.g., www.funduniverse.com)
Firm Risk	Standard deviation volatility over the past 60 months	Compustat item *bs_volatility*
Leverage	Year-end debt scaled by total assets	Compustat items *(dltt+dlc)/at*
Investment	Sum of capital and R&D expenditures scaled by total assets	Compsutat items *(capx+xrd)/at*
Dividend Payout	Annual cash dividends scaled by total assets	Compustat item *dv/at*
Shareholder Wealth	Market value of equity	Compustat items *csho*prcc*

The Role of Political Intelligence in Firms' Export Decisions During the Euro Crisis
by Andrew Barron, Peter Hultén, and Vladimir Vanyushyn

Inspired by the literatures on internationalization and absorptive capacity, we develop a model exploring how small firms—during crises—acquire and apply political information to export decisions. We test our model using data collected during the 2012 Eurozone crisis from a sample of 440 British, French, and Swedish SMEs. Findings indicate that firms dependent on the Eurozone for exports and heavily impacted by the crisis engaged in frequent political monitoring. In turn, frequent monitoring leads to the development of formal routines for exploiting political information. Firms with the most formal routines sought new export opportunities beyond the Eurozone. In contrast to previous research into small-firm internationalization, our study stresses the significance of "shortcut" searching activities, non-market information, and firms' decisions to reduce prior investments in export markets.

Introduction

As business becomes progressively international, firms increasingly search for export sales opportunities beyond domestic markets—not just to expand, but also to ensure their survival (e.g., Cadogan, Diamantopoulos, and Siguaw 2002). Against this background, the ability of firms to manage information related to export markets is of prime importance (e.g., Leonidou, Katsikeas, and Coudounaris 2010; Souchon et al. 2003). Information management becomes especially important in international settings where firms may encounter completely new and changing environments (e.g., Czinkota 2000). This argument holds especially true in the context of the Euro crisis during which firms have been confronted with high levels of political uncertainty in their export markets.

Indeed, as the Euro marked its ten-year introduction in 2012, the Eurozone was in the grips of political turmoil. Governments in Greece, Portugal, and Ireland requested financial assistance from the European Union (EU) and the International Monetary Fund (IMF). Policymakers in Italy and Spain considered similar options. Standard & Poors downgraded its credit ratings of nine Eurozone countries, resulting in France losing its much-valued AAA rating. This prompted fears of contagion and concerns that the crisis was spreading to the Eurozone's core. Many contradictory and inconsistent political responses to the crisis were proposed (Dinan 2011). In Brussels, a sense of political confusion reigned as Commissioners and heads of state and government struggled to agree on solutions to the crisis. The crisis also brought about significant political turbulences and shifts of power in individual Member States.

We exploited these exceptional political circumstances to investigate aspects of export

Andrew Barron is Associate Professor in the Department of Marketing/International Business at University of Toulouse/Toulouse Business School.

Peter Hultén is Associate Professor in the Department of Marketing at the Umeå School of Business and Economics.

Vladimir Vanyushyn is Associate Professor in the Department of Marketing at the Umeå School of Business and Economics.

Address correspondence to: Andrew Barron, University of Toulouse, Toulouse Business School, 20 Boulevard Lascrosses, Toulouse, France 31068. E-mail: a.barron@tbs-education.fr.

behavior that can be examined only when specific economic and political problems present themselves. We aimed to explore how managers of small and medium-sized enterprises (SMEs) in France, Sweden, and the United Kingdom kept informed of political developments in their export markets in the Eurozone, and to expose whether the political information they acquired incited them to explore new export opportunities. Our focus on SMEs is significant as such firms typically lack resources to gather the export information (Riddle and Gillespie 2003) that could assist them in managing turbulent foreign environments in pursuit of international expansion (Souchon and Durden 2002). Our decision to focus on France, Sweden, and the United Kingdom is significant given that much of the existing research into the exporting is based on single country studies that ignore the potential impact of cross-county variations in environmental conditions of exporting behaviour (e.g., Leonidou and Katsikeas 1996; Serra, Pointon, and Abdou 2012).

Our study makes specific contributions to extant research into small-firm internationalization. First, previous scholarly enquiries stress the importance of experiential learning through ongoing activities in internationalization. We recognise, however, that previous international experience may be less relevant for firms operating in unstable business environments (e.g., Santangelo and Meyer 2011). We thus train our attention specifically on how firms, during crises, use shortcuts (e.g., Huber 1991) such as searching and scanning to acquire information on rapidly changing developments in export markets.

Second, we emphasise the role of non-market, political information in firms' export decision-making processes. This is important since prior research tends to stress the role of market information (such as demand and supply conditions) in firms' export decisions. We, by contrast, acknowledge that firms' political environments can be subject to constant change during periods of crisis (e.g., Barron, Hultén, and Hudson 2012), necessitating continuous, dynamic efforts to monitor political developments (e.g., Oliver and Holzinger 2008). Finally, we explicitly explore whether firms—when facing crisis situations in export markets—take critical stock of previous internationalization decisions and reduce their earlier investments or even cease operations in those markets. As such, we contribute to scholarly work (e.g., Benito 2005; Nachum and Song 2011; Santangelo and Meyer 2011) criticizing the prescriptive, deterministic nature of stage models of internationalization by highlighting that firms can decrease their commitment in export markets when business conditions deteriorate.

Our paper begins with a critique of extant internationalization research. We then present the conceptual framework that guided our empirical work. Inspired by absorptive capacity research, our model enables us to explore the export information acquisition and exploitation activities of firms during the Euro crisis in terms of a beginning-to-end process, including their antecedents and outputs. We interrogate hypotheses derived from our framework using primary data collected from a sample of 440 SME managers from our three focal countries in 2012. We round off by discussing the key findings of our research and suggesting avenues for future research.

Prior Research

Internationalization, defined as "the process of increasing involvement in international operations" (Welch and Luostarinen 1999, p. 84), has received considerable scholarly and policymaker attention. While scholars have historically focused on understanding the internationalization activities of multinational enterprises (MNEs), the specific internationalization activities of SMEs have recently attracted broader interest (e.g., Armario, Ruiz, and Armario 2008). Theoretically, SME-focused literature has emphasized stage models of internationalization, with the Uppsala model and innovation-related models exerting considerable influence on mainstream studies (Chetty 1999; Clark, Pugh, and Mallory 1997; Eriksson et al. 2000; Glas et al. 1999; Knight and Liesch 2002; McAuley 1999; Morgan and Katsikeas 1997; Peng 2001; Vida and Fairhurst 1998).

Developed by Johanson and Vahlne (1977), the Uppsala model is inspired by the behavioral theory of the firm (Cyert and March 1963) and Penrose's theory of knowledge and change in organizations (Penrose 1959). It suggests that firms increase their international involvement through small, incremental steps within the foreign markets where they currently operate. Firms will then enter new, more psychically distant markets characterized by differences in languages, education, business practices, and so on. Accumulated international knowledge drives internationalization by influencing firms' choices of entry models and country markets.

Innovation-related models are influenced by the work of Rogers (1962) whereby firms consider each new stage of internationalization to be

an innovation (e.g., Gankema, Snuif, and Zwart 2000). Leonidou and Katsikeas (1996) note that such models involve three generic stages: the pre-export, initial export, and advanced export stages. Compared to the Uppsala model, innovation-related models focus more on factors evoking managers' attention to export opportunities and how positive exporting experiences changes managers' view on exporting to more distant countries. However, both the Uppsala and innovation models share commonalities insofar as their main focus is trained on the incremental nature of internationalization processes, in terms of both activities and deployment of resources.

Despite their acceptance, stage models of internationalization have also been criticized (e.g., Andersen 1993; Bell 1995; Crick and Jones 2000; Reid 1983; Turnbull 1988). We draw attention to three specific critiques that are relevant to our study. The first relates to the role of experience in the internationalization process. For some (e.g., Blomstermo et al. 2004), experience is a key driving force behind firm's internationalization efforts. It leads to better decision-making and a greater ability to recognize growth opportunities (e.g., Hohenthal, Johanson, and Johanson 2003). However, others (e.g., Hadjikani and Johanson 1996; Johanson 2008; Santangelo and Meyer 2011) counter-argue that experience is less helpful in emerging markets, where firms operate in rapidly changing and uncertain business environments.

Inspired by these critiques, we question whether experience can sufficiently prepare internationally active firms for dealing with the unforeseeable disturbances that characterized the Euro crisis. For example, it is doubtful that exporting firms would have acquired the experience necessary to address the business challenges stemming from the unique negative growth cycle experienced by the Greek economy following austerity measures introduced to restore the country's fiscal balance (e.g., OECD 2011). Instead, firms might have been more reliant on other shortcuts (e.g., Huber 1991) to obtain timely information on such developments.

Our second criticism of stage models refers to the type of information that drives firms' internationalization. Following Carlson (1974) and Johanson and Vahlne (1977), extant literature tends to assume that internationalization decisions are based on market information, including demand and supply conditions and the competitive landscape. Less attention is given to understanding how such decisions are impacted by information about non-market, political environments. In fact, prior research (e.g., Julien and Ramangalahy 2003; Souchon and Durden 2002) suggests that internationally active firms consider political environments to be relatively stable and of minor strategic importance.

Other scholars have recently begun to consider the role of institutional knowledge in the internationalization process. Eriksson et al. (1997) and Hadjikhani and Thilenius (2005) suggest that successful internationalization depends on information about political decision-making and political systems in foreign markets. Such political information is particularly important during crises when firms' political environments are subject to constant change (e.g., Barron, Hultén, and Hudson 2012) and require continuous, dynamic monitoring efforts (e.g., Oliver and Holzinger 2008). The political turmoil that accompanied the Euro crisis—not just in Brussels but also in individual EU member states—suggests that international managers had good reason to consider the political environments of their overseas markets to be unstable and thus of considerable strategic importance to internationalization decisions.

A third criticism of the stage models of internationalization centers on their prescriptive nature. Stage models are deterministic insofar as they view the internationalization process as the result of a series of sequential steps, beginning with low-risk, low-commitment exporting strategies in psychically close markets and culminating in higher risk, higher commitment more direct entry strategies in more psychically distant markets (e.g., Forsgren 2002; Melin 1992). There is an underlying assumption that, when faced with problems in a particular overseas market, firms will seek to learn more about their actual business in that market rather than seeking out new alternatives (e.g., Forsgren 2002). This focus has discouraged researchers from investigating whether firms, when faced with problems in export markets, take critical stock of previous internationalization decisions and reduce their earlier investments or even cease their international operations.

Exceptions exist: some scholars have investigated whether and why managers choose to reduce their commitments to or exit foreign markets (e.g., Benito 2005; Benito and Welch 1997; Hadjikhani and Johanson 1996; Nachum and Song 2011; Santangelo and Meyer 2011). Johanson and Vahlne (2009) addressed the alleged deterministic character in the extended

Figure 1
Conceptual Model
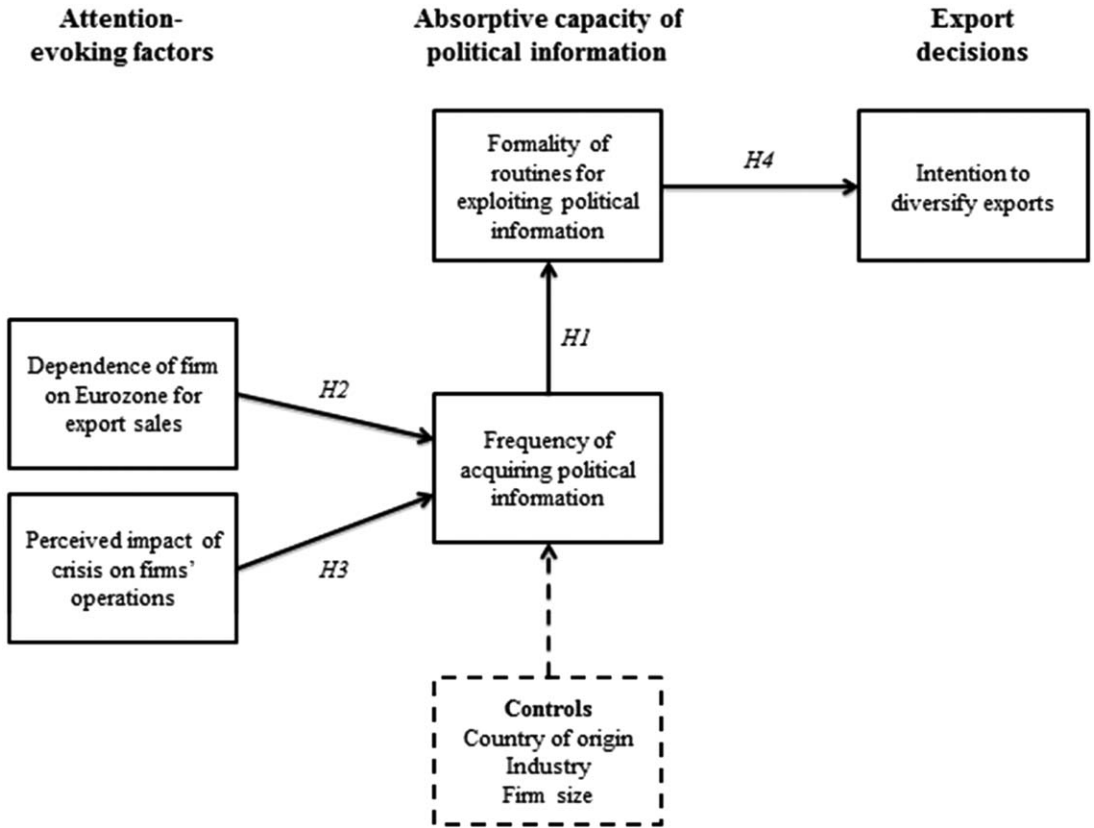
version of their original Uppsala model, clarifying that firms may decrease commitment in foreign markets if performance or business prospects deteriorate. Inspired by this emergent work, we contend that crisis situations, such as the one in the Eurozone, may affect managers' export diversification intentions since being too dependent on the markets within the Eurozone might be perceived as too commercially risky.

Research Model and Hypotheses

In response to concerns raised against the existing literature, we present in Figure 1 a conceptual model for exploring firms' intentions to diversify their export activities in the face of political crises in their export markets. Adopting an absorptive capacity (AC) perspective, it stresses how firms acquire and exploit informa-

tion about political developments in foreign markets. Of particular importance are the frequency with which firms acquire political information, and the formality of their routines for exploiting that information when making export decisions. Without claiming to be exhaustive, the model enables us to explore the information acquisition and exploitation activities of firms as a beginning-to-end process, including their antecedents and outputs. In terms of antecedents, it considers triggering cues that may stimulate the acquisition of political information during crises. We include dependence on the Eurozone for export sales and firms' perceived impact of the Euro crisis on their business operations as two variables that could stimulate firms' information gathering activities during crisis periods. In terms of outputs, our model suggests that the information exploitation activities of firms should, in turn, link directly to managers'

intentions to diversify their export markets. Below, we unpack the constructs and inter-linkages in our model and develop hypotheses for empirical testing.

Absorptive Capacity of Political Information

At the center of our model lies the concept of absorptive capacity (AC)—the ability of firms to recognize the value of new information and apply it to commercial ends (Cohen and Levin-thal 1990). Originally developed to explain innovation processes, AC has been shown to be applicable to firms' internationalization strat-egies (e.g., Andersen 1993; Cavusgil 1984; Jones 1999; Petersen, Pedersen, and Lyles 2008). We understand AC as a series of learning processes resulting from developments in firms' knowl-edge environments and managerial actions (e.g., Jansen, Van Den Bosch, and Volberda 2005; Lane, Koka, and Pathak 2006; Lichtenthaler 2009; Zahra and George 2002). Specifically, we consider AC involves information acquisition activities and organizational routines that enable the exploitation of that information.

Acquisition—also called intelligence genera-tion (e.g., Kohli and Jaworski 1990) environ-mental scanning (e.g., Aguilar 1967), or market information generation (Cadogan, Souchon, and Procter 2008)—refers to firms' capabilities to gather operation-critical information about their external environments (e.g., Clark and Fujimoto 1991; Kim 1997; Zahra and George 2002). An important aspect of acquisition is frequency. Indeed, how frequently firms collect information about events in their markets can vary: some engage in sporadic while others in more contin-uous environmental monitoring (e.g., Cadogan, Souchon, and Procter 2008).

Mainstream scholars stress how frequently firms acquire information about economic devel-opments in their immediate market environments (e.g., Julien and Ramangalahy 2003; Souchon and Durden 2002). Few investigate how they acquire information about more remote political environments (e.g., Frynas and Mellahi 2003). In fact, research (e.g., Brush 1992; Daft, Sormunen, and Parks 1988; Smeltzer, Fann, and Nikolaisen 1988) suggests that firms gather information on their political environments less frequently because these environments change less rapidly than their market environments. However, firms operations are increasingly dependent on their ability to manage non-market forces (e.g., Baron 1995). Especially during crisis periods, firms'

political and regulatory environments can be sub-ject to constant change and instability (e.g., Bar-ron, Hultén, and Hudson 2012).

Such political instability was particularly observable during the Eurozone crisis. At the EU level, political responses to the crisis were incon-sistent. An acute sense of political paralysis reigned over Brussels, with seemingly little agree-ment on proposals capable of navigating the Eurozone to calmer economic waters (e.g., OECD 2012). Within the Member States, the crisis caused sudden power shifts in several countries (e.g., Bergsten and Kirkegaard 2012). As per Oliver and Holzinger (2008), we argue that such devel-opments require managers to monitor their non-market, political environments and acquire infor-mation that helps them generate future value or protect current value from future loss or erosion.

Our model also emphasizes a second impor-tant component of AC—the exploitation of information, or how firms incorporate acquired knowledge into their organizational operations for commercial objectives (Cohen and Levinthal 1990). Exploitation is directly linked to acquisi-tion: firms cannot exploit information without having first acquired it. However, they might not have the formal capabilities to exploit infor-mation they have acquired (Zahra and George 2002). Our model trains attention on the formal-ity of the routines (e.g., Kohli and Jaworski 1990) used by firms to incorporate information into their operations. The formality of such rou-tines varies across firms (e.g., Cadogan, Sou-chon, and Procter 2008; Petersen, Pedersen, and Lyles 2008). Firms can, however, develop such routines cumulatively (Cohen and Levinthal 1990), suggesting that the frequency of prior acquisition efforts is crucial to this development process. Moreover, as Figueira-de-Lemos, Johan-son and Vahlne (2011) note, the more informa-tion that internationally active firms acquire, the greater their perception of the lack of informa-tion, which in turn can lead to more frequent acquisition and exploitation of information.

Based on these arguments, we assume that firms' abilities to value political information and apply it to commercial ends are dependent on both the acquisition and exploitation of informa-tion, and that firms regularly engaged in acquir-ing information will over time accumulate formal processes for exploiting that information. We thus first hypothesized that:

H1: Frequency of acquisition of political infor-mation is positively associated with the

development of formal routines for exploiting political information.

Attention Evoking Factors

Our model also considers antecedents of firms' information-acquisition activities. Information acquisition is driven by triggers—events inciting firms to respond to specific stimulus factors (e.g., Walsh and Ungson 1991; Winter 2000). These can induce firms' to invest more time in seeking information (e.g., Huber 1991). Crisis situations—such as the crisis in the Eurozone—represent a trigger as they can encourage firms to more frequently explore and acquire external knowledge (e.g., Kim 1997; Winter 2000). Crises can expose firms to unanticipated knowledge gaps—discrepancies between the knowledge firms possess and the knowledge needed for successful operations (e.g., Petersen, Pedersen, and Lyles 2008)—and can motivate information-acquisition actions to diminish those gaps. However, a trigger—such as a crisis—may not on its own incite firms to acquire information more frequently. Rather, it only becomes a real driving force for information acquisition when brought to the attention of firms (e.g., Leonidou et al. 2007; Wiedersheim-Paul, Olson, and Welch 1978). In other words, the activation of a crisis as a trigger is dependent on background variables—or attention-evoking factors.

The first attention-evoking factor in our model is firms' dependence on the Eurozone, relating to the proportion of their total revenues from export sales to Eurozone countries. The second is the broader perceived impact of the Euro crisis on firms, relating to the well-documented adverse effects of the crisis on firms' sales, their ability to raise finance, to forge new or maintain existing relationships, and on their overall growth prospects (e.g., UEAPME 2012). Crucially, firms only marginally dependent on the Eurozone for export sales, or only marginally impacted by the crisis, may not be stimulated to increase the frequency of their information acquisition activities because the adverse effects of a crisis may not threaten their survival (e.g., Bennett and Koudelova 2001; Chong and Nyaw 2002). Conversely, firms with extensive export sales in the Eurozone, or significantly impacted by the crisis, may feel especially exposed to the crisis and threatened by grave problems if the crisis disrupts its operations (e.g., Drummond and Chell 1994). Thus, it seems plausible to assume that firms belonging to the latter group would have an interest in acquiring information more often.

Assuming that information acquisition activities are driven by triggers, but also assuming that those triggers are activated by background variables, we next hypothesized that:

H2: *Dependence on the Eurozone for export sales is positively associated with the frequency of acquisition of political information.*

H3: *Negative impact of the Euro crisis is positively associated with the frequency of acquisition of political information.*

Absorptive Capacity and Export Decisions

Our model also considers the outputs of information-exploitation activities, focusing specifically on their impact on firms' export decisions. Considerable scholarly attention has been invested in identifying organisational factors that influence firms' initial decisions to begin export operations. As Leonidou et al. (2007) report, these can relate to human resources, financial considerations, production concerns, research and development reasons, or marketing capabilities. Recognizing that export decisions can be driven by organizational factors, our model suggests that firms' decisions to decrease or even discontinue their commitment in export markets may be driven by the formality of their organizational routines for exploiting political information. Firms with formal routines are more likely to adapt to external environmental changes since absorptive capacity enables firms to better understand and evaluate information acquired from their external environments, and thus enhances sensitivity toward emerging opportunities and threats (Cohen and Levinthal 1990). Being more attuned to their external environments, firms with higher levels of absorptive capacity are likely to be more responsive to cues and triggers in their external environments.

Firms possessing highly developed absorptive capacity are also likely to be more efficient in overcoming competence traps that can preclude firms from responding to external cues. Ahuja and Lampert (2001) distinguish between three different types of such traps. Familiarity traps result from firms overemphasizing their existing knowledge base—they prevent firms from exploring alternative sources of knowledge and limiting their cognitive schemas. Maturity traps

arise when firms have a need for reliable and predictable outcomes—they limit knowledge exploration. Propinquity (nearness) traps reflect firms' tendencies to explore knowledge in areas that are closest to their existing areas of expertise—they discourage firms from examining major shifts in their external environments. Firms possessing a well-developed absorptive capacity are likely to be less exposed to these competence traps (Zahra and George 2002). Based on these arguments, we finally hypothesized that:

H4: Formal exploitation of political information is positively associated with export diversification intentions.

Control Variables

Our research model also includes control variables that can affect how frequently firms acquire information about political developments in their export markets. The first is firm size: smaller firms tend to attach less importance to acquiring external information, focus their acquisition activities on their immediate business environments, and devote less time to gathering external information (e.g., Liao, Welsch, and Stoica 2008). Frequency of information acquisition can also vary across industries. Hambrick (1982) found that insurance firms scanned their regulatory environments more frequently than counterparts in the higher education and healthcare industries. Xu, Kaye, and Duan (2003) found firms in the food, chemicals, and transportation sectors monitor legislative sectors of their business environments more frequently than their counterparts in the computing and electronics sectors. In recognition of this research, we incorporate industry membership as a second control variable.

Our third control variable is country of origin. Cross-county variations in environmental conditions can impact exporting behavior (e.g., Leonidou and Katsikeas 1996; Serra, Pointon, and Abdou 2012). For example, firms in countries with large domestic markets might be less dependent on export markets compared to firms in countries with small domestic markets (e.g., Welch and Wiedersheim-Paul 1980). Firms exporting to markets in the same currency zone might not be affected by currency fluctuations associated with crises to the same extent as firms who export to countries using a different currency (e.g., Clark, Kotabe, and Rajaratnam 1999). The formality of organizational routines for acquiring external information can differ across countries, reflecting culturally grounded attitudes to risk and uncertainty (e.g., Schneider and De Meyer 1991).

Methodology

Sample and Data Collection

We tested our hypotheses using data from an online survey of SME owners and managers in France, Sweden, and the United Kingdom. Our choice of countries reflects diversity in the EU. It enables us to consider how export decision-making during the Euro crisis differed across firms using the Euro (France) or other currencies (Sweden, United Kingdom); across firms operating in large domestic (France, United Kingdom) and smaller export-oriented markets (Sweden) (IMF 2012); in firms from countries exhibiting primarily European (France, Sweden) and more globalized (United Kingdom) trade links (*ibid*); and across firms from comparatively risk-accepting (United Kingdom, Sweden) and risk-averse countries, such as France (e.g., Hofstede 2001).

Following the official OECD definition of SMEs (OECD 2005), we targeted our survey at non-subsidiary, independent firms with less than 250 employees. We differentiated between micro-enterprises (less than 10 employees), small enterprises (10–49 employees), and medium-sized enterprises (50–249 employees). We identified respondents using databases (containing the contact details of firms) maintained by business schools in France and the United Kingdom, and from online business directories in Sweden. We distributed our survey to 3,393 managers—1,409 in France, 745 in Sweden, and 1,239 in the United Kingdom. We first mailed out our survey in April 2012, followed by a reminder two weeks later, and a final reminder at the beginning of May.

Our survey instrument was developed in English. Cross-national data can only be analyzed insightfully if collected using country-specific instruments that consider potential variations in construct meanings in different country contexts (e.g., Riordan and Vandenberg 1994). Thus, native speakers of French and Swedish translated the English version of our survey into their respective languages. Subsequently, French and Swedish colleagues with knowledge of English reviewed both the English and the respective country-specific version of the survey. We used this review process to correct inconsistencies

Table 1
Size and Industry Sectors of Firms in Our Sample

	France	Sweden	United Kingdom	Total
Size of the SMEs				
Micro enterprises	66	29	65	160
Small enterprises	40	58	36	134
Medium-sized enterprises	64	36	46	146
Main industry sectors				
Manufacturing	29	65	22	116
Services	69	27	46	142
Trade and Finance	43	17	23	83
Other	29	14	56	99
Total	170	123	147	440
Sales to customers in Eurozone, percent of total sales				
Mean	57.18	34.96	16.42	37.18
Median	60.00	25.00	8.00	23.50
Response rate	12 percent	17 percent	12 percent	13 percent
Number of contacted SMEs	1,409	745	1,239	3,393

between the English and foreign language versions of our surveys.

We received a total of 440 usable responses (169 from the first mailing, 110 responses from the second, and 161 responses from the third) making the response rate 13 percent. The resulting sample is described in Table 1.

To assess potential non-response bias (Armstrong and Overton 1977), we compared the first response wave with third wave in each country. We found no statistical significant differences ($p > .10$) between these response waves on the constructs reported in Table 4 later in this article.

Measurements

Our measures were inspired by previous studies, adapted to fit our specific context. Following McKee et al. (1989), we determined frequency of information acquisition using two variables. These measure how often (on a 5-point scale, ranging from never to frequently) firms use public and private sources to acquire political information. Our distinction between private and public sources draws on the studies of Hart, Webb, and Jones (1994), Souchon and Diamantopoulous (1999), and Yeoh (2000). As per previous studies (Barron, Hultén, and Hudson 2012; Hultén, Barron, and Bryson 2012), we defined public sources of information as

European institutions, political parties, and national governments, and private sources as chambers of commerce and industry, business associations, and employer federations. Our variables measuring firms' frequency of political monitoring assume that, despite many media reports about the Euro crisis, firms wanted information on specific business issues and advice on interpreting them (Bennett and Kottasz 2012). Inspired by Raymond and Ramangalahy (2001) and Bennett (2005), we measured formality of firms' routines for exploiting political information by asking respondents to assess (on a 5-point Likert scale, ranging from completely disagree to completely agree) whether they agreed with statements on their firms' effectiveness of their exploitation processes and information channels.

We measured attention evoking factors using two variables capturing the Euro crisis's impact on firms. Following Bennett (2005), these center on respondents' perceptions of environmental complexities caused by the crisis and their firms' export dependence. Acknowledging that perceptual measures of performance correlate well with objective measures of performance (Dess and Robinson 1984; Geringer and Herbert 1991; Lu et al. 2010), our first measure is performance-oriented. It measures (on a 5-point Likert scale, ranging from completely disagree to completely

agree) the extent to which respondents agreed with statements regarding direct impacts of the crisis on their sales, exports, capacity to raise finance, relationships with customers and suppliers, and growth. Our second measure is output-oriented, asking respondents to report the proportion of their turnover derived from Eurozone export markets.

Our measure of the crisis's impact on export decisions draws on the well-established notion that SMEs use information about foreign markets to make decisions about operations in those markets (e.g., Mogos Descotes and Walliser 2011). We asked respondents to state (on a 5-point Likert scale, ranging from completely disagree to completely agree) whether they agreed with statements on their intentions to increase their exports to non-Eurozone countries within the EU, non-EU European countries, and to non-European countries. Our measure of SMEs' intended export diversification decisions is thus a dependent variable indicating whether the firms' crisis management includes routines for detecting, interpreting and acting on crisis signals (e.g., Bennett 2005) and whether such routines result in export diversification decisions.

Our three control variables are based on biographical survey questions asking respondents to state which industry they operated in, the size of their firm (in terms of employees) and their country of origin.

Validity and Reliability of Measures

We assessed the reliability, convergent, and discriminant validities of the reflective multiple-item measures using confirmatory factor analysis (CFA). Table 2 reports the individual item factor loadings, average variance extracted, and composite reliabilities of the measures. Overall, the fit of the five-factor CFA measurement model is very good (Hair et al. 2010): $\chi^2(271.18; 125)/df = 2.16$; SRMR = 0.046; RMSEA = 0.052; AGFI = 0.91.

All standardized factor loadings are greater than 0.5 and significant at $p < .001$. The composite reliabilities are equal or greater than 0.7, and average variance extracted either

exceeds or is in the proximity of 0.5. Thus, the proposed measures exhibit acceptable convergent validity (Fornell and Larcker 1981). To assess the discriminant validity of the proposed constructs, we compared the AVE of each construct with maximum shared squared variance (MSV) and average shared squared variance (ASV). Given that the highest value of MSV is 0.35 and of ASV is 0.18, both of which are far below AVEs of the constructs, we conclude that the measures exhibit sufficient discriminant validity.

We rule out the possibility of common method bias by restricting an exploratory factor analysis of all items reported in Table 2 to one common factor, which turned out to explain only 24.1 percent of the total variance. Exploratory factor analysis without restrictions results in multiple factors derived that explain 65 percent of the total variance. Thus, there is no indication of common method bias (Lindell and Whitney 2001).

We assessed whether the measurement structure performs consistently in the three countries using multiple group analysis. Imposing constraints on measurement weights (equal across countries) results in a model with a fit of $\chi^2(710; 401)/df = 1.771$ and RMSEA = .042; with additional structural covariance constraints the fit is $\chi^2(763; 431)/df = 1.772$, RMSEA = .043. A model with full constraints returns the following fit measures: $\chi^2(921; 467)/df = 1.972$, RMSEA = 0.047. While imposing constraints results in statistically significant loss of fit compared to a fully unconstrained model ($\chi^2(592; 375)/df = 1.58$), the overall fit of all models is acceptable and the factor loadings pattern and factor structure remain the same. Thus, we conclude that the measurement model performs well within studied countries.

Table 3 summarizes the key descriptive data of the constructs in the model: means and standard deviations by country[1] of origin and correlations.

The pattern of correlations among indicators points to the presence of hypothesized

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[1]ANOVA test of means by country of the endogenous variables in our model (monitoring frequencies, formality of information exploitation, and export diversification intention) shows that there are no significant differences in export diversification intention ($p > .1$); UK firms report the highest level of formality of information exploitation ($p = .02$); there are significant differences in the monitoring frequency across the countries at $p < .00$: UK respondents used private sources of political intelligence more frequently than their French and Swedish counterparts, and French respondents used private sources the least.

Table 2
Measurement Model

Constructs	Measurement Items	Factor Loading	t	AVE	CR
Impact of Euro crisis					
	... on sales	0.60	Fixed	0.54	0.85
	... on exports	0.61	10.61		
	... on financing	0.66	11.18		
	... on business relationships	0.85	13.25		
	... on growth	0.90	13.56		
Frequency of acquiring political information from private sources					
	Chambers of commerce	0.70	Fixed	0.51	0.76
	Employers' associations	0.80	11.74		
	SME associations	0.64	10.93		
Frequency of using political information from public sources					
	European institutions	0.58	Fixed	0.46	0.72
	Political parties	0.75	10.11		
	National governmental bodies	0.70	9.91		
Formality of routines for exploiting political information					
	Our company has effective methods to monitor political developments	0.54	Fixed	0.48	0.79
	Our company has good channels to obtain political information	0.75	10.08		
	We receive information we need about policy initiatives	0.70	9.74		
	We do not face political surprises in our export markets	0.78	10.21		
Export diversification intention					
	We will increase exports to non-EU, European countries	0.62	Fixed	0.58	0.80
	We will increase exports to non-Eurozone countries in the EU	0.94	11.18		
	We will increase exports to non-European countries	0.70	12.01		

$N = 440$. AVE, average variance extracted; CR, composite reliability. Fit of the model: $\chi^2(271.18;$ $125)/df = 2.16$; SRMR = 0.046; RMSEA = 0.052; AGFI = 0.91.

relationships. With the exception of the Public Source correlation with Private Source and Information Exploitation, all correlation coefficients are below 0.4. Such patterns suggest that there are no serious multicollinearity problems (Leeflang, Wedel, and Naert 2000), and we may proceed to specifying and estimating the model.

Model Specification

Our conceptual model is translated into a set of simultaneous equations as follows:

$$MF_k = \alpha_{k,0} + \sum_{m=1}^{2} \alpha_{k,m} \times EE_m$$
$$+ \sum_{f=1}^{7} \alpha_{k,f+2} \times C_f + \varepsilon_{k,MF_k} \quad (k=1,\, 2) \qquad (1)$$

$$FEI = \beta_0 + \sum_{k=1}^{2} \beta_k \times MF_k + \varepsilon_{FEI} \qquad (2)$$

$$EDI = \gamma_0 + \gamma_1 \times FEI + \varepsilon_{EDI}, \qquad (3)$$

where MF_k is monitoring frequency via public and private sources of intelligence, EE_m are the

Table 3
Means, Standard Deviations, and Correlation Matrix of Constructs in the Model

| | Mean (S.D.) | | | | | | | |
	Sweden	United Kingdom	France	1	2	3	4	5
Impact of Euro crisis	2.32(1.09)	2.64(0.97)	3.06(1.07)					
Frequency of using public sources	1.98(0.81)	2.35(1.00)	2.40(0.98)	0.22				
Frequency of using private sources	2.56(0.91)	2.54(1.11)	2.26(1.01)	0.14	0.43			
Formality of routines for exploiting political information	2.49(0.89)	2.88(0.81)	2.73(0.89)	0.12	0.46	0.28		
Export diversification intention	2.47(1.04)	2.63(0.95)	2.47(1.01)	0.11	0.16	0.07	0.16	
Eurozone dependence	35.86(34.17)	16.93(22.90)	57.76(38.08)	0.17	0.07	0.10	0.01	0.02

Table 4
Effects of the Antecedents of Monitoring Frequency (Equation (1))

| | Public Sources of Political Intelligence | | | | Private Sources of Political Intelligence | | | |
	α	S.E.	z	$p>\|z\|$	α	S.E.	z	$p>\|z\|$
Constant	1.24	0.16	7.51	0.00	1.76	0.18	9.71	0.00
Impact of the Euro crisis	0.16	0.04	3.91	0.00	0.17	0.04	3.78	0.00
Eurozone dependence	0.00	0.00	1.14	0.26	0.01	0.00	3.57	0.00
Controls								
Country								
Sweden	–	–	–	–	–	–	–	–
United Kingdom	0.29	0.12	2.44	0.02	0.09	0.13	0.68	0.49
France	0.11	0.12	0.89	0.38	−0.51	0.13	−3.85	0.00
Industry								
Manufacturing	–	–	–	–	–	–	–	–
Services	0.40	0.12	3.43	0.00	0.08	0.13	0.62	0.54
Trade and Finance	0.33	0.13	2.50	0.01	−0.02	0.15	−0.14	0.89
Other	0.27	0.13	2.14	0.03	−0.08	0.14	−0.55	0.58
Firm Size								
Micro	–	–	–	–	–	–	–	–
Small	0.05	0.10	0.45	0.65	0.27	0.12	2.24	0.03
Medium	0.43	0.10	4.22	0.00	0.33	0.12	2.84	0.00
$R^2(\chi^2; p)$	0.12 (61.25; 0.00)				0.10 (49.70; 0.00)			

$N = 440$.

effect of the Euro crisis and Eurozone dependence, C_f are the controls industry, size, and country (total 7 coefficients as industry, size and country are dummies). In the second equation FEI is formality of routines for exploiting information, which is explained by monitoring frequency MF_k. In equation (3), EDI is export diversification intention and it is explained by the formality of routines for exploiting information FEI.

The estimation method for the model is three stage least squares (3SLS) to account for simultaneity. Within the specified system of equations EDI, MC, MF_k are endogenous variables, all other variables are exogenous; the system is identified and we can proceed to actual estimation. Note that R^2 are reported for the reasons of completeness and they have no meaningful interpretation in 3SLS (Greene 2000).

Results

Table 4 presents the results of estimation of equation (1) used to test H2 and H3.

H2 is partly confirmed: firms highly dependent on the Eurozone for export sales acquire information on political developments in the Eurozone frequently, however only using private sources. Dependence on the Eurozone does not significantly affect the frequency of information acquisition via public sources ($p = .26$). H3 is fully upheld: firms highly affected by the crisis gather information on political developments in the Eurozone frequently, using both private and public sources.

Interestingly, UK managers are more frequent users of public sources of political intelligence compared to their Swedish or French counterparts. French managers are the least frequent users of private sources of information. Furthermore, managers in the manufacturing sector use public sources less frequently than managers in other industries. There are no cross-sector differences regarding how managers use private sources, and firm size is generally positively related to use of both public and private sources of political intelligence.

Table 5 reports the estimation results of equation (1) used to test H1.

H1 is partly confirmed: firms frequently engaged in information acquisition accumulate formal processes for exploiting that information. However, Table 4 suggests that acquiring political intelligence from private sources has no impact on the accumulation of formal exploitation processes.

Table 6 reports the results of testing hypotheses H4, estimated by equation (3). H4 is fully confirmed: formality of routines for exploiting political information is positively related to export diversification intention.

Further Analysis and Robustness Checks

The analysis reported above tests the model exactly as specified in Figure 1, focusing only on explicitly hypothesized effects. Naturally, we conducted a number of further analyses to verify the robustness of the reported results to alternative specifications. One question that might arise is whether the effects of information exploitation on firms' export decisions persist if we allow for direct effects of being impacted by

Table 5
Effects of Monitoring Frequency on Formality of Routines for Exploiting Political Information (Equation (2))

	Formality of Routines for Exploiting Political Information			
	β	S.E.	z	$p>|z|$
Constant	1.18	0.33	3.54	0.00
Public sources of political intelligence	0.66	0.13	5.18	0.00
Private sources of political intelligence	0.02	0.13	0.15	0.88
$R^2(\chi^2; p)$		0.14 (32.88; 0.00)		

$N = 440$.

Table 6
Effects of Formality on Export Diversification Intention
(Equation (3))

	Export Diversification Intention			
	γ	S.E.	z	$p>|z|$
Constant	4.55	1.57	2.90	0.00
Formality of routines for exploiting political information	1.11	0.58	1.93	0.05
$R^2(\chi^2; p)$	0.01 (3.72; 0.05)			

$N = 440$.

the Euro crisis, dependence on the Eurozone for export sales, and frequency of information acquisition on firms' export diversification intentions. Thus, we re-specified equation (3) to allow for those effects:

$$\text{EDI} = \gamma_0 + \gamma_1 \times \text{FEI} + \sum_{k=1}^{2} \gamma_{k+1} \times \text{MF}_k$$

$$+ \sum_{m=1}^{2} \gamma_{m+3} \times \text{EE}_m + \sum_{f=1}^{2} \gamma_{f+5} \times C_f + \varepsilon_{\text{EDI}}, \quad (3')$$

where all parameters are as described in the earlier specifications section; control variable is included to keep the model identified. In the interest of brevity, we report the results of estimating only equation (3)' in Table 7, as the substantive effects addressed in the other two equations remain the same. Results show that formality of exploitation routines remains the only significant predictor (at $p < .1$) of export diversification intention; estimating the equations as SUR yields identical substantive results. Thus, the relationships proposed in the model hold.

Our model also postulates that the formality of routines for exploiting political information affects export decisions. However, the direction of causality could be reversed. For example, firms that have decided to re-focus their export activities on other countries may develop routines for exploiting information to a larger extent in order to better manage their risks.[2] As the cross-sectional nature of our study makes it impossible to draw even weak causal inferences, we follow the approach of Verhoef and Leeflang (2009) to

assess the potential dual causation between exploitation the formality of routines for exploiting information and diversification intention. We thus re-specified equation (2) and include EDI as a predictor of information exploitation in equation (3), while retaining the direct link between formality of routines for exploiting information and EDI in equation (3):

$$\text{FEI} = \beta_0 + \sum_{k=1}^{2} \beta_k \times \text{MF}_k + \beta_3 \times \text{EDI}_k + \varepsilon_{\text{FEI}}.$$

$$(2')$$

We estimated both the original model and a re-specified one (reported above) while allowing for a dual relationship. Results showed that export diversification intention EDI was not a significant predictor of the formality of routines for exploiting political information FEI. Hence, we find no evidence supporting dual causation. We do not report the coefficient tables as they are very similar to those already presented. Nonetheless, we reiterate that such an approach does not allow us to draw causal inferences, and the results of this analysis should be treated with caution.

Finally, we checked the stability of our results by preforming bootstrapping and jackknife estimation, which yielded results identical to those reported. Estimating the equations as SUR does not lead to changes in direction of the effects and significances. We also used alternative specifications of both dependent variables and controls: using log-

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[2]We thank an anonymous reviewer for raising this point.

Table 7
Expanded Set of Antecedents of Export Diversification Intention
(Equation (3′))

	Export Diversification Intention			
	γ	S.E.	z	$p>|z|$
Constant	1.70	2.36	0.72	0.47
Formality of routines for exploiting political information	3.87	2.23	1.74	0.08
Public sources of political intelligence	−3.36	2.19	−1.53	0.13
Private sources of political intelligence	0.61	0.79	0.77	0.44
Impact of the Euro crisis	0.44	0.30	1.43	0.15
Eurozone dependence	0.00	0.01	0.14	0.89
Firm size				
Small	0.15	0.51	0.30	0.76
Medium	0.72	0.67	1.07	0.29

transformed values of dependence on Eurozone, removing items with smaller loadings from constructs, and removing potential outliers. Overall, the results are stable as the direction and significance of the reported effects do not change.

Findings and Discussion
Collecting Information and Building an Absorptive Capacity

As predicted, we found a positive relationship between the regularity of acquiring political information and the development of formal routines for exploiting that information. This makes sense since absorptive-capacity development is a cumulative process based on recurrent acquisition of information (e.g., Cohen and Levinthal 1990). That some firms in our sample engaged frequently in political monitoring suggests that firms' international activities are based on non-market and not simply market considerations. As such, our research lends weight to prior research (e.g., Eriksson et al. 1997, 2000; Hadjikhani and Thilenius 2005) highlighting the importance of political and institutional information to firms' international operations. It specifically confirms previous studies (e.g., Barron, Hultén, and Hudson 2012) suggesting that such information in particularly important during periods of crisis. A closer analysis of our results reveals a less obvious and somewhat unexpected finding. Crucially, we found that firms claiming to have developed formal processes for applying political information during the crisis made the most frequent use of public—rather than private—sources of political information. In other words, the development of processes for exploiting political information is positively related to the frequency of acquiring such information from public sources only.

Attention Evoking Factors: Antecedents of Absorptive Capacity

We found partial support for H2: firms depending heavily on the Eurozone seek information on political developments via private but not public sources of information. We found more support for H3: firms whose sales, finances, business relationships and growth rates were negatively impacted by the crisis frequently collected information on political responses to the Euro crisis, using both political and private sources of intelligence. These findings build on previous work (e.g., Barron, Hultén, and Hudson 2012) that highlights the importance of acquiring political information during crisis periods by elucidating factors that stimulate firms to collect such information. Combined, these two findings also contest prior research (e.g., Julien and Ramangalahy 2003; Souchon and Durden 2002) arguing that internationally active managers consider political developments to be of minor strategic importance for internationalization decisions. That our respondents regularly sought information on political developments in the Eurozone suggests that they did consider their political

environments to be immediate and strategically important. Their frequent monitoring of political developments makes sense insomuch as that Euro crisis represented very much a political—not simply an economic—crisis (Dinan 2011).

Our testing of H2 and H3 also reveals that firms engaged in focused searches for new information and obtained information from both public and private organisations. This finding exposes shortcuts (e.g., Barkema and Vermeulen 1998; Huber 1991) that internationally active firms use to plug knowledge gaps. As per other scholars (e.g., Hadjikani and Johanson 1996; Santangelo and Meyer 2011), our research suggests that experience can be less relevant for internationally active firms operating in rapidly changing, uncertain and unstable business environments. We build on this research by specifically illustrating how experience is also less significant in times of political crisis in developed countries.

Export Decisions: Outcomes of Absorptive Capacity

When testing H4, we found a positive relationship between formal routines that firms develop to exploit political information and their intentions to seek new export opportunities beyond the Eurozone: export decisions of firms with higher levels of absorptive capacity were more responsive to negative cues and triggers in their political environments. This finding adds to extant work into environmental scanning during crises (e.g., Barron, Hultén, and Hudson 2012). While that research focuses narrowly on how firms acquire political information, ours indicates how they apply information to commercial decisions. Our finding is also in line with Cohen and Levinthal (1990) who suggested that firms with stronger absorptive capacities are more sensitive to understanding and acting on emerging opportunities and threats in their external environments.

This finding also confirms work suggesting that firms facing deteriorating business prospects in foreign markets may decide to discontinue their commitment in those markets. Prior research suggests that firms' decisions to reduce their commitment in foreign markets are driven by strategic intentions (e.g., Santangelo and Meyer 2011), market knowledge (e.g., Hadjikhani and Johanson 1996), or firms' assessments of the fit between their existing portfolios and foreign markets (e.g., Nachum and Song 2011). By contrast, we find that such decisions are informed by firms' abilities to acquire and apply non-market information.

Further Cross-Country Findings

Our country-specific findings also merit further discussion. We found UK respondents used private sources of political intelligence more frequently than their French and Swedish counterparts. They might conversely have been expected to use private sources, and in particular business associations, more frequently as such associations play an important role in UK policymaking and have access to political information that they can circulate among their members (e.g., Eising 2003). A possible explanation for this finding may be that the UK small-business community—historically suspicious of the EU (e.g., Grant 2008)—considered the Eurosceptic Conservative government to be a dependable source of information on the Euro crisis. We also found French respondents used private sources the least. This makes sense insofar as the French government has historically played an active role in promoting competitive intelligence in France. Indeed, the 1994 Martre Report paved the way for the creation of public bodies (such as the Haut Responsible à l'Intelligence Economique) aimed at helping French firms acquire intelligence (Moinet 2010).

Our research also demonstrates that UK respondents reported a significantly higher level of formality of processes for exploiting political information. This challenges previous research (e.g., Schneider and De Meyer 1991) suggest that firms in Anglo cultures—owing to their acceptance of risk—develop only informal routines for processing environmental information. This might be explained by the fact that, compared to France and Sweden, the United Kingdom was more strongly impacted by the global financial crisis that preceded the Euro crisis. British managers might have already developed processes for exploiting information during this previous crisis. This finding chimes with research (e.g., Garg, Walters, and Priem 2003) suggesting that prior investments lead to higher performance in the acquisition and exploitation of information.

Overall, however, the cross-country differences exposed by our research are weak. Our measurement model performs equally well in all three countries, and the mean values of our endogenous variables by country (reported in Table 3) are very close from a practical point of view. Our research thus challenges extant work

(e.g., Sawyerr, Edbrahimi, and Thibodeaux 2000) suggesting that environmental scanning practices vary across countries. Instead, it points to supports the view (e.g., Stewart, May, and Arvind 2008) that firms' monitoring procedures are similar, irrespective of their country of origin.

Conclusions

Exploiting exceptional political circumstances that accompanied the Euro crisis, we investigated how SMEs kept informed of political developments in their Eurozone export markets, and whether the political information they acquired stimulated them to seek new export opportunities. Guided by a conceptual framework inspired by the notion of absorptive capacity, we used data collected from a sample of 440 British, French, and Swedish managers to explore the information acquisition and exploitation activities of firms as a beginning-to-end process, including their antecedents and outputs.

Findings suggest that firms dependent on the Eurozone for export sales, and firms perceiving a broader impact of the crisis on their operations, frequently acquired information on political developments. Those monitoring political developments frequently, specifically using public sources of information, were the ones most likely to develop formal routines for exploiting political information. Firms possessing the most sophisticated routines for exploiting information were most likely to seek new export opportunities. We found no significant differences in scanning behaviors across our three countries of interest, suggesting convergence toward universal managerial practices during times of crisis.

Combined, our findings build on existing research into the international activities of small firms. Previous studies emphasize the importance of long-term, experiential learning—we demonstrate that, during crises, firms have frequent recourse to "shortcut" scanning activities to acquire information on rapidly changing political developments in export markets. Extant research highlights the importance of market environments and market information in export decisions—we elucidate the significance of non-market environments and political information in those decisions. Prior studies view internationalization as an ongoing, largely positive process marked by increased investments in foreign markets—we show that, in response to deteriorating operating conditions, small firms can reduce their previous commitments to their export markets.

We openly acknowledge the limitations of our research. Our results do not necessarily generalize to all SMEs based in France, Sweden, and the United Kingdom, nor to SMEs based in other country contexts. More importantly, we recognize as per Leonidou et al. (2007) that firms' export decisions can be driven—alongside the formality of their routines for exploiting information—by a combination of other internal, external, reactive, and proactive factors that lie beyond the scope of our paper. There is clearly a need for further empirical work to compare the importance of information exploitation routines against these other factors during times of crisis.

Future work could explore more deeply how firms utilize political intelligence when making export decisions. Our research focused on the instrumental use of information (Menon and Varadarajan 1992)—the direct application of information in response to specific problems. Future studies could explore how managers indirectly apply political intelligence to broaden the managerial knowledge base without serving any specific project (the conceptual use of political intelligence) and use political intelligence to justify export decisions already taken (the symbolic use of political intelligence).

Its limitations notwithstanding, we nonetheless consider that our research creatively exploits exceptional political circumstances to provide initial insights into the antecedents and outcomes of exporting firms' information acquisition and exploitation activities during periods of crisis, and opens up some potentially fruitful and valuable avenues for future.

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Looking Upstream and Downstream in Entrepreneurial Cognition: Replicating and Extending the Busenitz and Barney (1997) Study

by Richard J. Arend, Xian Cao, Anne Grego-Nagel, Junyon Im, Xiaoming Yang, and Sergio Canavati

We revisit the assertion that entrepreneurs are uniquely characterized in their ways of thinking; specifically being relatively more prone to the overconfidence bias and the representativeness heuristic in their decision-making. We replicate an earlier seminal study in entrepreneurial cognition, with a wider and more current survey. We then extend that analysis by investigating whether such "different thinking" leads to different (i.e., less rational) choices and different (i.e., worse) firm performance. Given the expected differences, we also investigate whether there exist other factors that affect the use of such biases and heuristics, to control their effects on focal outcomes.

Introduction

Business-related decision-making is especially important to study in the entrepreneurial context not only because entrepreneurial activity is a significant part of the economy but also because entrepreneurs are the least likely to have the resources available to follow the recommended decision-making processes. "*Entrepreneurship is a major source of employment, economic growth, and innovation, promoting product and service quality, competition, and economic flexibility… key topic areas* [*include*]*… entrepreneurial cognition*" Hisrich, Langan-Fox, and Grant (2007, p. 575). To increase the benefits from entrepreneurial activity—both private and public—it is useful to under-

stand *how entrepreneurs think*, especially given the possibility that they think differently due to the unusual contexts (e.g., resource-scarcity), challenges and visions they encounter relative to other decision-makers. While entrepreneurial cognition research has begun to build that understanding (Mitchell et al. 2002, 2007), there remain several under-served areas in this infant field; one involves the strategic implications. "*future research should seek to determine the performance implications of overconfidence and the other biases and heuristics associated with entrepreneurial cognition…*" Forbes (2005, p. 638). In this paper, we provide that research through a replication and extension of one of the seminal studies in entrepreneurial

Richard J. Arend is Professor of Strategy and Entrepreneurship and Bloch Research Fellow at the Bloch School of Management at University of Missouri–Kansas City.

Xian Cao is a doctoral student at the School of Business, University of Connecticut.

Anne Grego-Nagel is a doctoral candidate at the School of Engineering, Kansas State University.

Junyon Im is a doctoral candidate at the Henry W. Bloch School of Management, University of Missouri–Kansas City.

Xiaoming Yang is a doctoral candidate at the Henry W. Bloch School of Management, University of Missouri–Kansas City.

Sergio A. Canavati is an Assistant Professor at the Department of Management, California State University, Los Angeles.

Address correspondence to: Richard J. Arend, Bloch School of Management, University of Missouri–Kansas City, 303 Bloch, 5100 Rockhill Road, Kansas City, MO USA 64110-2499. E-mail: arendr@umkc.edu.

cognition that also happens to be one of the most cited papers in the entrepreneurship literature.

We use a recent survey of U.S. entrepreneurs and executive managers to replicate and extend the original study of Busenitz and Barney (1997) that identified the overconfidence bias and the representativeness heuristic as two of the reasons why entrepreneurs think differently. Besides replicating their study, over 15 years later with a more diverse sample, we contribute to the entrepreneurial cognition and strategic entrepreneurship literatures in our extensions to that study. First, we answer the call for research on whether the biases and heuristics attributed to entrepreneurial cognition have performance implications for ventures and individual entrepreneurs. Second, we analyze whether such biases and heuristics can be managed by identifying correlated factors that are easier to leverage. Third, we determine whether it is the entrepreneur or the attributed biases and heuristics that lead to less-than-rational choices.

We successfully replicate the results of the original Busenitz and Barney's (1997) study—referred to from now on as BB97. In extensions, we find that the ventures of entrepreneurs characterized by more overconfidence experience lower performance (driven by effects in stable environments and with highly risk-averse entrepreneurs). We identify several factors, some at the individual-level, that correlate with the overconfidence bias; factors that may make attractive policy targets for influencing entrepreneurial behavior. And, we find that while representativeness leads to worse choices, entrepreneurs are *not* less rational in their choices than executive managers. These results entail interesting theoretical, practical and policy implications regarding the promotion of certain types of entrepreneurial activity. Such results differ from related work—such as that by Forbes (2005) in antecedents of overconfidence and by Hmieleski and Baron (2009) in consequences of overoptimism—as we consider both antecedents and consequences in *one* study of both a bias and a heuristic. In fact, our addresses some of the future work that Forbes (2005) suggests, such as to consider the consequences of entrepre-

neurial cognition, to consider environment dynamism as influencing entrepreneurial cognition, and to consider the performance implications of overconfidence and other heuristics. Our paper also addresses some of the future work that Hmieleski and Baron (2009) suggest, such as studies on the use of heuristics, investigation of additional behavioral factors (e.g., like alertness and risk-aversion), and the identification of significant linkages to personal satisfaction (e.g., individual rewards).[1]

We continue the paper as follows. First, we generate the hypotheses drawing on the relevant literature. Second, we describe the empirical analysis, from details of the survey, to specifics of how we addressed data issues, to details of the variables, to specifics of the analytical methods we used for testing the hypotheses. Third, we describe the results of the testing. Fourth, we discuss the results, their implications, the study's limitations, and how that informs possible follow-on work. Fifth and last, we conclude with a summary and some final thoughts about entrepreneurial cognition research.

Hypotheses and Theory

Besides past work on the antecedents and consequences of related biases and heuristics by Forbes (2005) and Hmieleski and Baron (2009), respectively, there is a substantial literature covering cognition, and entrepreneurial cognition, specifically, that has arisen since BB97. Gilovich, Griffin, and Kahneman's (2002) book provides an excellent reference to research done on heuristics and biases. Studies in the entrepreneurship context dealing with biases and heuristics include: Hayward, Shepherd, and Griffin's (2006) work related to overconfidence; several papers on the subjective-constructionist characterizations of entrepreneurial perceptions (e.g., Zander 2007) connected to overconfidence; several "consequent-oriented" studies regarding the effects of biases, like Lowe and Ziedonis's (2006) study of overoptimism; special issues on entrepreneurial cognition, for example, in *ETP* in 2004; and, research that considers alternative explanations for the entry decision besides "overconfidence" (e.g., Moore, Oesch, and Zietsma 2007). Note that in

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[1]This paper contributes in several ways beyond what was presented in the original BB97 study. As described, there are both upstream and downstream extensions, and considerations of other outcomes and controls, to address calls for such research in related works. We also present replication results in an updated fashion that clarifies changes in "hit rates" and in what the choices—not just the justifications of the choices—were of the survey participants (the latter providing new results about the relative rationality of entrepreneurs).

previous studies, as in ours, there is an assumption that there is a general tendency for people to use more or less heuristics in making decisions, often based on the specific context surrounding the decision (and that we, as did previous authors, attempt to place subjects in relevant contexts for assessing their uses of heuristics).

Replication

We begin our specific conversation about entrepreneurial cognition theory with two hypotheses that replicate those of the original BB97 study. We summarize the justifications for these hypotheses here, and refer interested readers to the original study for additional details. The original arguments assumed that entrepreneurs are more likely to face dynamic and uncertain environments than managers of large firms. In such environments, the costs of reducing uncertainties are high, and the efforts to reduce uncertainty are unlikely to be effective. In such environments, information about base rates are unlikely to be helpful, if even such information from large random samples would even be available, which is also unlikely. In such environments, the windows of opportunity are short. Besides these assumptions about an entrepreneur's environment, there are the assumptions about the entrepreneur's relative paucity of resources—an entrepreneur does not have the resources to obtain large random samples, and is worried that any such actions to gather data, or any delays, would put the venture at a disadvantage to larger better-endowed rivals. Thus, the entrepreneur must use alternative processes and perspectives to "rational" decision-making ones meet the short window of opportunity, under resource constraints, under conditions of uncertainty before all the information is in, and do so convincingly.

To be faithful to both the original terminology and more recent definitions (e.g., Kahneman 2003), we consider that a heuristic is a mental "short-cut" process that substitutes one attribute of rational judgment for something else (e.g., substituting personal experience for statis-

tical base rates), and we consider that a bias is a perspective (or orientation) that is also a measure of error, measured against the reference of the rational benchmark. For this study, we focus on the heuristic of representativeness and the bias of overconfidence. Representativeness is defined here as a willingness "*to generalize about a phenomenon … based on … only a few observations of a specified phenomenon … a willingness … to generalize from small, non-random samples*" (Busenitz and Barney 1997, p. 16). Overconfidence is defined as existing "*when decision-makers are overly optimistic in their initial assessment of a situation, and then are slow to incorporate additional information about a situation into their assessment because of their initial overconfidence*" (Busenitz and Barney 1997, p. 15). The representativeness heuristic may be useful in conditions of uncertainty when base rates are unavailable but small nonrandom samples are. The overconfidence bias may be useful also in those conditions of uncertainty (e.g., about the market demand and the firm's abilities) for convincing investors (and oneself) to commit to the venture under when facing high-risk-high-return opportunities (Arenius and Minniti 2005; Busenitz and Barney 1997; Trevelyan 2008; Wasserman 2008).[2]

Entrepreneurs are more likely to face the environments where overconfidence and representativeness are likely to be helpful in the short-term than are executive managers. Additionally, executive managers are more likely to have the processes, rewards and resources available to mitigate the use of such biases and heuristics; for example, managers have less upside to taking risky actions, and more resources and procedures available to reduce uncertainty. In other words, entrepreneurs are more likely to be characterized with overconfidence and representativeness than managers because entrepreneurs have more motivation to draw upon them, experience more contexts where they are applicable, and enjoy fewer resources to fund alternative decision-making approaches. Thus, we expect such decision-making heuristics and biases to be

[2]Although a bias like overconfidence is considered a measurement of error (Kahneman 2003), its presence can have positive compensating effects when other errors exist (e.g., an error due to risk aversion—so, the overconfidence error could make a choice more risky, which would help counteract the effect of a risk aversion error that would make a choice less risky). Note that overconfidence is correlated with the use of specific decision modes (heuristics) and with increases in specific abilities (e.g., salesmanship). As with any "intermediate" measure, the overconfidence bias has both *causes* and *effects*, and as with most applied psychology concerns, that causal nature is a question for future work.

attributed more to the entrepreneurs. Our first two hypotheses (that replicate BB97's) follow:

H1: Entrepreneurs will manifest more overconfidence than will executive managers.

H2: Entrepreneurs will manifest representativeness more extensively in their decision-making rationalizations than will executive managers.

Extensions

Our first extension of the original BB97 study is in the "upstream" direction, to identify what factors may correlate with the overconfidence bias attributable to entrepreneurs. We do this to determine whether such biases can be managed through other factors that are perhaps easier to measure and manipulate.

Although little is known about the origins of overconfidence (Cesarini et al. 2009), it is likely that both individual-level and environmental factors influence it (Forbes 2005)—it is likely that it is both trait-like and situational in nature. Further, cognition research explains that biases arise from the use of heuristics (Gilovich, Griffin, and Kahneman 2002); thus, we also expect representativeness will affect overconfidence. The latter logic arises because when entrepreneurs ignore base rates and generalize from small nonrandom samples to make decisions, they are more likely to depart from rational decisions, where such departures are measured as biases. In the case of overconfidence, being optimistic over the accuracy of an initial assessment is more likely for an individual who draws on personal experience (i.e., small nonrandom samples). In other words, representativeness (among other heuristics) is logically linked to overconfidence (Gilovich, Griffin, and Kahneman 2002).

Regarding personal characteristics, Landier and Thesmar (2009) suggest that such biases are partly explained by individual-level factors, perhaps even genetics (Cesarini et al. 2009). Forbes (2005) suggests *age* reduces overconfidence, drawing on work linking cognition with age (e.g., Grimm and Smith 1991; Taylor 1975). He argues that older entrepreneurs simply have more experience related to failure and error which would temper their overestimation of the accuracy of their knowledge. Another personal characteristic—*alertness*—is also expected to affect overconfidence. Arenius and Minniti (2005) suggest overconfidence and alertness are linked; it may be that greater alertness to the business environment provides the confidence behind spontaneous optimistic opinions. Forbes (2005) also supports this when he states (p. 637) that overconfidence can result from "*possessing more information.*" Although this may seem counterintuitive, the idea that more information—say, from being more alert—may actually increase overconfidence has been found in related studies (e.g., Zacharakis and Shepherd 2001).

In terms of the contextual influence, the logic in the original BB97 study suggests that overconfident entrepreneurs are more likely to select themselves into more dynamic—that is, uncertain and complex—environments. Given possible short-term benefits of overconfidence in more dynamic environments (e.g., shorter decision cycles to help hit short windows of opportunity; higher optimism to help sell investors, employees and partners on the firm's abilities and chances of success; higher optimism to help motivate greater personal efforts; and so on), we expect to see a positive relationship between the bias and environmental dynamism. Our third hypothesis follows:

H3: For entrepreneurs, overconfidence is affected by both personal characteristics and the venture environment; specifically, overconfidence will increase with representativeness, alertness and environmental dynamism, but will decrease with age.

Our second extension of the original BB97 study is in the "downstream" direction, to determine whether entrepreneurs—as being more attributed the overconfidence bias and the representativeness heuristic—make *less* rational choices. We do this to better understand whether aspects of "how entrepreneurs think differently" translate into important results—that is, in their "final choices" (after all their "reasoning" has been described[3]). We draw on the logic that if entrepreneurs are more prone to certain heuristics that are expected to lead to divergence from rational decisions (as measured in biases), then the actual choices of entrepreneurs should be "less rational," for example, in terms of the "scientific legitimacy" of these choices. The lower

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[3]In the original BB97 study we noted that the "reasoning" was measured in the decision-making scenarios used to calculate the representativeness heuristic, but the "actual choices" made for those scenarios were not reported. We were curious whether the two differed; in our study they did.

rationality in terms of choosing the less statistically supported alternative would be caused by entrepreneurs putting more weight on representative "short-cuts" and being confident in them.

There are many studies that support these expectations. BB97 suggest that biases and heuristics lead to decision errors. Several studies reveal that representativeness produces misleading, low-quality, or statistically inferior choices (Finkelstein, Whitehead, and Campbell 2009; Wickham 2003). Essentially, heuristics lead to low-quality choices (Bazerman 1994; Russo and Schoemaker 1992), and the associated biases (like overconfidence) are correlated with less rational decisions (Simon and Houghton 2003). Heuristics, specifically the representativeness heuristic, will lead to errors in decisions, specifically choices that diverge from rational ones. Given the definition of representativeness, we can be even more specific, in terms of the type of divergence from rationality—that is, the error will be in ignoring base rates and other statistical information.

We now turn to the question of whether it is the heuristic, or the decision-maker who is more prone to use it, that drives the non-rational decisions. We have already argued that the heuristic alone will be correlated with less rational decisions.[4] We have also argued (in H2) that entrepreneurs are more likely to not only use the heuristic but also are more likely to embody the divergence-from-rationality error of at least one related bias—overconfidence. And, we know that overconfidence is correlated with less rational decisions (e.g., Simon and Houghton 2003; Smith et al. 2010). We expect that entrepreneurs—because of their different circumstances relative to managers—will make less rational decisions, even controlling for representativeness. We expect this because entrepreneurs are likely to use other heuristics as well (e.g., the ones that underlie anti-conservative biases like overconfidence—Gilovich, Griffin, and Kahneman 2002), and do so more than their manager peers.[5] We base this on the same logic used to argue H2—there is more motivation to use, more rationalization in the contexts faced to use, and fewer resources to mitigate—convenient alternatives to rational decision-making processes for entrepreneurs. While such logic is consistent with the assertion of the field of entrepreneurial cognition that the decision-making of entrepreneurs is unlikely to be "traditionally" rational (Mitchell et al. 2007), it must be noted that other studies, like Sandri et al.'s (2010), have found entrepreneurs and non-entrepreneurs to be similar in reasoning and decision-making behaviors. Our fourth hypothesis follows:

H4: Executive managers will manifest rational choices more often than will entrepreneurs, even controlling for the effects of representativeness.

Our third and final extension of the original BB97 study is also in the downstream direction; we seek to determine whether entrepreneurs who are attributed heuristics and biases that lead to, and correlate with, less rational choices also experience lower accomplishment levels in terms of venture performance and individual rewards. We follow through on the logic for H4 one step further by predicting that worse choices will translate into lower performance and rewards over time, as these would be the expected consequences of mistakes and inaccuracies. Several studies support this logic. Representativeness has been linked to lower performance outcomes in several studies (e.g., Finkelstein, Whitehead, and Campbell 2009; Smith et al. 2010). Koellinger, Minniti, and Schade (2007) suggest overconfidence negatively influences venture performance in terms of survival. Hayward, Shepherd, and Griffin (2006) also determine that overconfidence leads to venture failure, often due to resource deprival caused by inaccurate allocation choices based on overly optimistic thinking.

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[4]When a short-cut—a heuristic—is used, the decision must be "less rational," as by definition, any short-cut is a deviation from "fully rational" (i.e., optimal) decision-making. That is not to say that it could be true that a short-cut could provide the same decision choice (e.g., to choose product A versus B in a scenario), and do so with less computing, making it in such a sense "economically better"—as it gives the same output for a cheaper input, for that specific scenario. The problem is that the set of "appropriate" settings is not known *ex ante*, and users of short-cuts end up using them outside that set, giving what is normally observed as non-optimal, or less rational, decision-making. As such, discussions of performance implications of biases and heuristics are difficult.

[5]Note that entrepreneurs do not *always* suffer more from biases than manager peers; Burmeister and Schade (2007) tests for differences in the "status quo" bias. In that study they find that bankers are more likely to use the status quo bias more than entrepreneurs in consumer scenarios.

Overconfidence in entrepreneurs is harmful to ventures for additional reasons; for example, in less rational responses to setbacks (Trevelyan 2008), such as continuing unsuccessful development efforts for too long (Lowe and Ziedonis 2006).

We have argued that entrepreneurs are more likely to possess the representativeness heuristic and the overconfidence bias (see H1 and H2), we have argued that such alternative decision-making processes and perspectives will lead to non-rational decisions (see H3 and H4), and now we have further argued that these will also lead to lower performance. Thus, we expect entrepreneurs who rely more heavily on representativeness, and who show greater overconfidence, to suffer more in terms of outcomes-of-interest—that is, in terms of lower venture performance, and in terms of lower individual rewards. Hmieleski and Baron (2009) argue similarly about the negative expected effects of a related bias (i.e., dispositional optimism) on venture performance for entrepreneurs. Overconfidence will make decision-making more difficult, increase overextension, increase cognitive dissonance, and harm judgment (Hmieleski and Baron 2009; Judge and Ilies 2004) *for entrepreneurs*—the individuals who are more likely to score high on the optimism dimension (e.g., Lowe and Ziedonis 2006). We expect that less rational judgment will not only affect business decisions relevant to the firm but also relevant to the individual (and that these two measures will likely to correlated, given that most entrepreneurs feel a strong personal affinity to their ventures—e.g., Wasserman 2008). For example, research on gamblers (Chóliz 2010) reveals that heuristics leading to less rational judgment can be pervasive—not only negatively affecting business bets but personal rewards ones as well.

While biases and heuristics may have some instantaneous benefits in specific contexts, we expect that they have significant longer-term costs for ventures and decision-makers (Alvarez and Busenitz 2001). Our fifth hypothesis follows:

H5: For entrepreneurs, venture performance and individual rewards will decrease with overconfidence and representativeness.

Our next hypothesis involves the interaction between the "entrepreneurial" context (i.e., a dynamic environment) and representativeness and overconfidence. We expect that the detrimental effects on performance outcomes are made worse

in the more dynamic competitive environments. Drawing on both the contextual assumptions and the arguments of the original BB97 study, we expect that the more dynamic environments will draw more overconfidence and representativeness from entrepreneurs (e.g., through self-selection). The logic is then, if such environments attract individuals who are more characterized by representativeness and overconfidence, and this heuristic and this bias are correlated with less rational decisions, then under more complex and uncertain settings, the more the heuristic and the bias will prevail and the more the mistakes will be made and the lower the performance will be. We also expect that such harsh environments are less tolerant of the mistakes, and so make them more costly. This is because such contexts are more competitive, involve greater variance of conditions that would expose weaknesses, and are more dynamic to the extent that any initial good luck won't provide more-than-temporary windfalls.

Related work on the consequences of cognitive biases by Hmieleski and Baron (2009) support this prediction, suggesting that the negative effects on performance increase with industry dynamism. While dynamic environments increase opportunities for entrepreneurs, they also are associated with high uncertainty, and the greater information processing challenges that result (Chandler, Honig, and Wiklund 2005). Heuristics and biases may help temporarily relieve those challenges, but are likely to harm judgment (McKenzie 1997). Specifically, overconfidence may decrease needed attentiveness (Hmieleski and Baron 2009), and representativeness may lead to discounting negative information and to over-reliance on personally familiar cases to reduce uncertainty (Berger and Gudykunst 1991). Overconfident individuals will tend to draw from positive small nonrandom (representative) samples, leading to expectedly sub-optimal decisions (Hmieleski and Baron 2009). Given the greater importance of integrating new information with statistical rationality in faster-changing contexts (Eisenhardt 1989), it is more likely that entrepreneurs characterized by representativeness and overconfidence will experience even lower venture performance and personal rewards in dynamic environments. Our sixth hypothesis follows:

H6: Environmental dynamism moderates the relationship between the level of an entrepreneur's overconfidence/representativeness and their venture performance/individual rewards: the relationship will be more

negative for environments with high, as opposed to low, dynamism.

Our last hypothesis involves the interaction between a counter-balancing trait (i.e., risk-aversion) and representativeness and overconfidence. We expect that the detrimental effects on performance outcomes are mitigated when the entrepreneur is more risk-averse. We know that overconfidence correlates with riskier decisions (e.g., Simon and Houghton 2003), and that representativeness is one of the heuristics that correlates with the overconfidence bias. We also know that a balance between optimism and realism correlates with better outcomes (Goel and Thakor 2008; Lovallo and Kahneman 2003). We expect that such balance is more likely when the pro-risk cognitive characteristics of representativeness and overconfidence are countered by anti-risk trait of risk-aversion.

A high level of heuristic decision-making is ineffective in the entrepreneurial context (Hmieleski and Baron 2009; Sarmany 1992). Great effectiveness is possible with self-regulation, such as that provided by risk-aversion. For example, risk-aversion correlates with greater information-seeking in investment decisions and strategies (Bricker and DeBruine 1993; Shun-Yao 2012); information that is likely to correct for representativeness effects. Risk-aversion implies a consideration of base rates, a motivation to avoid the regret of ignoring available statistical information, and a greater openness to considering disconfirming data (especially as expected in dynamic contexts where "bad" surprises are likely). Risk-aversion is also likely to reduce the bad risk-taking associated with overconfidence, whether embodied in over-stretching the firm (Weinberg 2009), choosing riskier investments when inexperienced (Lambert, Bessière, and N'Goala 2012; Menkhoff, Schmidt, and Brozynski 2006), or overcommitting to uncertain projects (Workman 2012). Studies have indicated that CEOs who balance risk-aversion with overconfidence enhance firm value (Goel and Thakor 2008) and are more likely to exert extra effort on risky projects to increase the chances of success (Gervais, Heaton, and Odean 2011). And, when risk-aversion arises from experience (especially with failure), its effects will provide a more seasoned "use" of heuristics and biases, mitigating their negative effects on firm performance and individual rewards. Our seventh and final hypothesis follows:

H7: Risk-aversion moderates the relationship between the level of an entrepreneur's overconfidence/representativeness and their venture performance/individual rewards: the relationship will be less negative for high risk-aversion, as opposed to low risk-aversion.

Empirical Methods

The source of our empirical data is a recent cross-sectional survey of U.S.-based respondents who identified themselves as either *entrepreneurs* or as *executive managers*. Given our desire to replicate the original BB97 study, we followed their methods as much as possible, including using the "survey methods" to access the data for our analysis.

Survey Development and Deployment

The survey was primarily developed by drawing on the questions from the original BB97 study.[6] We provide the descriptions of all variables in the sections that follow.

The survey instrument was entered into *Zoomerang.com*'s system for Internet-based deployment to a targeted audience. The survey was deployed in spring 2012 targeting entrepreneurs and executive managers in the United States. It was conducted on-line by MarketTools (the market research company parent of the on-line survey firm, *Zoomerang*). As with other data from third parties (e.g., databases from Thompson Financial), and as with surveyed data in general, it is important to consider several issues to assure a good set of responses is obtained.

The first issue is the quality of the sampling method. MarketTools has the first quality-assured sampling method in the market research industry; they validate that the respondents are who they say they are, that no respondents take the survey twice, and that respondents are engaged (e.g., answer thoughtfully). Their samples have been validated as providing accurate representations of U.S. census (and other segments) when tested in independent studies; as such, we considered our data as accurate (just as those using other legitimate data providers have). In other words,

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[6]Unfortunately, the original data as well as some of the specific questions were unavailable from the original authors due to nondisclosure issues.

respondents were drawn from MarketTools' clients, with entrepreneurs meeting one specified criteria and managers meeting a different specified criteria; from the variance of the responses, we consider these respondents "normal" (e.g., in distribution of success for survey respondents of this type of study).

The second issue is the use of the online method. The electronic survey technique is newer and entails possible additional concerns versus mail-based surveys. The use of this technique for this paper addressed all of the issues that Simsek and Veiga (2000) outline to consider when using the electronic survey technique.[7]

The third issue involves the response rate, and the related concerns over non-response bias. The response rate was over 28 percent; that level is within the range common in the entrepreneurship literature and when surveys heavily involve new and small businesses (Alreck and Settle 1985; Dennis 2003; Newby, Watson, and Woodliff 2003). To evaluate non-response bias, we tested for statistically significant differences between completed surveys recorded early and those recorded late (Armstrong and Overton 1977; Lambert and Harrington 1990); we did not find evidence of bias. The final responses were the proxy for non-

respondents and the early responses were the proxy for respondents. The t-tests for differences between the two groups yielded no statistically significance in the survey items used in the analysis.

Besides the issues that assure a good set of responses from this particular survey technique, there are additional issues that arise from using a single-response type survey in general. The two main concerns are for common method bias, and for single-respondent bias. We employed the suggested remedies and assessments for each (Krishnan, Martin, and Noorderhaven 2006; Podsakoff et al. 2003). Common method bias may pose problems for survey research that relies on self-reported data, especially when the data are provided by a single respondent—that is, the same person at the same time. The usual concern is that these biases will artificially inflate observed relationships between focal variables. We used both procedural and statistical approaches to minimize the effects. We drew from Podsakoff et al. (2003) regarding "Situation 7"—we used all of the procedural remedies related to questionnaire design; we separated the measurement of predictor and criterion variables psychologically and guarantee response anonymity.[8] Drawing

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[7]MarketTools' sample respondents are scattered and mobile and consist of members that regularly complete online surveys. As well, this technique is less prone to non-sampling errors such as data collection and data processing. None of the common problems in electronic survey applications applied to our application: lack of universal coverage was not an issue given the validated representative population of MarketTools; bias in sampling frames due to users versus non-users of the Internet (and e-mail) was also not a concern due to MarketTools' database; and, compatibility problems and technical problems simply did not exist with our application.

[8]Specifically, we used Model 3A- [p. 899] where the "*researcher cannot obtain the predictor and criterion variables from different sources, cannot separate the measurement context, and cannot identify the source of the method bias. In this situation, it is best to use a single-common-method-factor approach* [SCMF] *(Cell 3A in Table 5)*." We followed the reference of Elangovan and Xie (1999): using the LISREL statistical package for the analysis, our SCMF model provided the following statistics: $\chi^2(229) = 327.70$, $p = .00$, GFI = 0.890, while the BASE model provided the following statistics: $\chi^2(260) = 412.49$, $p = .00$, GFI = 0.861. We interpreted these statistics according to Elangovan and Xie (1999, p. 365) as: even though the overall chi-square statistics were significant between the two models, the incremental fit index difference was calculated as a *rho* of 0.012 suggesting *insignificant* improvement—this means that the method effects were *not* significant (Bentler and Bonett 1980). In other words, the SCMF approach—as suggested by Podsakoff et al. (2003), indicated no common method bias issue for our study.

Specifically, the procedural methods we used included:

- Protecting respondent anonymity to decrease the respondents' tendency to make socially desirable responses. We accomplished this through the online method chosen, where anonymity was guaranteed through the third-party intermediary.
- Reducing survey item ambiguity. We accomplished this through careful attention to wording in our questions, assessed through our pretesting stage.
- Separating scale items to reduce the likelihood of respondents guessing the relationship between variables and then consciously matching their responses to those relationships. We accomplished this by

on relevant interpretations of data by Elangovan and Xie (1999) and Bentler and Bonett (1980) on such models, we found concluded that common method bias was not an issue for our study's analyses.

The use of surveys to provide both dependent and explanatory variable information is common in management and marketing research, where performance is often considered a more complex construct (Capron and Hulland 1999; Vorhies and Morgan 2003, 2005) and where survey-based relative measures have been established as legitimate assessments of firm performance (Venkatraman and Ramanujam 1986). Further, for new ventures (i.e., in cases where very few respondents have knowledge of sensitive information like decision-making procedures and competitive performance), single-response surveys have precedence (e.g., Clark 2000). The procedures and the statistical results suggest that neither common method bias nor single-respondent bias was a serious problem in this study.

Sample of Entrepreneurs. We netted 102 completed surveys from our entrepreneurs. Entrepreneurs were self-identified using the same criteria as in the BB97 study—a respondent had to have founded the focal firm and had to have current involvement in the start-up process. The latter criterion was operationalized as the respondent having started a venture in past two years and/or currently planning on starting another venture in the next five years.[9]

Sample of Executive Managers. we netted 99 completed surveys from our executive managers. Executive managers were self-identified using similar criteria as in the BB97 study—a respondent had to have responsibility for at least two functional areas in the focal firm, and that firm had to be of significant size in terms of employees.[10]

Variables

Testing the hypotheses required the use of several dependent variables, some of which were also used as explanatory variables. To replicate the original BB97 study, we used the variable *entrepreneur* to test H1 and H2. This is a dichotomous zero-one variable that has value of one if the respondent was a founder of an independent start-up within the past two years, or was a past founder planning on starting another venture in the next five years (BB97).

To test H3 required the measurement of the *overconfidence* bias and the *representativeness* heuristic. We followed the sources and specific questions of the original BB97 study to measure these variables. We used the same basis for the *overconfidence* measure as BB97 (but with different specific questions about death rates from various causes in the United States) drawing on the work of Fischhoff, Slovic, and Lichtenstein (1977) to calculate the individual overconfidence

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placing predictor and criterion variables far apart; that is, we placed dependent and independent variables to diminish the effects of consistency artifacts (Podsakoff et al. 2003; Salancik and Pfeffer 1977).

- Targeting the top managers as respondents. Single respondent bias is less of a problem when focal organizations are small (Gerhart, Wright, and McMahan 2000). By surveying the top managers of the new ventures and the C-suite Executives of medium and large firms, we obtained the greatest information on the enterprise from that single response (Clark 2000).

The further statistical methods we used included:

- Conducting Harman's (1967) one-factor test on the data to ascertain whether one factor accounts for most of the variance when all variables are entered together. Our results gave seven factors with eigenvalues over 1.0, where the largest factor explained only 21 percent of variance.
- Assessing the significance of interaction terms in the analysis to determine whether a pattern of significant interaction terms exists. For example, the results of from analyzing the interaction of cognition and environmental terms are unlikely to have resulted from single-respondent bias (Aiken and West 1991; Kotabe, Martin, and Domoto 2003) because it is unlikely that respondents would consciously theorize these complex relationships among variables when responding to the survey.

[9]Note that we were not restricted by the SIC codes of the original BB97 study (SICs 2800–3800) or the one geographic area (the one U.S. state). We did obtain a similar response rate.

[10]Due to restrictions on the population of respondents available to MarketTools, we had to adjust our criteria relative to the BB97 study in terms of the executive manager's firm characteristics. Respondents needed to work in firms of 100 FTEs or more (versus 10,000 employees in the BB97 study) and we did not restrict the firm to being publicly-owned. However, we were not restricted to only two corporations and only a few SIC codes as the original study was.

scores (in percent).[11] We also used the same basis for the measure of individual *representativeness* scores as the original BB97 study, drawing on the exact same two scenarios, following the work of Fong, Krantz, and Nisbett (1986) and Fong and Nisbett (1991). Respondents were required to describe their reasoning for their choice of one alternative over a second for each scenario. We also had coders analyze those descriptions to determine whether heuristic type reasoning was used or not. Our coders were five doctoral students who had education in entrepreneurial issues including decision-making. There was exact agreement among the five coders 78 percent of the time across the data; when opinions varied, a majority rule resolved disputes. Each survey respondent's reasoning was rated either as heuristic (=1) or not (=0), and these scores were then summed across the two scenarios to provide final survey scores.

To test H4 required the measurement of a rationality-type assessment. We drew from the choices made in the measure of *representativeness* to calculate these variables. The variable—*ratl-rep*—measures the rationality of the actual choices made (rather than the descriptions of the reasoning for those choices from the respondents) for the two *representativeness*-related scenarios. Each scenario had one of the possible choices being based on a greater sample size, extensive testing, parallel control groups, etc.. than the alternative. The measure of *ratl-rep* was the number of "economically rational" choices made over the two questions (i.e., =0 if neither rational choice was made, =1 if either rational choice was made, =2 if both rational choices were made).[12]

Testing H5, H6, and H7 required the measurement of relevant outcomes to the entrepreneur. The variable *firm-performance* measured relative the profitability and growth of the focal venture of the entrepreneur. It was based on four questions using a five-point Likert scale and enjoyed a Chronbach $\alpha = 0.847$ (please see the Appendix for details). The variable *indiv-reward* measured the respondent's expected level of compensation (including all benefits) relative to responsibilities. It used a five-point Likert scale, where 1=very poor, 2=poor, 3=fair, 4=good, and 5=excellent.

Testing the various hypotheses also required the use of controls. We used the controls of the original BB97 study as the main individual-based factors. The variable *age* measured the respondent's age, in years since birth. Respondents chose their age, as categorized in 28 bins, ranging from 18-and-younger to 71-and-older. The variable *education* measured the respondent's level of education attained at the time of the survey. Respondents chose from five categories, ranging from high-school-or-less to doctorate-or-more. The variable *alertness* measured the respondent's awareness of relevant events, based on Kaish and Gilad (1991)'s published questions. We used three questions, with ten point scales (where $\alpha = 0.764$ for the construct). The variable *conformity* measured how "conventional" the respondent was. The scale was adapted from Ellis and Child's study of managerial conformity (1973). We use five items with four point scales ranging from 0 to 4 (where $\alpha = 0.861$ for the construct). The variable *risk-aversion* measured the respondent's desire for security. It was based on Gomez-Mejia and Balkin (1989), Jackson (1976), Sexton and Bowman (1984), Slovic (1972), and Hao, Seibert, and Hills (2005). We used four items with five-point Likert scales (where $\alpha = 0.847$ for this construct).

We added an individual-level variable relevant to our extensions to the BB97 study. The variable *objective-reality* measured the respondent's belief about whether the business environment is

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[11]Individual overconfidence was measured based on responses to five questions about the death rates from various diseases and accidents in the United States. The questions were based on the most recent vital statistics report prepared by the National Center for Health Statistics. Respondents had to choose between two causes as the one with the higher attributed death rate, and then answer a question about how confident they were in that selection.

[12]We chose this measure primarily because it was a natural outcome from the original study that was curiously not reported; it is a natural outcome because it would have been reported in that data as closure to the representativeness scenarios. While it is of interest to identify the rationale expressed by the decision-makers in their thought processes (for cognitive research), it is also of interest (to the strategist) to identify what the actual choice made was, regardless of the process taken to get there. Thus, we do the analyses here of involving the measure based on the choices made. It was a directly related extension to the original study that we considered an addressable flaw.

objective (not based on any specific person's or group of persons' perspectives, = 1) rather than socially constructed (based on people's beliefs, = 0).

Because we were interested in venture performance we also controlled for various firm-level characteristics. The variable *firm-age* measured the respondent's firm's age in years at time of survey, chosen from 14 categories, ranging from less-than-1-year to over-60-years. The variable *firm-size* measured the respondent's firm's size in full-time-equivalent employees (FTEs) at time of survey, chosen from 25 categories, ranging from less-than-1-FTE to over-25000-FTEs. The variable *appropriation* measured the respondent's belief that the focal firm more often benefits in terms of follow-on opportunities after the firm exploits a new business opportunity (=1) than do other firms (=0). The variable *firm-report-use* measured the respondent's use of reports and statistics at work and away, based on four questions with five-point Likert scales (where $\alpha = 0.876$ for the construct; please see the Appendix for details).

Finally, we also controlled for the competitive context, when relevant. The variable *env-dynamics* measured the uncertainty, hostility and complexity of the firm's industry. There were five questions with five-point Likert scales (where $\alpha = 0.742$ for the construct; please see the Appendix for details).

We checked all of the constructs used in this study for discriminant validity. We report the factor loadings of the individual-level constructs and non-individual-level constructs in Table 1. All items loaded onto the expected constructs, and the CFA statistics over all of these constructs revealed a good fit (e.g., RMSEA = 0.054, CFI = 0.968).

Descriptive Statistics

Table 1 provides the descriptive statistics and simple correlations for the main variables in this study. The variables appear to have reasonable ranges, averages, and variances. As well, several of the simple correlations are significant in the expected directions. Being an *entrepreneur* is correlated with both *overconfidence* and *representativeness*; it is also negatively correlated with *education*. Rationality is negatively correlated with *representativeness* as expected. Firm performance and individual rewards are correlated with firm size and appropriability, and with environmental dynamism, also as expected. In other words, the survey data appears to pro-vide a reasonable basis for conducting our analyses.

Analysis Methods

We draw on the appropriate analysis methods for the type of the dependent variable and the hypothesis test of concern. To test H1 and H2 we follow the original BB97 study and apply logit regressions, but with the more traditional ordering of Model 1 being the "base" analysis involving only the control variables. Model 2 is the analysis with the added overconfidence bias and heuristic variables. In the results, we note the differences in these models in the increases in the significance of regressions and "hit ratio" (i.e., number of correctly predicted entrepreneurs). To test H3 we choose the appropriate technique for the dependent variable type—we use ordinary least squares (OLS) to find correlates for the bias *overconfidence*. To test H4 and identify correlates for rational choices we use an ordered probit model because this variable only takes on integer values from 0 to 2. To test H5, H6, and H7, we use the appropriate hierarchical technique where a base model is compared to a model with added variables (of the interaction types). We use hierarchical OLS analysis for the continuous variable of firm performance and an ordered probit for the scaled variable of individual rewards. We test for changes in model fit with the appropriate statistic between base and added-variable models (e.g., an F-statistic for hierarchical OLS). Note that we centered the variables involved in the interaction terms about their means prior to calculating the interaction to reduce multicollinearity effects (Aiken and West 1991; Belsley, Kuh, and Welsch 1980). As such, multicollinearity was not an issue for any of the analyses (with the maximum VIF recorded below 3).

Results

Table 2 provides the results for hypothesis testing. The header rows indicate the dependent variables (DVs) being analyzed, the analytical methods used, the hypotheses tested, and the model number. The main rows are the coefficient values and standard deviations, and significances for the variables used in the analysis. The footer rows provide information on the sample, and various significance tests for the model. The first column (reading left to right) indicates the variable label; the remainder of the columns are provided in sets, corresponding to the tests on each of the seven hypotheses, with

Table 1
Construct Factor Loadings and Descriptive Statistics and Correlations

Item/Component	1	2	3	4
AlertQ1	−0.082	0.297	0.093	**0.587**
AlertQ2	−0.097	0.141	0.083	**0.883**
AlertQ3	−0.068	0.158	0.198	**0.879**
ConformityQ1	**0.662**	0.014	−0.093	−0.263
ConformityQ2	**0.804**	−0.027	−0.159	−0.086
ConformityQ3	**0.766**	−0.022	−0.167	−0.036
ConformityQ4	**0.826**	−0.064	−0.191	0.018
ConformityQ5	**0.873**	−0.076	−0.042	0.017
Risk-AversionQ1	−0.103	0.021	**0.835**	0.134
Risk-AversionQ2	−0.121	0.005	**0.809**	0.030
Risk-AversionQ3	−0.157	0.128	**0.805**	0.116
Risk-AversionQ4	−0.230	0.136	**0.761**	0.140
Use-ReportQ1	−0.066	**0.895**	−0.028	0.149
Use-ReportQ2	−0.021	**0.910**	0.123	0.104
Use-ReportQ3	−0.033	**0.872**	0.042	0.107
Use-ReportQ4	−0.032	**0.656**	0.146	0.276

Item/Component	1	2
Firm-PerformanceQ1	**0.848**	0.206
Firm-PerformanceQ2	**0.861**	0.122
Firm-PerformanceQ3	**0.865**	0.201
Firm-PerformanceQ4	**0.851**	0.185
Environmental-DynamicsQ1	0.217	**0.642**
Environmental-DynamicsQ2	0.013	**0.776**
Environmental-DynamicsQ3	0.299	**0.487**
Environmental-DynamicsQ4	0.103	**0.763**
Environmental-DynamicsQ5	0.204	**0.712**

Table 1
Continued

Descriptive Statistics

	Min.	Max.	Mean	StdDev	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 entrepreneur	0	1	0.507	0.501																
2 firm-performance	1.5	5.0	3.606	0.803	0.000															
3 indiv-reward	1	5	3.721	0.844	−0.066	0.586														
4 ratl-rep	0	2	0.940	0.668	−0.043	0.040	0.059													
5 overconfidence	−30	100	14.060	23.667	0.180	0.193	0.134	−0.164												
6 representativeness	0	2	0.980	0.663	0.181	0.032	0.097	−0.262	0.118											
7 age	2	28	15.095	6.167	0.004	−0.175	−0.089	0.179	−0.329	−0.034										
8 education	1	5	3.308	1.065	−0.154	0.238	0.135	0.124	0.125	−0.048	−0.109									
9 alertness	1	10	3.735	1.851	0.119	0.299	0.145	−0.140	0.445	−0.090	−0.385	0.247								
10 conformity	0	4	2.035	0.852	−0.018	−0.256	−0.155	0.049	−0.105	−0.047	0.196	−0.187	−0.207							
11 risk-aversion	1	5	2.836	0.985	0.084	0.186	0.068	−0.045	0.206	0.035	−0.395	0.075	0.304	−0.355						
12 objective-reality	0	1	0.652	0.478	−0.031	0.136	−0.006	0.044	0.167	−0.117	−0.121	0.242	0.217	−0.154	0.112					
13 appropriation	0	1	0.836	0.371	−0.061	0.180	0.172	0.061	0.117	0.007	−0.207	0.078	0.128	−0.042	0.001	0.042				
14 firm-report-use	1	5	3.517	0.925	−0.095	0.449	0.367	0.010	0.239	−0.020	−0.323	0.336	0.416	−0.119	0.197	0.099	0.132			
15 firm-age	1	14	7.050	3.826	−0.436	0.065	0.082	0.015	−0.082	−0.039	0.224	0.157	−0.105	−0.013	−0.074	0.045	0.002	−0.014		
16 firm-size	1	25	11.129	7.573	−0.489	0.325	0.265	0.059	0.099	−0.007	−0.171	0.385	0.216	−0.120	0.096	0.201	0.144	0.348	0.555	
17 env-dynamics	1.2	5	3.376	0.724	0.017	0.418	0.277	0.003	0.253	0.057	−0.357	0.243	0.326	−0.208	0.373	0.103	−0.026	0.441	−0.058	0.222

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

***Note:** Correlations greater than 0.138 are significant at $p < 0.05$ in two-tailed test.

Table 2
Hypotheses Testing

Variable	Logit Model 1 DV = entrepreneur	Logit H1, H2 Model 2 DV = entrepreneur	OLS H3 Model 3 DV = overconfidence	Ordered Probit H4 Model 4 DV = ratl-rep	OLS H5 Model 5 DV = firm-performance	OLS H5, H6 Model 6 DV = firm-performance	OLS H5, H6, H7 Model 7 DV = firm-performance	Ordered Probit H5 Model 8 DV = indiv-reward	Ordered Probit H5, H6 Model 9 DV = indiv-reward	Ordered Probit H5, H6, H7 Model 10 DV = indiv-reward
constant	−0.257 (1.087)	−1.167 (1.178)	−14.135 (16.187)	−2.058 (0.747) ** 0.144 (0.172)	1.550 (0.577) **	1.668 (0.569) **	1.698 (0.561) **	−0.399 (0.944)	−0.144 (0.956)	−0.057 (0.968)
entrepreneur										
age	0.028 (0.027)	0.046 (0.029)	−0.858 (0.367) *	0.033 (0.016) *	0.022 (0.014)	0.017 (0.013)	0.015 (0.013)	0.021 (0.022)	0.018 (0.023)	0.014 (0.023)
education	−0.393 (0.149) **	−0.418 (0.156) **	0.216 (1.933)	0.181 (0.085) *	−0.014 (0.064)	0.025 (0.065)	0.061 (0.064)	−0.001 (0.104)	0.066 (0.109)	0.107 (0.111)
alertness	0.203 (0.093) *	0.190 (0.104) †	5.273 (1.318) ***	−0.141 (0.055) *	0.057 (0.046)	0.037 (0.046)	0.033 (0.046)	0.024 (0.074)	−0.022 (0.077)	−0.034 (0.079)
conformity	−0.022 (0.187)	−0.007 (0.192)	2.461 (2.502)	0.048 (0.104)	−0.164 (0.082) *	−0.172 (0.080) *	−0.119 (0.080)	−0.176 (0.138)	−0.238 (0.145)	−0.246 (0.145) †
risk-aversion	0.160 (0.173)	0.149 (0.176)	−2.600 (2.531)	0.064 (0.097)	−0.064 (0.082)	−0.096 (0.082)	−0.005 (0.004)	0.013 (0.138)	−0.044 (0.138)	−0.075 (0.140)
overconfidence		0.015 (0.008) †			−0.006 (0.003) *	−0.008 (0.003) *	−0.020 (0.105)	−0.004 (0.006)	−0.004 (0.006)	−0.001 (0.006)
representativeness		0.580 (0.239) *	5.601 (3.211) †	−0.528 (0.130) ***	0.007 (0.106)	0.045 (0.105)		0.147 (0.174)	0.191 (0.177)	0.118 (0.182)
objective-reality			6.861 (4.733)							
appropriation					0.553 (0.185) **	0.597 (0.183) **	0.631 (0.179) ***	0.750 (0.303) *	0.814 (0.310) **	0.861 (0.313) **
firm-report-use			−2.992 (2.426)	0.086 (0.108)						
firm-age					0.017 (0.024)	0.013 (0.024)	−0.003 (0.024)	−0.016 (0.040)	−0.023 (0.040)	−0.046 (0.042)
firm-size					0.042 (0.016) **	0.045 (0.016) **	0.046 (0.015) **	0.021 (0.026)	0.020 (0.027)	0.022 (0.027)
env-dynamics			7.728 (3.255) *	0.117 (0.135)	0.386 (0.109) ***	0.371 (0.107) ***	0.388 (0.104) ***	0.554 (0.182) **	0.560 (0.184) **	0.588 (0.185) **
env-dynamics * overconfidence						0.006 (0.003)	0.013 (0.005) **	0.019 (0.007) **	0.019 (0.007) **	0.027 (0.009) **
env-dynamics * representativeness						−0.282 (0.147) †	−0.506 (0.167) **		−0.230 (0.256)	−0.512 (0.295) †
risk-aversion * overconfidence							−0.007 (0.004) †			−0.007 (0.007)
risk-aversion * representativeness							0.272 (0.118) *			0.383 (0.209) †
N	201	201	102	201	102	102	102	102	102	102
adjusted R²	0.043	0.085	0.324	0.081	0.386	0.410	0.442	0.103	0.134	0.148
χ² - statistic	11.950 *	23.681 **		32.384 ***					34.309 **	38.039 ***
F-statistic			6.378 ***		6.783 ***	6.410 ***	6.329 ***	26.447 **		
Hit Ratio change	+10.1% from base	+6.9% from model 1								
test for added variables						2.825† F-test	3.531 * F-test		7.862 * χ² - test	3.730 ns χ² - test

Notes: (i) base rate is 102/99 = 50.7%

(ii) adj R² is McFadden Pseudo R² for the Logit and Ordered Probit Analyses.

(iii) Significance Legend: † = $p < 0.10$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

(iv) To compute the interaction terms, the constituent variables (env-dynamics, risk-aversion, overconfidence, representativeness) were first centered prior to multiplication.

two pairs for each of the last three hypotheses (because two DVs were considered there).

The logit analysis (reported in Models 1 and 2) supported both H1 and H2. The coefficients of both *overconfidence* and *representativeness* were in the expected direction and significant (at $p < .10$ and $p < .05$, respectively); additionally, the increase in explanatory power was significant over the control analysis of Model 1, and the hit ratio increased significantly.[13] Thus, being an entrepreneur was positively associated with both a greater *overconfidence* bias and a greater use of the *representativeness* heuristic.

The OLS analysis (Model 3) supported H3. The *overconfidence* bias was positively correlated with the *representativeness* heuristic (at $p < .10$), as well as with *alertness* (at $p < .001$), and *env-dynamics* (at $p < .05$), and negatively correlated with *age* (at $p < .05$), for the entrepreneurs.

The ordered probit analysis (Model 4) did *not* support H4. Being an entrepreneur did *not* significantly correlate with "less rational" choices. Expectedly, the representativeness heuristic had a significant negative correlation on its related choice outcome (at $p < .001$). As well, *age* and *education* were positive correlated with more rational choices (at $p < .05$ and $p < .05$, respectively). These latter but non-focal results were sensible.[14]

The hierarchical analyses (Models 5 through 10) partially supported H5, H6, and H7. Only the *overconfidence* bias was negatively correlated to firm performance (at $p < .05$). In the best fitting model for *firm-performance* (Model 7), neither focal variable was significant (see below for explanations of how *overconfidence* is moderated by other factors to create its effects on firm performance). Similarly, neither the bias nor the heuristic was significant for the regressions on individual rewards. Overall, there was little support for H5.

Figure 1
Overconfidence—Environmental Dynamics Interaction Effect on Firm Performance
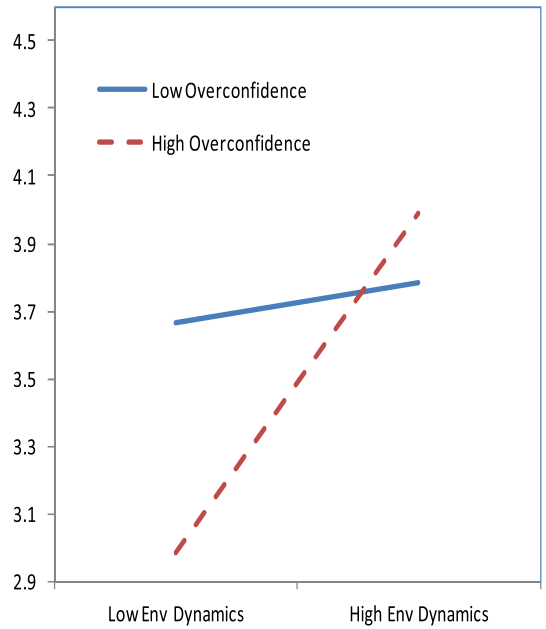
Adding the interaction terms to the base regressions provided significant improvements in model accuracy (i.e., the F-test and the χ^2-tests were significant); Model 7 (with four interaction terms) was the best-fitting for *firm-performance*, while Model 9 (with two interaction terms) was the best fitting for *indiv-rewards*.[15]

While H6 was supported by the results for the representativeness heuristic (at $p < .01$ in Model 7, at $p < .10$ in Model 10), the *opposite* effect was supported for the overconfidence

[13]For robustness, we also report means t-test statistics for differences of focal variables between entrepreneurs and managers here: for overconfidence and for representativeness, the entrepreneurs have significantly greater levels ($p < .01$) than the managers; for *ratl-rep*, the entrepreneurs have greater levels ($p > .10$) than the managers, but it is non-significant.

[14]The unexpected non-focal result was a significant negative correlation of *alertness* with *ratl-rep*; our argument was that greater outside knowledge would make for better decisions. However, given the result of H3—that alertness increases *overconfidence*—perhaps it is not surprising that this other measured deviation from rational decisions is also increased by alertness, as it would appear that greater knowledge actually appears to make the decision-maker more comfortable ignoring base rates (Forbes 2005, p. 637; Zacharakis and Shepherd 2001).

[15]Note that Evans (1985) and Siemsen, Roth, and Oliveira (2010) both agree that interaction terms *cannot* be artifacts of common method variance; if interactions are found, they are likely to exist (although their practical effects may be attenuated).

**Figure 2
Representativeness—Environmental Dynamics Interaction Effects on Firm Performance**

**Figure 3
Overconfidence—Risk Aversion Interaction Effect on Firm Performance**
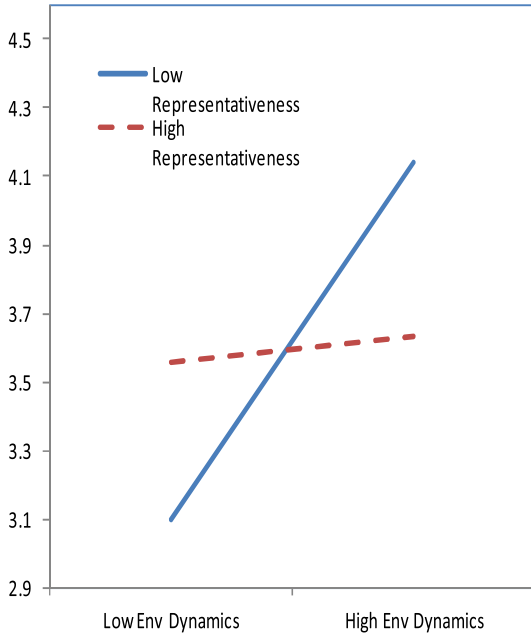
bias (at $p < .01$ in Model 7, at $p < .01$ in Models 9 and 10). So, while *representativeness* correlated with more-negative outcomes (at the firm and individual levels) in the more dynamic environments, *overconfidence* correlated with more-positive ones. Insight into what drives the results comes from plotting the interactions (see Figures 1, 2, 5, and 6). It appears that the representativeness results are driven by the low-values; low representativeness in less-dynamic environments leads to the worst outcomes while low representativeness in very dynamic environments leads to the best outcomes. These outcomes indicate that drawing on more-rational information-scanning is optimal in turbulent contexts, while doing so in stable contexts is detrimental (e.g., because the firm fails to differentiate itself from its better-endowed peers). As for overconfidence, the plots reveal that the results are driven by the high values; high overconfidence in less-dynamic environments leads to the worst outcomes while high overconfidence in very dynamic environments leads to the best outcomes. These outcomes indicate that

bold decision-making is beneficial in changing contexts, perhaps to exploit first-mover advantages (alternatively, it could be that overconfidence resulted in overestimating the dynamic environmental pressures—Pillai 2010—allowing the entrepreneur to better prepare for the realized challenges relative to rivals), while such boldness in stable contexts is self-defeating (perhaps because there are few new opportunities to be bold about).

The results for H7 were also mixed; support was seen for the heuristic but not for the bias. While *representativeness* correlated with more-positive outcomes (at the firm and individual levels—at $p < .05$ in Model 7, and $p < .10$ in Model 10, respectively) when entrepreneurs were more risk-averse, *overconfidence* correlated with more-negative firm-level outcomes (at the $p < .10$ level in Model 7). Insight into what drives the results comes from plotting the interactions (see Figures 3–7, and 8). It appears that the representativeness results are driven by the

Figure 4
Representativeness—Risk Aversion Interaction Effects on Firm Performance

Figure 5
Overconfidence—Environmental Dynamics Interaction Effect on Individual Rewards
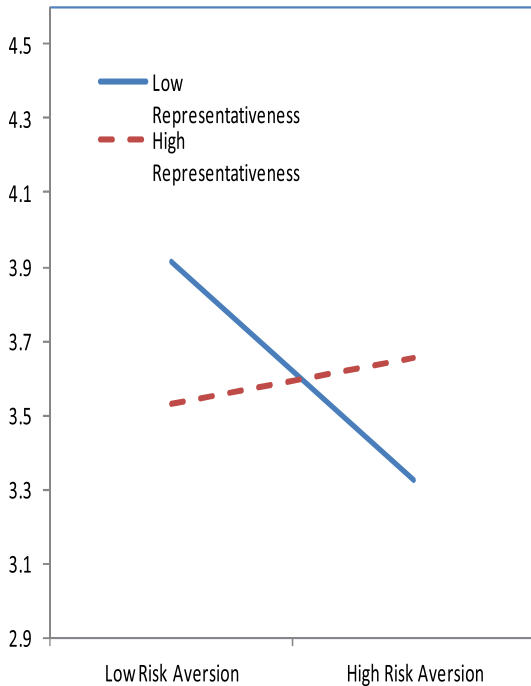
low-values; low representativeness with high risk aversion leads to the worst outcomes while low representativeness with low risk aversion leads to the best outcomes. These outcomes indicate that drawing on more-rational information-scanning is optimal when "taking risks" (e.g., because the firm fails takes smart risks), while doing so when "playing it safe" is detrimental. As for overconfidence, the plots reveal that the results are driven by the high-values; high overconfidence with high risk aversion leads to the worst outcomes. The outcome indicates that bold decision-making when "playing it safe" simply strengthens an undifferentiated strategy that is bound to fail in competition with better endowed peers.

Discussion
Review of Results

The analysis successfully replicated the original BB97 study's main results, using more diverse samples (e.g., drawing on many more firms from a wider array of industries for the manager sample). Like BB97, we found that entrepreneurs were more highly associated with biases (i.e., overconfidence) and heuristics (i.e., representativeness) than managers. And, we provided the analysis in a more "traditional" fashion—that is, running the control analysis *before* adding the focal variables. This somewhat deflated the importance of the bias and heuristic, especially in terms of the effect on the "hit ratio."[16]

We then extended the BB97 analysis "upstream"—in terms of the *origins* of these

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[16]We expect that the original BB97 results would have provided similar outcomes, and were perhaps somewhat "oversold" in terms of playing up the value of the cognitive factors and playing down that of the controls (as their controls appeared to add about as much to the "hit ratio" as their focal variables—9 percent versus 10 percent — even after those latter variables were present; recall their base hit ratio was about 60 percent whereas ours was about 51 percent).

Figure 6
Representativeness—Environmental Dynamics Interaction Effects on Individual Rewards
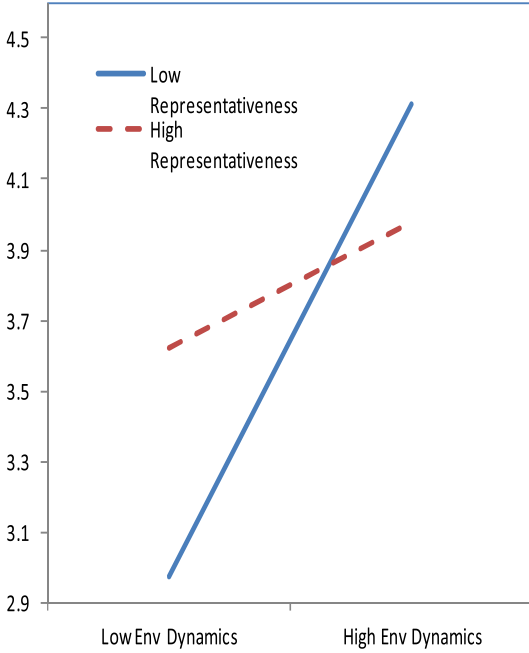
Figure 7
Overconfidence—Risk Aversion Interaction Effect on Individual Rewards
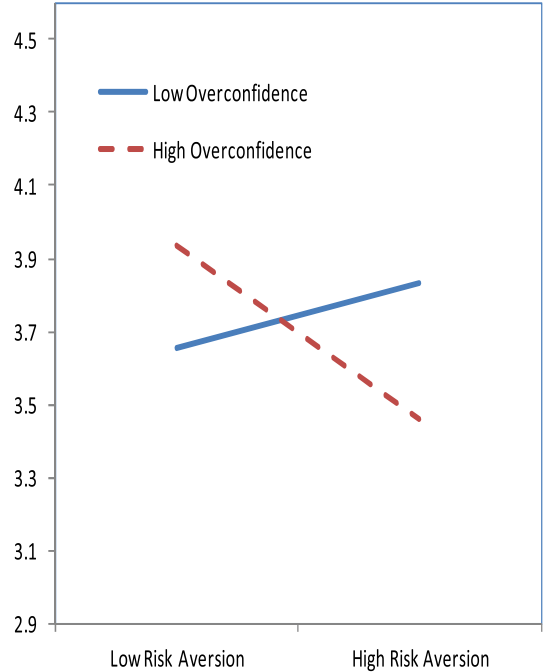
cognitive factors—and "downstream"—in terms of the *effects* of the factors. We extended upstream to determine whether the bias could be "controlled." We did so to identify correlated factors that policy could influence to potentially decrease the negative effects of this bias. We found that the bias correlated with individual-level and industry-level factors, indicating the possibility it could be influenced through these factors.

The downstream extension covered three outcomes: (i) the rationality of the choices made across all respondents; (ii) the firm performance of the entrepreneurs; and, (iii) the individual rewards to the entrepreneurs. We found that entrepreneurs were no less rational than executive managers in terms of the choices they made, yet the heuristic that entrepreneurs relied upon more was significantly correlated with less rational choices. Essentially, it appeared that despite "thinking differently," entrepreneurs could still choose as rationally as their manager peers, perhaps because of countervailing characteristics. In terms of the "entrepreneur-relevant outcomes"—that is, firm performance and individual rewards—we found some costs and benefits to the bias and the heuristic. High overconfidence was costly to venture performance (without accounting for moderating effects) but, when combined with a highly dynamic environment, was beneficial to both firm performance and individual rewards in the best-fitting models. By contrast, low representativeness was beneficial when combined with dynamic environments. It was also beneficial when the entrepreneur was more risk-taking. So, the overconfidence bias and representativeness heuristic had significant effects on all three outcomes. The heuristic of representativeness correlated with less rational choices, but when it was minimized in dynamic environments and with risk-taking benefits were likely; in other words, the effects of the heuristic aligned well

Figure 8
Representativeness—Risk Aversion Interaction Effects on Individual Rewards
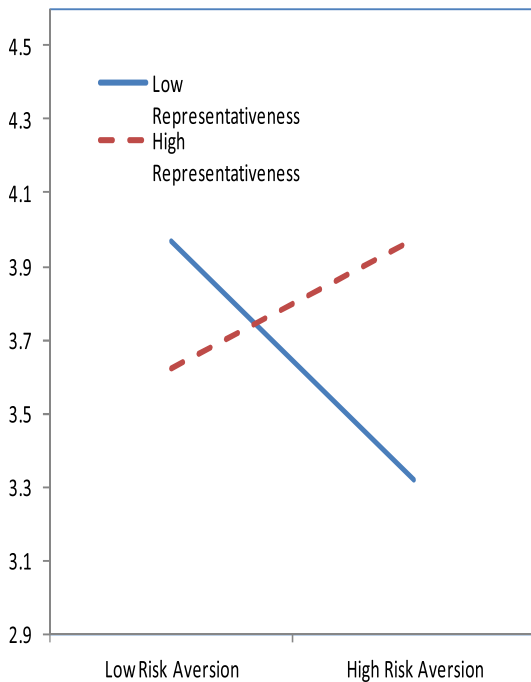
with expectations. In contrast, the bias of overconfidence had the its significant effects when maximized—when combined with dynamic environments and risk-taking, there were benefits, but when combined with stable environments and risk-aversion, costs were significant. Combining the results indicates that a consistent (and theoretically compatible story): curtailing decision-making short-cuts (i.e., minimizing the narrowing of the field of choices) is most beneficial when dynamics and risk-taking are great, and boosting the audaciousness of decisions (and actions) is most beneficial when dynamics and risk-taking are great. Explaining the beneficial interaction with dynamic environments implies referring to the original story for how overconfidence helps entrepreneurs make decisions faster and with conviction in their "usual circumstances" where opportunities are likely to exist in the dynamic environment; it would appear, for our study, that any mistakes in decision-making due to overconfidence that we

predicted are outweighed by the benefits of what the confidence brings to the entrepreneur in terms of greater persuasion of resource-holders (e.g., investors, employees, and partners) to help the venture proceed, hit small windows of opportunity, and succeed (Busenitz and Barney 1997).

Implications

Our results help inform the literature on "how entrepreneurs think differently" by reaffirming that the overconfidence bias and representativeness heuristic remain more attributable to entrepreneurs than to managers, by identifying possible ways to manage the bias, and by identifying likely strategic impacts of each under certain conditions.

We find evidence that entrepreneurial cognition is strategically interesting because firm performance and individual rewards are both affected by a bias and a heuristic that are relatively more attributed to entrepreneurs. We recommend further investigation into the tradeoffs made by entrepreneurs attributed these cognitive characteristics, given such "less-rational" decision-making survives despite the overall expected negative influence on performance. For example, perhaps while the mean effect is detrimental, the upside variance is compensatingly high.

We also find evidence suggesting that despite the attributed heuristic that negatively correlates with "rational" decisions, entrepreneurs seem to make similarly sensible choices as manager-peers. We recommend further investigation into whether entrepreneurs also have some countervailing characteristics, or whether there is some "flaw" in the way such heuristics (and biases) are measured in survey-based research (versus in the field).

We further find evidence that entrepreneurs do not "think differently"—in terms of what correlates to having the bias or heuristic—simply because they find themselves working in a certain *organizational* context (Forbes 2005). The cognitive behavior seems to be affected by individual-level factors as well as by industry-level ones. If "thinking" behaviors are a function of "learned" behaviors, proxied by age or by alertness, then perhaps we need a better understanding of this "hierarchy" of behaviors to identify the best points to apply policy levers. Perhaps another way to add perspective is to consider the question of "*when are entrepreneurs likely to think differently?*" For example,

if this only occurs in opportunity formation rather than in opportunity exploitation, then perhaps we need to restrict our studies to "certain decisions" rather than to "certain definitions of individuals."

Note that our implications differ from those of Forbes (2005), and Hmieleski and Baron (2009). Although we used a similar measure of overconfidence as Forbes (2005) and some similar controls (e.g., entrepreneur age and education), many significant antecedents differed (e.g., we included representativeness, alertness, and environmental dynamics). Although we tested a similar interaction effect (i.e., environmental dynamics) with the overconfidence bias as Hmieleski and Baron (2009) did regarding effects on firm performance, the bias differed (optimism versus overconfidence), the measure of firm performance differed, and many significant controls differed. We offered results on a bias as well, and also for a heuristic, and for the effects of interactions with risk-aversion. Due to such differences with these related papers, our results also differed and thus our preceding theoretical implications emerge from a unique perspective.

Besides theoretical implications, this study provides several practical and policy implications. The main practical implications involve the downstream extensions of this study. If the entrepreneur wishes to guard against making "less-rational" choices, she can try to manage her biases and heuristics by drawing on our identified correlates, like alertness. If the entrepreneur wants to keep the venture performance high—as an owner-manager—she may also wish to mitigate *representativeness*, especially in dynamic environments and when taking risks. Conversely, if the entrepreneur is more interested in her individual rewards over the firm's performance, an *overconfidence* bias appears beneficial—perhaps because it helps in selling privately beneficial predictions underlying compensation targets.

Policy implications also arise from the extensions, but focus on overall social benefits (rather than the private ones considered by the practical implications). In certain industries where new venture-based experimentation would provide high spillovers, they may wish to increase funding towards entrepreneurs who exhibit the *overconfidence* (or its correlate of younger age) that is more associated with launching a less-conformist venture (Arenius and Minniti 2005; Trevelyan 2008). But in other industries where venture failure is net costly, policy-makers may wish to mitigate the effects of biases and heuristics in entrepreneurs, perhaps through training in self-regulation (Bryant 2007), or through selecting on correlates, like age, or through balancing factors, like risk-aversion.

Limitations

We caution the application of the results from this one study to different domains because of the numerous limitations such survey-based research commonly involves. This study is limited by its sampling in terms of: the time period (i.e., spring 2012), the geographic target (i.e., the United States), and the filters used to select entrepreneurs and executive managers (e.g., based on recent founding or multifunctional responsibilities). Generalizing the results outside such specifications should be done with caution. This study is limited by the survey method employed in terms of: being done once, being limited in size, and using single respondents. This study is limited by the specific variables measured, in terms of: the possibility that "missing variables" may also be important to the analyses, and that there were some differences in the variable measures from those of original BB97 study. This study is limited by the analysis methods, in terms of possible empirical concerns. However, we applied the appropriate methods for the dependent variable type, and checked for robustness (often not formally reported) for alternative methods (e.g., OLS for ordered probit), for alternative models (e.g., self-selection), for multicollinearity, and for alternative variables. We found no significant concerns or changes to our main results.

Future Work

Future work could address many of the limitations just described. For example, longitudinal studies could be used to identify whether specific ways of how entrepreneurs think differently actually *cause* strategically interesting outcomes. We recommend follow-on work to determine what countervailing mechanisms exist in entrepreneurial thinking that lead to reasonable choices despite the existence of heuristics and biases (such as risk-aversion, as we have considered some interactions effects for in this study).

Being an infant field, many challenges for entrepreneurial cognition remain. We have contributed to the study of how entrepreneurs think differently by adding to the understanding of

what mechanisms are involved in it, how it matters, and potentially how it can be managed.[17] We need to continue; for example, we need to better identify the benefits from thinking differently (given its costs are well known), as well as the causes of such divergence. It will be important to explain what the benefits of the different thinking are relative to the "rational processes" which are, by definition, "optimal" by proposing that some of these different thinking processes are faster, simpler and cheaper in the short-run, or by being creative in how one defines what a "traditional" process is, and in how one models the constraints and information asymmetries and cost allocations. How the field responds to such challenges will be interesting to follow; regardless, the developments in this field, especially when combined with strategic interests, should lead to better entrepreneurial decision-making and more valuable entrepreneurial activity in our future.

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[17]This paper contributes by replicating the BB97 Study, with a more diverse sample, and updated presentation of results, and also a full reporting of the results. The main contribution, however, is found in the extensions of the study both upstream—to identify possible causes of the bias—and downstream—to identify possible effects of the heuristic and the bias over several measures; we also address several calls for alternative measures and controls in related, more recent studies in our analyses.

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Appendix: Survey Questions of Select Constructs

sbu-performance:

Four questions on relative profitability and growth ($\alpha = 0.847$)

1. Profitability relative to peers
2. Profitability relative to objectives
3. Growth relative to peers
4. Growth relative to objectives

[Five-point Likert scales with 1=much worse, 2=worse, 3=about the same, 4=better, 5=much better]

sbu-report-use:

Five questions on the use of reports ($\alpha = 0.876$)

1. At your work, people are expected to use and refer to statistical analysis when making decisions.
2. At your work, people are expected to use and refer to external repots when making decisions.
3. At your work, people will miss business opportunities if they over-analyze them.
4. Outside of your work (e.g., with your hobby), you draw on statistics and external reports to make decisions.

[Five-point Likert scales with 1=completely disagree, 2=disagree, 3=neither agree or disagree, 4=agree, 5=completely agree]

env-dynamics:

Five questions regarding the competitive environment ($\alpha = 0.742$)

1. The competitive environment is completely unpredictable.
2. The competitive environment is highly hostile.
3. The industry is constantly changing.
4. There is a high turnover of firms in this industry.
5. The industry experiences many technological and regulatory shocks.

[Five-point Likert scales with 1=completely disagree, 2=disagree, 3=neither agree or disagree, 4=agree, 5=completely agree]

Opening the Black Box: Power in Buyout Negotiations and the Moderating Role of Private Equity Specialization
by Oliver Ahlers, Andreas Hack, Franz Kellermanns, and Mike Wright

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The management buyout is an important exit strategy for small business owners. Negotiations of buyout deals have received little research attention to date. This is surprising given buyout negotiations' complexity giving rise to multiple issues that require consideration and often conflicting interests of deal parties. This paper examines perceived bargaining power in buyout negotiations between private equity (PE) firms and current owners who sell their business. We identify competition, expertise, and time pressure as key antecedents of PE firms' perceived bargaining power and examine the moderating effect of PE firms' industry and size specialization in buyout negotiations. We use a sample of 176 respondents who each report on a particular buyout deal for a PE firm. The majority of respondents are seasoned PE professionals who held managing director or investment director positions.

Introduction

A management buyout is when private equity (PE) firms together with the incumbent and/or external management take over the business (Meuleman et al. 2009). The buyout is an important route for SME owners to exit their business and could be particularly relevant for family firms who find no successor inside the family (Bruce and Picard 2006; Sharma and Irving 2005). According to a recent survey, it is estimated that around 35 percent of businesses globally consider ownership succession through a buyout (PWC 2011).[1] Buyouts can have advantages over other forms of ownership transition. The initial public offering (IPO), which is the start of public quotation, is a complex and costly process, and thus, not feasible for many SMEs (Ehrhardt and Nowak 2003). The trade sale, which is the sale of the business to another company such as a competitor is often not desirable (Scholes et al. 2007). On the contrary, buyouts allow the business to remain an independent corporate entity with flexibility on

Oliver Ahlers is a Visiting Researcher in the Witten Institute for Family Business (WIFU) at Witten/Herdecke University.

Andreas Hack is professor at the Institute of Organization and Human Resource Management, University of Berne, Switzerland, and affiliated professor at the Witten Institute for Family Business (WIFU), University Witten/Herdecke, Germany.

Franz Kellermanns is a professor of management at the University of North Carolina – Charlotte and affiliated with WHU (Otto Beisheim School of Management).

Mike Wright is professor of Entrepreneurship at Imperial College Business School and visiting professor at University of Ghent.

Address correspondence to: Franz Kellermanns, UNC Charlotte, 9201 University City Blvc., Charlotte 28223. E-mail: kellermanns@uncc.edu.

[1]According to this worldwide PWC survey, ~1,600 (family business) owners and managers assume the following exit routes for their business: 53 percent family succession, 35 percent buyouts (management and financial investors), 21 percent trade sale, 8 percent IPO, and 13 percent other. Please note: Numbers do not add up to 100 percent as multiple answers were possible.

how to design management structures (Scholes et al. 2007).

Buyouts are usually driven by PE firms for which they are the key investment route and present opportunities for corporate entrepreneurship in established businesses under a new ownership regime (Phan et al. 2009). A buyout deal requires negotiations between current owners and PE acquirers on how to form a new, independent corporate entity (Meuleman et al. 2009). There is usually an asymmetric view on the value of the business whose price is ultimately determined in an iterative process between the deal parties. Powerful negotiators usually benefit from this process, because they are likely to claim more value from a purchasing agreement (Argyris and Liebeskind 1999; Nair, Narasimhan, and Bendoly 2011; Overbeck, Neale, and Govan 2010). Yet buyout negotiations are extraordinarily complex, given the number of financial, tax, and legal issues that need to be resolved between the negotiating parties (Cumming and Johan 2009).

Surprisingly, we know very little about this topic apart from sketchy coverage in some practitioners' guides. Previous research has focused mostly on PE performance issues (e.g., Cumming, Siegel, and Wright 2007; Wilson et al. 2012) and PE investment decision-making (Dawson 2011). Although researchers acknowledge that PE firms increasingly develop specialization (strategies) to gain competitive advantage over peers in a matured marketplace (Cressy, Munari, and Malipiero 2007), the important negotiation phase, however, has been largely ignored (for an exception, see Scholes et al. 2007). In particular, there is no research on how PE firms perform in negotiations with firm sellers and if specialization plays a role in negotiation (Cressy, Munari, and Malipiero 2007; Gompers, Kovner, Lerner, and Scharfstein 2008).

With this paper, we hope to make a number of contributions. First, we address the aforementioned research gap by utilizing bargaining power theory, answering the call for insights on how negotiation power is created. Power, a key factor in negotiations (De Dreu and Van Kleef 2004; Greenhalgh, Neslin, and Gilkey 1985), determines who is able to claim more value from an agreement (Argyris and Liebeskind 1999; Nair, Narasimhan, and Bendoly 2011; Overbeck, Neale, and Govan 2010). Negotiation power is shaped by individual perceptions (Bacharach and Lawler 1976), and our data set covers the bargaining power perception of PE

firms (buying side). Specifically, we identify a set of negotiation power sources from the literature that we assume to be particularly relevant for buyout negotiations, namely, bidder competition, expertise, and time pressure (Bacharach and Lawler 1980; French and Raven 1959; Lewicki, Saunders, and Barry 2010; Stuhlmacher, Gillespie, and Champagne 1998). Second, we contribute to a growing body of research that recognizes the heterogeneity of PE firms by examining how different forms of PE firm specialization can provide competitive advantage in negotiations. Specifically, we investigate how PE firms' specialization moderates the relationship between these sources of bargaining power and PE bargaining power. Last, our paper might also provide SME owners with valuable insights on how to improve their power in buyout negotiations. Bargaining power is a relational concept and sources of bargaining power can be influenced by selling and buying sides alike. Thus, if SME owners become aware of what provides PE firms with higher bargaining power, they can utilize this knowledge to improve on their own negotiation strategy.

After reviewing the bargaining power literature, we formulate hypotheses regarding the sources of bargaining power and the moderating effects of different PE firms' specialization. This is followed by a description of the sample, variables, and constructs used in our analysis. We then present and discuss our empirical results, examine limitations of our study, and outline opportunities for future research.

Literature Review
Power in Negotiations

Negotiation is "... the deliberate interaction of two or more complex social units which are attempting to define or redefine the terms of their interdependence" (Walton and McKersie 1965, p. 35). Power, a key factor in negotiations (De Dreu and Van Kleef 2004; Greenhalgh, Neslin, and Gilkey 1985), can be broadly defined as the potential to influence others (Bacharach and Lawler 1981; De Dreu and Van Kleef 2004). Although negotiation power in business contexts is sometimes limited to determining a price (Lindblom 1948), we follow Kim, Pinkley, and Fragale (2005, pp. 799–800), who define negotiation power more broadly as "the underlying capacity of negotiators to obtain benefits from their agreement."

Bargaining power is individually perceived and objective features are cognitively determined

by available information, subjective assessments, values, and comparisons based on shadows of the future (i.e., expectations) and shadows of the past (i.e., history) (e.g., Bacharach and Lawler 1976; Wolfe and McGinn 2005). Individual perceptions are of high importance because negotiations usually happen in situations without perfect information and ultimately trigger "real" behavior (Bacharach and Lawler 1976). For example, PE firms' perception of performance shapes their commitment toward their portfolio firms, that is, how much time they invest developing them (De Clercq and Sapienza 2006).

Differences in power distribution are manifested in negotiation outcomes, with powerful, proactive negotiators likely to claim more value from the agreement than reactive negotiators (Argyris and Liebeskind 1999; Nair, Narasimhan, and Bendoly 2011; Overbeck, Neale, and Govan 2010). Evaluating power distribution in negotiations is also important for determining appropriate negotiation tactics (Bacharach and Lawler 1981; Kim, Pinkley, and Fragale 2005). Additionally, power imbalances in the negotiation relationship lead to a higher rate of conflict and less intense search for integrative outcomes (De Dreu 1995; De Dreu, Giebels, and Van de Vliert 1998; Wolfe and McGinn 2005). Accordingly, it is of utmost importance to understand the negotiation power of the parties.

Because the overall efficacy of power (sources) largely depends on the individual situation, there is no universally applicable framework of power in negotiations (e.g., Astley and Sachdeva 1984). Although previous research shows that bargaining power is an important determinant in inter-organizational transactions such as joint ventures and corporate mergers (Varaiya 1987; Yan and Gray 2001b), we know very little about buyout negotiations conducted by PE firms. Management buyouts differ from joint ventures when it comes to the nature of deal-making (buyer–seller versus partnership) and the form of negotiation exchange (until deal closure versus until termination of joint venture) as well as in the degree of potential information asymmetries. Further, PE firms typically engage in more frequent deal negotiation activities than even active acquirers and so are likely to develop as expert negotiators (Zollo and Singh 2004).

It is sometimes distinguished between "context-based" and "resource-based" bargaining power sources, which determine the interdependence of the negotiating parties (Yan and Gray 2001a, 2001b). Context-based bargaining power highlights the context dependency of the relationship between the bargaining parties (Yan and Gray 2001b); for example, A's negotiation power rises when B's dependence on the negotiation relationship increases (Emerson 1962; Wolfe and McGinn 2005). That is, the party with more alternatives to choose from could threaten to exit the current negotiation and select an alternative that manifests bargaining power (Fisher and Ury 1981). Resource-based bargaining power assumes that power in inter-organizational relationships derives from the possession of critical resources, either tangible or intangible (Pfeffer and Salancik 1978; Yan and Gray 2001b).

For the context of inter-organizational relationships, three sources of perceived bargaining power may be particularly relevant for buyout transactions (Yan and Gray 1994, 2001a, 2001b): bidder competition, expertise, and time pressure. As shown in Figure 1, we argue that these sources of perceived bargaining power and PE bargaining power will be moderated by both size and industry specialization of the PE firm.

Hypotheses

We derive a set of hypotheses regarding perceived bargaining power in buyout negotiations by outlining the factors that drive perceived bargaining power and then hypothesizing on the moderating effect of PE firm specialization.

Bidder Competition

Power-dependence theory emphasizes the context dependency of negotiators (Emerson 1962; Wolfe and McGinn 2005). Dependence is derived from the number of alternatives party A has in a negotiation relationship with party B: the more alternatives available to A, the higher A's respective negotiation power, provided that B's alternatives remain unchanged (e.g., Bacharach and Lawler 1980). Consequently, increasing the number of alternatives a party can establish in the negotiation relationship (i.e., dependency reduction) leverages the party's perceived negotiation power (Bacharach and Lawler 1984).

Thus, the firm seller with a higher number of potential buyers (alternatives) could threaten to exit current negotiations with a PE firm while pursuing its best alternative to a negotiated agreement ("BATNA") (Fisher and Ury 1981). When speaking of alternatives, we assume that they fulfil a minimum level of quality (Veiga, Yanouzas, and Buchholz 1995; Yan and Gray 2001a, 2001b). The seller will feel less inclined

Figure 1
Research Model
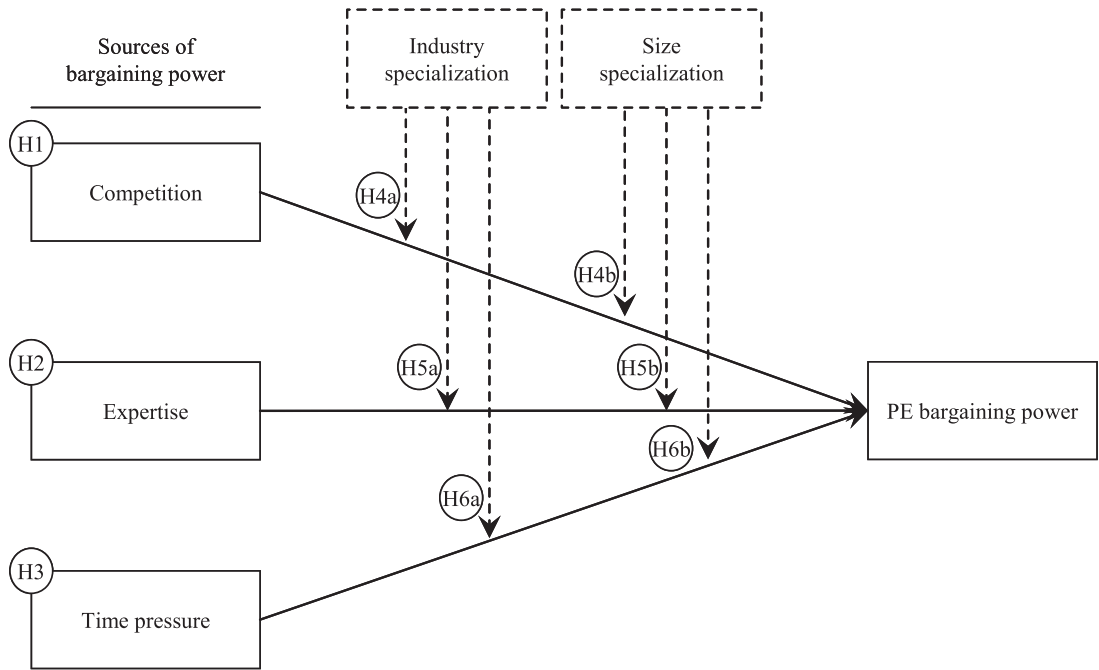
to make concessions during negotiations if there is a substantial number and quality of alternatives available.

In the context of public acquisitions, higher buyer competition is reflected in higher acquisition premiums (Varaiya 1987). Buyout transactions, however, usually take place in less information-efficient private markets. Thus, buyer competition cannot be taken for granted; it exists due to professional searches for exchange partners (Capron and Shen 2007; Scholes et al. 2007; Wright and Robbie 1998). Selling or purchasing privately held targets often becomes problematic due to greater information asymmetries and increased difficulty in identifying exchange partners (Scholes et al. 2007; Seghers, Manigart, and Vanacker 2012). Yet PE firms are likely aware of higher bidder competition and perceive lower bargaining power for the deal at hand. In contrast, the availability of alternative acquisition targets for the deal at hand might increase PE's bargaining power. But, the availability of alternative targets decreases with intensified competition among PE firms for deal opportunities (Cressy Munari,

and Malipiero 2007). Assuming PEs' alternative acquisition targets to the deal at hand to remain constant, we can hypothesize:

H1: The higher the bidder competition, the lower the buying PE firm's perceived bargaining power in buyouts.

PE Expertise Advantage

Superior expertise has been emphasized as an important source of power in (inter-organizational) negotiations (French and Raven 1959; Raven 1993). Though informational power in negotiations is usually tied to the negotiator's efforts and ability to accumulate and organize information, power generated from expertise requires a higher level of education, skills, accomplishments, and experience in a certain domain, allowing for informational sense making (Lewicki, Saunders, and Barry 2010). Put differently, there is a difference between experience and expertise. Though experience can be seen as a prerequisite for expertise, experience does not necessarily translate into expertise.

Expertise requires reflection on and learning from experience for future actions and decision-making. As a result, experts are associated with authority, credibility, and superior status (Cronkhite and Liska 1976).

A negotiating party possessing superior expertise can use that expertise to manipulate the other party's assumptions, beliefs, and choices (e.g., Pfeffer 1981). Thus, power from expertise can be viewed as manipulative or persuasive in nature. Not surprisingly, much of the practitioner-oriented negotiation literature is concerned with achieving advantage through expertise development in prenegotiation preparations to advance one's own interests (e.g., Fisher and Ury 1981).

In the context of buyouts, superior expertise can be of critical importance to successfully negotiate a deal (Petty, Bygrave, and Shulman 1994; Scholes et al. 2007). As buyout transactions involve high uncertainty, complexity, and the risk of exploitation (Capron and Shen 2007; Olekalns and Smith 2009), disagreements between buyers and sellers on an appropriate transaction price are common (Scholes et al. 2009). Yet PE firms, as buyers, are able to develop superior expertise through education and experience, compared to the seller (Scholes, Westhead, and Burrows 2008; Wright and Robbie 1996),[2] and use this expertise advantage to challenge and reduce the seller's price perception while structuring a deal in their interest. Sellers, in turn, might be able to counter buyers' negotiation power if comparable expertise can be utilized as a result of their own experience from previous buyouts, education, inside information, and/or the support of professional sale advisors (Petty, Bygrave, and Shulman 1994; Westhead and Howorth 2007). We hypothesize as follows

H2: The higher the PE firm's expertise advantage relevant for the buyout deal, the higher the buying PE firm's perceived negotiation power.

Seller's Time Pressure

Time plays an important role in negotiations; time pressure can be defined as the desire or need to close the negotiation process quickly (Druckman 1994; Saoriniborra 2008; Smith, Pruitt, and Carnevale 1982). Time pressure can be either internally imposed or externally induced (Saoriniborra 2008) and is often associated with acquisition processes (e.g., Newburry and Zeira 1997). The negotiating party that is exposed to higher time pressure experiences weaker negotiation power, as pressure creates the necessity to close the deal even if circumstances are unfavorable (Pruitt and Drews 1969; Stuhlmacher, Gillespie, and Champagne 1998). Put differently, if the selling side is under time pressure relative to the PE buyer, it needs to sell the business quickly. The buying PE firm with comparatively lower time pressure could play out seller's time pressure to enforce a beneficial deal because the PE firm does not necessarily have to invest. But, PE firms could also face time pressure if investors have committed capital which is not yet invested ("dry powder"). It is ultimately decisive, which negotiation side faces higher comparative time pressure. Yet it has to be acknowledged that PE buyers even if they are comparatively less time-pressured face the risk of being pulled into deals that promise a potential "leap of faith."

Less time pressure gives the seller more time to prepare. Processes for value creation in negotiations, such as information collection and trust-building, benefit from the absence of time pressure (Saoriniborra 2008; Stuhlmacher and Champagne 2000; Walton and McKersie 1965). Given that buyout deals are complex, less time pressure allows the seller to prepare for the complex buyout sale so that exit objectives can be realized. Also, detailed information about the current and expected future state of the firm needs to be compiled for potential buyers (i.e., information memoranda, due diligence), thus preparing the organization for the sale (DeTienne 2010).

Less time pressure also allows the seller to decide on the optimal time to exit. A variety of factors influence the conditions of buyout markets, such as the availability of firm investment opportunities (supply side), provision of capital to finance transactions (demand side), and possibilities to realize gains from investments, which, in turn, are shaped by country-specific industry and market characteristics (Cumming Siegel, and Wright 2007; Wright, Thompson, and Robbie 1992). Thus, because buyout markets fluctuate, temporary overfunding on the demand side might create pressure to invest and positively influence the seller's negotiation power (Axelson et al. 2013; Wright et al. 2006). Taken together, this suggests that comparatively

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[2]This excludes cases of secondary buyouts when the seller can also be a PE firm.

higher time pressure experienced by the selling party is likely to provide the PE firm with a much more comfortable negotiating position. Thus, we hypothesize

H3: The higher the comparative time pressure of the buyout seller, the higher the buying PE firm's perceived negotiation power.

Moderation: PE Firm Specialization

Superior performance of PE-backed buyouts has been explained by the "Jensen hypothesis"; that is, PE firms can establish superior governance structures to realize superior economic efficiencies for their portfolio companies (Jensen 1986, 1989). In particular, managers of buyout firms are disciplined in their use of free cash flows due to regular repayment of debt, typically put on the balance sheet of the buyout target (i.e., financial leverage). Additionally, PE firms continuously monitor the performance of their portfolio companies, initiate measures to improve operational performance (Kaplan 1989; Smith 1990), and add value to their portfolio firms via strategic advice often focused on growth initiatives (Nikoskelainen and Wright 2007; Wilson et al. 2012). Rising competition in a growing PE industry, however, has forced PE firms to develop strategies of specialization to differentiate their value proposition, realize competitive advantage over peers (Cressy Munari, and Malipiero 2007), and optimize their investment activities when identifying, selecting, and developing their buyout portfolio companies (De Clercq and Dimov 2008; Ruhnka and Young 1991).

Forms of specialization might vary depending on investment style. Industry specialization refers to the range of industries in which a PE firm prefers to invest (Cressy Munari, and Malipiero 2007; De Clercq and Dimov 2008; Gompers et al. 2008; Knill 2009). Industry specialization is recognized as the main source of PE firms' future value creation in buyouts, marginalizing the role of financial leverage, and multiple arbitrage (Heel and Kehoe 2005; Kaplan 2007). Industry-specialized PE firms might be able to optimize their investment activities when identifying, selecting, and developing their buyout portfolio companies, realizing superior returns and limiting company risk at the expense of industry diversification (Cressy, Munari, and Malipiero 2007; De Clercq and Dimov 2008; Ruhnka and Young 1991). Industry-specialized investment firms are also able to make investments during market booms,

with no detriment to performance (Gompers et al. 2008). Industry specialization, which is associated with shorter investment durations (time between investment and exit), suggests that higher expertise is provided to portfolio companies (Knill 2009).

In addition to industry specialization, other forms of PE specialization have been neglected in research, particularly company size of buyout investment targets. This is surprising, because size specialization is often disclosed or explicitly stated by PE firms or their respective funds (EVCA 2011). Size specialization can refer to number of employees, revenues, or market capitalization of the buyout target, depending on the specific definition used by the PE firm. In general, a size distinction is often made between small, mid, or large cap investments (EVCA 2011).

Effects of PE firms' different specializations are likely to manifest themselves through similar mechanisms, thus affecting the relationship between sources of bargaining power and bargaining power during the negotiation stage of buyouts. Specialized PE firms will be able to develop valuable networks with various stakeholders (i.e., social capital) that can be beneficial for buyout negotiations (Batjargal and Liu 2004; De Clercq and Dimov 2008) and will likely have access to important information about attractive deal opportunities, as buyout markets are less information-efficient (Capron and Shen 2007; Wright et al. 1992). Specialized PE firms might then be able to leverage relationships with potential sellers, as their focus allows them to build relationships over time, which leads to an accumulation of mutual knowledge (e.g., Coleman 1988; Loewenstein and Adler 1995). Such relationships will mitigate the effects of direct competition, as sellers' of buyout targets will favor PE firms with whom they have developed relationships as exchange partners or to whom they have been referred indirectly by third parties (Batjargal and Liu 2004; Robinson and Cottrell 2007). Additionally, specialized PE firms might be better able to target a seller's needs, achieve goal congruence, and, thus, become preferred exchange partners (De Clercq and Sapienza 2006) in the face of buyout competition. As a result, specialized PE firms will have a competitive edge in bidding competition.

The structure of industry- and size-specialized PE firms is different. Though industry-specialized PE firms might be able to develop superior networks in certain industries initiated through industry exposure ("vertical networks"), size-

specialized PE firms could span their networks across industries but focused on similar sizes of buyout targets such as for example SMEs ("horizontal networks"). Certain size groups like SME's face similar problems and challenges that transcend industry boundaries such as ownership succession (De Massis, Chua, and Chrisman 2008; Dyck et al. 2002). Family firm owners, representing the majority of SME's, often show a higher emotional attachment to their business (Zellweger and Astrachan 2008; Zellweger et al. 2012) and, thus, require a more personal approach. By developing horizontal networks, size-specialized PE firms could develop a great understanding of the needs and requirements (financial and nonfinancial) of similar business types that can be addressed appropriately in negotiations. Dealing with similar businesses facing similar problems could lead to more credibility, trust, and an understanding of seller needs.

The different nature of networks for size- and industry-specialized networks also facilitates a different deal flow. Industry-specialized PE firms certainly have superior capabilities to detect attractive deal opportunities within an industry compared to nonindustry specialized PE firms. On the contrary, size-specialized PE firms can detect deal alternatives from across a range of sectors with a similar size that are available as substitutes for the current negotiation relationship (i.e., dependency reduction), which leverages their negotiation power (Bacharach and Lawler 1984). With more attractive alternatives to choose from, there is less pressure for specialized PE firms to engage in the current deal. Accordingly, we hypothesize

H4a: The relationship between bidder competition and a buying PE firm's perceived bargaining power is moderated by industry specialization of the buying PE firm. Specifically, higher levels of industry specialization weaken the relationship between bidder competition and a PE firm's perceived bargaining power.

H4b: The relationship between bidder competition and a buying PE firm's perceived bargaining power is moderated by size specialization of the buying PE firm. Specifically, higher levels of size specialization weaken the relationship between bidder competition and a PE firm's perceived bargaining power.

In addition to bidder competition, PE specialization of industry and size should be able to

complement expertise that PE firms can utilize in negotiations as bargaining power by enabling further information acquisition. Access to competent managers who can be recruited as a result of specialization will give PE firms an additional advantage (Hellmann 2002). Valuation and synergy expertise will facilitate PE firms' assessment of the value of the buyout business, that is, their own willingness to pay. Specialized PE firms might be able to identify additional potential for value creation in the buyout due to the ability to gain deeper knowledge (Busenitz, Fiet, and Moesel 2004; Sapienza and Korsgaard 1996). Additionally, risks associated with the buyout target can be better identified, allowing firms to develop more confidence in their estimates and narrow the spread of risk (Fiet 1995; Shepherd and Zacharakis 2001). Accordingly, specialization combined with general levels of expertise facilitate more accurate assessment of the target and decrease uncertainty associated with projections, providing PE firms with a better bargaining position.

The most significant difference between industry- and size-specialized PE firms might derive from the characteristics of knowledge that they could utilize in negotiations. For industry specialized firms their competitive edge clearly derives from the depth of industry knowledge. For example, industry-specialized firms might be able to benefit from insights of previous portfolio investments to assess the feasibility of industry-specific buy and build strategies. Furthermore, industry-specialized PE firms might be able to appropriately assess future industry-specific market trends that effect valuation of buyout targets. On the contrary, size-specialized PE firms could leverage on the different characteristics associated with varying levels of company size. For example, SMEs could differ from larger corporations in their internationalization approach (Etemad and Wright 2003), innovation capabilities (Lindgren 2012), access to capital (Kouser et al. 2012), HR practices (Schmelter et al. 2010), owner-centric decision-making (Gómez-Mejía et al. 2007), and corporate strategy (Hagen et al. 2012). Size-specialized PE firms could use their expertise on size-specific characteristics to identify value-enhancing opportunities and to derive appropriate valuations. Accordingly, we hypothesize

H5a: The relationship between a buying PE firm's expertise advantage and perceived

bargaining power is moderated by industry specialization of the buying PE firm. Specifically, higher levels of industry specialization strengthen the relationship between a buying PE firm's expertise advantage and perceived bargaining power.

H5b: The relationship between a buying PE firm's expertise advantage and bargaining power is moderated by size specialization of the buying PE firm. Specifically, higher levels of size specialization strengthen the relationship between a buying PE firm's expertise advantage and perceived bargaining power.

Specialized PE firms could also benefit from higher bargaining power when buyout targets are under time pressure to reach an agreement quickly. Superior information arising from specialized network access might provide more opportunities to identify such deals and allow firms to act faster and more efficiently. More importantly, specialized firms are likely to benefit from standardization. Firms that frequently engage in the same type of deals can speed up due diligence, valuation, and decision-making, thus closing deals quickly and strengthening their position in the negotiation process when time is of the essence. Accordingly, specialized PE firms are likely able to execute deals more quickly without compromising risk assessment, so that time pressure of potential deal targets can be fully exploited. Though industry-specialized PE firms utilize their industry knowledge and vertical networks, size-specializers are able to use size-specific business knowledge along with horizontal networks to capitalize on seller time pressure. Accordingly, we hypothesize

H6a: The relationship between a seller's time pressure and a PE firm's bargaining power is moderated by industry specialization of the buying PE firm. Specifically, higher levels of industry specialization strengthen the relationship between a seller's time pressure and a PE firm's bargaining power.

H6b: The relationship between a seller's time pressure and a PE firm's bargaining power is moderated by size specialization of the buying PE firm. Specifically, higher levels of size specialization strengthen the relationship between a seller's time pressure and a PE firm's bargaining power.

Method Section

Sample

For our sample, we identified 856 PE firms located across Europe based on information obtained from membership directories of national and European PE industry associations, as well as from Internet research. We eliminated 348 firms if their focus of operations was on early stage/venture capital investments, they did not complete a single transaction, or they no longer existed. As a result, our total sample consists of 508 individual PE firms.

For each firm, we generated multiple personal contact details of senior investment professionals by utilizing membership directories of PE associations complemented by Internet research (company websites). But, it became clear during the initial stages that because of the potential burden on executives, PE firms decided to allow only one respondent per firm. The respondent was supposed to answer the survey based on one particular buyout deal. Thus, we relied on a key informant approach (Kumar, Stern, and Anderson 1993), assuming that one PE manager could credibly give information on one particular deal given that firms work in small deal teams with similar perceptions, attitudes, and qualifications of team members.

Along with the questionnaire, we sent out a short introduction explaining the study's purpose and ensuring confidential and anonymous processing of all questionnaires. Respondents' answers to the questionnaire were qualified using three conditions for participation. First, respondents had to relate their answers to a randomly selected successful buyout deal in which their PE firm represented the buying coalition. Second, respondents had to be actively involved in the negotiation process. Third, the buyout deal occurred during the last three years.

Between September 2011 and March 2012, we mailed the questionnaire and received 188 responses, each representing information on one particular buyout deal from one respondent per PE firm. Thus, our response rate was 37 percent. Twelve questionnaires could not be used due to incompleteness and were removed from the sample. Most respondents were partners or managing directors (43 percent), while 44 percent occupied investment director positions, and 13 percent were classified as investment associates. The buyout deals on which respondents reported came from Germany (28 percent),

Italy (15 percent), France (11 percent), U.K. (10 percent), Spain (7 percent), Switzerland (5 percent), the Netherlands (5 percent), Poland (3 percent), Finland (3 percent), and other countries (9 percent).

The geographical representation of our sample can be compared to data for the European buyout market 2012 (EVCA 2013). In total, our sample has a stronger representation of Germany/Austria/Switzerland ("DACH") with 34 percent (versus 16 percent in EVCA 2013) and Southern Europe with 24 percent (versus 10 percent in EVCA 2013). The representation in our sample is lower for France/Benelux with 16 percent (versus 36 percent in EVCA 2013) and U.K. with 10 percent (versus 20 percent). CEE is similar with 7 percent (versus 4 percent in EVCA 2013) and the Nordics with 9 percent (versus 14 percent in EVCA 2013). But, it has to be mentioned that our sample covers multiple years and geographic representation varies over the years.

We focused our study on collecting information from the buying side, that is, PE managers. Thus, we did not directly receive information from the selling side. Similar to other leading research on bargaining power, we acknowledge that this is a limitation of our study (Mjoen and Tallman 1997; Scholes et al. 2007). But, previous research pointed out that negotiation partners in inter-organizational transactions generally have correct perceptions on their negotiation partners (Geringer and Hebert 1989; Mjoen and Tallman 1997). For buyouts, this might be particularly true because negotiations usually take place over a longer period of time and the process of deal initiation and due diligence extends this time period even further.

Depending on when responses were received, the sample was split into early and late respondents. To assess a potential nonresponse bias, we used ANOVA to test for differences between the two groups. Late respondents can be considered as being similar to nonrespondents when data for nonrespondents is unavailable (Armstrong and Overton 1977; Kanuk and Berenson 1975). No statistically significant differences were observed between early and late respondents on the dependent and independent variables.

We also checked our data for multicollinearity. We found only moderate levels of correlation among the variables and calculated variance inflation factors (VIF) (all <2.239) and condition indices (all <3.303). All indicators are below recommended values (Hair et al. 2010), suggesting that multicollinearity is not a significant concern.

Model and Measures

The constructs and items were all measured on a five-point Likert-type scale with end points labeled "strongly disagree" (1) and "strongly agree" (5), except for the items relating to "competition," which were labeled "low" (1) and "high" (5). Our confirmatory factor analysis shows a good fit, with χ^2 (58, $n = 176$) = 109.0 ($p < .001$), a comparative fit index (CFI) of .939, an incremental index of fit (IFI) of .940, a Tucker–Lewis Index (TLI) of .917, and a root mean square error of approximation (RMSEA) of .071 (e.g., Hu and Bentler 1999).

In a second step, we further tested for common method bias (Podsakoff et al. 2003; Podsakoff and Organ 1986). After entering independent, moderator, and control variables into a factor analysis, we extracted nine factors with eigenvalues >1.0, which accounts for 74 percent of the variance. We found that the first factor accounts for 12 percent of the variance and the remaining factors account for 59 percent of the variance. No individual factor accounts for the majority of the variance explained; thus, we assume that common method bias is not a concern. In addition, we ran a factor analysis and compared a method factor model with the regular CFA (Podsakoff et al. 2003), which fit the model poorly (CFI = 0.384, TLI = 0.260, IFI 0.393, RMSEA = 0.212). The χ^2 difference ([65–58] = 468.3, $p < .001$) also indicated that the four factor solution is superior to the method factor solution.

Dependent Variable. Based on Mjoen and Tallmann (1997), five items were used to measure *PE firm's perceived bargaining power in buyout transactions*. The alpha of the composite is 0.78. All items and the corresponding alphas for each construct (all >0.70) are listed in the Appendix.

Independent Variables and Moderating Variables. The two items used to measure *bidder competition* were adapted to the context of buyout decisions from Yan and Gray (2001a), who studied joint ventures. We used three items, inspired by Raven, Schwarzwald, and Koslowsky (1998) and Stahelski, Frost, and Patch (1989), to measure the *PE's expertise advantage.*

Last, the *seller's time pressure* was measured by adapting three items from Stuhlmacher and Champagne (2000).

Two moderating variables captured *industry* and *size specialization*. Instead of utilizing historical deal information (Scholes et al. 2009; Ughetto 2010), we asked respondents to indicate the extent to which their PE firm specializes in the industry and/or the size of the buyout target. We consider direct subjective measurement superior to historical data that tries to capture portfolio composition of buyout funds (Cressy, Munari, and Malipiero 2007), as this data might be both misleading, due to differences in industry classifications, and biased for smaller PE funds, which are less diversified. Consider the example of PEPOWER[3] which is a mid-size PE firm. PEPOWER previously invested in Verimax, a company that is doing both retail and wholesale business which accordingly could be classified as both SIC Code F&G (Retail or Wholesale trade). Additionally, PEPOWER invested in Durimax which clearly is a wholesale trader. The question about PEPOWER now is: are they fully diversified with one investment in retail and one in wholesale or fully specialized in retail? We avoid such ambiguities by simply asking the PE firm directly. In addition, for younger/smaller PE firms having very few deals accomplished (sometimes not even one per year), it is hard to judge on specialization strategies. Moreover, specialized PE firms cannot be judged entirely by their track record of deals because the personal expertise of its (new) investment managers might not be reflected therein. The items are listed in the Appendix.

Control Variables. To ensure the robustness of our findings, we included a number of control variables. First, we controlled for industry of the buyout target with five dummy codes (consumer, IT, life sciences, manufacturing, and other industries; manufacturing was the omitted industry category). This control is warranted, as industries that are more attractive might be systematically associated with higher levels of bargaining power. Second, we controlled for the year in which the buyout took place with a date range from 2008 to 2011 ("2011" is the omitted reference category). Buyout markets are cyclical and market climate varies accordingly, which might affect bargaining power (Scholes et al.

2009). Third, we controlled for PE firms' funds under management (FUM) because larger PE firms could have resource advantages that give them superior bargaining power. Fourth, we controlled for "age" of the PE firm. Fifth, we controlled for deal size. We used the logarithm of PE firms' FUM, age, and transaction value to achieve a normal distribution of the constructs. Lastly, we controlled for the type of buyout, that is, whether it was an MBO (Management Buy-Out, i.e., led by incumbent managment), MBI (Management Buy-In, i.e., led by external managers) or other type of buyout (e.g., combination of MBO/MBI, secondary buyout) as the information available during negotiations may be different at the time of negotiation between insider (MBO) and outsider (MBI) driven deals.

Data Analysis and Results

Means, standard deviations, and correlations for all variables are shown in Table 1. To test our hypotheses, we used hierarchical regression analysis. Results are presented in Table 2.

A review of the correlations does not reveal high levels of correlations among our variables of interest. Worth mentioning is the negative correlation between transaction value and PE expertise. This may indicate that smaller firms are not comfortable with firms handling larger deals as this might detract from the attention that they receive from the firm. Turning to the regression results, in model 1 the control variables were entered. Only the industry control "life science" ($p < .10$) and "age of the PE firm" ($p < .05$) show (weak) significance. To test H1, H2, and H3, we entered all independent variables in the second model. A significant change in R^2 was observed ($\Delta R^2 = 0.18, p < .001$); competition ($\beta = -0.18$, $p < .005$), expertise, ($\beta = 0.30$, $p < .001$), and time pressure, ($\beta = 0.27, p < .001$) have a significant effect on PE firms' perceived bargaining power. Thus, H1, H2, and H3 are supported.

To test the hypothesized moderation effects, we first entered the moderators, industry and size specialization, in model 3. In model 4, we entered the interaction effects of PE industry specialization and size specialization with our three main effect constructs. For model 3, no significant change in R^2 was observed ($\Delta R^2 = 0.003$). For model 4, the change in R^2 is

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[3]Anonymized.

Table 1
Correlation Matrix, Means, and Standard Deviations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Consumer	0.28	0.45	1																				
2. Industry	0.37	0.48	-0.475^{**}	1																			
3. IT	0.12	.33	-0.229^{**}	-0.282^{**}	1																		
4. Life Sciences	0.10	.30	-0.210^{**}	-0.258^{**}	-0.124	1																	
5. Other	0.13	.34	-0.241^{**}	-0.297^{**}	-0.143	-0.131	1																
6. 2011	0.49	.50	-0.100	0.029	0.096	-0.030	0.026	1															
7. 2010	0.29	.45	0.106	-0.074	-0.042	-0.009	0.012	-0.624^{**}	1														
8. 2009	0.07	.26	-0.078	0.054	-0.037	0.048	0.019	-0.276^{**}	-0.180^{*}	1													
9. 2008	0.15	.36	0.063	0.013	-0.054	0.018	-0.066	-0.407^{**}	-0.266^{**}	-0.118	1												
10. PE firm FUM (LN)	6.63	1.74	0.132	-0.299^{**}	0.150^{*}	0.025	0.086	0.023	0.082	-0.099	-0.064	1											
11. PE firm Age (LN)	2.77	.60	0.083	-0.121	0.123	-0.092	0.027	0.074	-0.075	-0.060	0.035	0.421^{**}	1										
12. Transaction Value (LN)	4.44	1.52	0.208^{**}	-0.213^{**}	-0.030	-0.036	0.090	0.009	-0.004	0.014	-0.018	0.631^{**}	0.265^{**}	1									
13. MBO	0.57	.50	0.023	-0.126	0.034	-0.050	0.164^{*}	-0.100	0.120	0.024	-0.030	0.199^{**}	0.204^{**}	0.239^{**}	1								
14. MBI	0.11	.32	-0.063	0.097	-0.077	0.056	-0.033	-0.063	-0.031	-0.033	0.154^{*}	-0.108	-0.183^{*}	-0.107	-0.416^{**}	1							
15. Other type of deal	0.31	.46	0.019	0.068	0.017	0.015	-0.152^{*}	0.150^{*}	-0.106	-0.003	-0.073	-0.139	-0.093	-0.182^{*}	-0.782^{**}	-0.241^{**}	1						
16. Competition	3.08	1.12	0.044	-0.141	0.037	0.119	0.003	0.060	0.037	0.016	-0.144	0.187^{*}	0.030	0.216^{**}	0.146	-0.148	-0.055	1					
17. Expertise	3.17	.80	0.013	0.125	-0.121	-0.057	-0.028	0.104	-0.031	-0.131	-0.010	-0.251^{**}	-0.100	-0.249^{**}	-0.142	0.163^{*}	0.040	-0.143	1				
18. Time Pressure	2.70	1.09	0.020	0.087	-0.119	-0.022	-0.017	0.039	0.028	0.031	-0.114	0.021	-0.010	0.054	0.080	0.010	-0.093	0.062	0.009	1			
19. Specialization Industry	3.41	1.26	-0.094	-0.127	0.060	0.179^{*}	0.087	0.104	0.027	0.011	-0.189^{*}	0.053	0.134	0.099	0.070	-0.112	0.002	0.111	0.041	0.050	1		
20. Specialization Size	4.01	.98	-0.124	0.112	0.032	-0.004	-0.022	0.082	-0.046	0.019	-0.070	-0.046	0.053	0.006	0.104	-0.022	-0.096	0.082	0.185^{*}	0.075	0.142	1	
21. Bargaining Power	3.23	.69	-0.019	0.075	-0.077	-0.133	0.113	0.067	-0.049	0.097	-0.104	-0.080	-0.177^{*}	-0.026	-0.032	0.090	-0.028	-0.186^{*}	0.309^{**}	0.280^{**}	0.048	0.070	1

$N = 176$; $^{**}p < .01$; $^{*}p < .05$.

Table 2
Results of Regression Analysis[a]

	Model 1	Model 2	Model 3	Model 4
Step 1: Control Variables				
Consumer	−0.011	0.003	0.005	−0.015
IT	−0.071	0.015	0.009	0.003
Life Sciences	−0.157†	−0.094	−0.108	−0.103
Other	0.074	0.103	0.096	0.093
2010	−0.089	−0.065	−0.066	−0.061
2009	0.063	0.108	0.108	0.068
2008	−0.122	−0.082	−0.071	−0.041
PE FUM[b]	0.016	0.064	0.073	0.072
PE Age[b]	−0.177*	−0.192*	−0.202*	−0.187*
Transaction value[b]	−0.002	0.067	0.056	0.073
MBI	0.076	0.011	0.015	0.005
Deal type other	−0.028	−0.015	−0.015	0.000
Step 2: Independent Variables				
Competition		−0.180*	−0.184*	−0.186**
Expertise		0.303***	0.296***	0.312***
Time pressure		0.271***	0.268***	0.230**
Step 3: Moderators				
Specialization industry			0.060	0.042
Specialization size			0.006	0.028
Step 4: Interaction Terms				
Industry × Competition				−0.199**
Industry × Expertise				−0.101
Industry × Time pressure				0.030
Size × Competition				0.172*
Size × Expertise				0.185**
Size × Time pressure				0.172*
Change in R^2	0.096	0.181***	0.003	0.106***
R^2	0.096	0.277	0.280	0.386
Adjusted R^2	0.029	0.209	0.202	0.293
F	1.440	4.082***	3.613***	4.154***

[a]Standardized regression coefficients are reported.
[b]Logarithmized.
$n = 176$; ***$p < .001$; **$p < .01$; *$p < .05$; †$p < .1$.

significant ($\Delta R^2 = 0.11$, $p < .001$); four of the six interaction effects are also significant.

Because the standardized beta coefficients of interaction effects are difficult to interpret, we plotted the significant interaction effects (Figures 2–5) and tested if the slopes significantly differed from zero (Aiken and West 1991). We found high significance for simple slope testing of size specialization when expertise and time pressure are concerned, as well as for industry specialization and competition. For competition, we found significance of slope tests for low levels of size specialization. As can be seen from our plots, H4a is contrary to the predicted relationships, while H5a and H6a are not supported. H4b, H5b, and H6b receive support.

Contrary to our hypothesis, Figure 2 indicates that with increasing competition, industry specialization becomes less desirable. With low competition, high levels of industry specialization are the most beneficial for high levels of PE bargaining power perceptions. The level of PE

Figure 2
Interaction Between PE Industry Specialization and Competition (H4a)
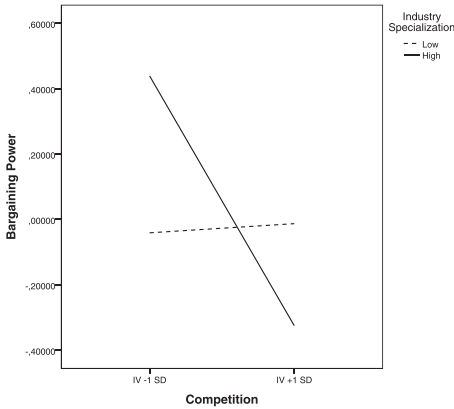
Figure 4
Interaction Between PE Firm Size Specialization and Expertise Advantage (H5b)
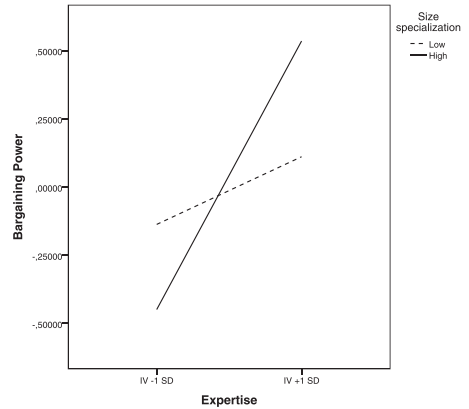
Figure 3
Interaction Between PE Firm Size Specialization and Competition (H4b)
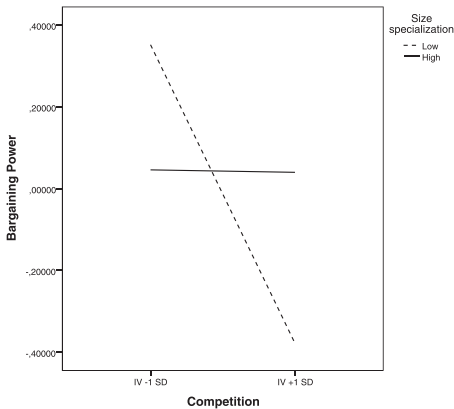
Figure 5
Interaction Between PE Firm Size Specialization and Time Pressure (H5c)
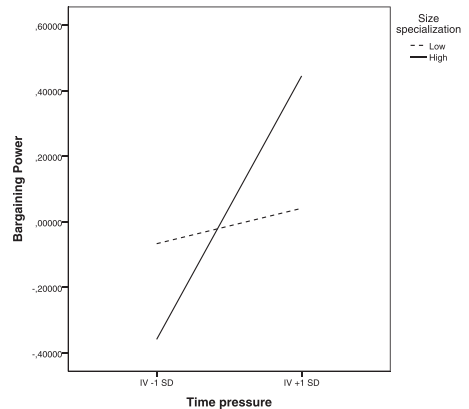
bargaining power for low industry specialization is lower at low competition scenarios, but higher at high competition. Figure 3 shows the interaction between size specialization of PE firms and bidder competition. PE firms with a high size specialization show higher levels of bargaining power in situations of bidder competition.

Figure 4 shows the interaction between size specialization of PE firms and expertise advantage. PE firms with a high size specialization show higher levels of perceived bargaining power when exhibiting their expertise advantage. Similarly, Figure 5 confirms that PE firms with a high size specialization show higher levels

of perceived bargaining power when sellers are under time pressure.

Discussion

Prior research has largely neglected the negotiation stage of buyouts, particularly perceived bargaining power in buyout negotiations. Research on the effects of PE firm specialization has generally focused on industry specialization. We have attempted to close this research gap by highlighting different factors that provide PE firms with negotiation power, such as bidder competition, expertise advantage, and seller's time pressure. Moreover, we have demonstrated if and how selected forms of PE firm specialization affect power in buyout negotiations.

Our research indicates that PE firms experience high perceived bargaining power in buyout negotiations, depending on factors such as competition, expertise advantage, and seller's time pressure. For bidder competition, we conclude that higher bidder competition for a buyout target leads to lower perceived bargaining power of PE firms. The seller of the buyout firm will feel less inclined to make concessions during negotiations if there is a substantial number and quality of alternative bidders available (Fisher and Ury 1981). In a perfectly information-efficient market, bidder competition can be taken for granted (Fama 1991); however, buyouts usually take place in private markets with greater information asymmetries and with greater difficulty in identifying exchange partners (Scholes et al. 2007). Thus, the role of bidder competition becomes prominent due to imperfect markets. Our research further highlights the importance of PE firms' deal-searching activities.

Expertise (advantage) is also highlighted as a source of perceived bargaining power. Power generated from expertise requires education, skills, and accomplishments in a domain allowing for informational sense making (Lewicki, Saunders, and Barry 2010). We have evaluated expertise as it relates in particular to valuation, synergies, and process-related aspects of buyout deals, which we hypothesize to be critical for a number of reasons. First, a great deal of uncertainty and information asymmetries make predicting cash flow and "upside potential" for the buyout target difficult. Not surprisingly, there is often disagreement between buyers and sellers on an appropriate transaction price (Scholes et al. 2007). Pricing the business might be par-

ticularly challenging for entrepreneurial sellers as they are less familiar with such situations (Van Auken 2001). Second, buyout transactions are complex and require the resolution of a number of financial, tax, and legal issues between the negotiating parties (e.g., Cumming and Johan 2009). Consequently, the PE firm that possesses more transaction-relevant expertise than does the seller is in a more powerful bargaining position (e.g., Scholes, Westhead, and Burrows 2008). Thus, our findings further highlight the importance of expertise as a source of bargaining power for the pre-buyout stage.

We have also demonstrated that if the seller in buyout deals suffers from time pressure, PE firms may gain higher levels of perceived bargaining power. Time availability allows the seller to decide on the optimal time to exit volatile markets and to prepare an organization for the transfer of ownership (e.g., DeTienne 2010). Deal-searching activities seem to be critical in the pre-buyout stage, allowing PE firms to identify buyout targets in less efficient market situations, which becomes a source of bargaining power in negotiations.

Moreover, our research indicates that not all forms of specialization seem to be equally beneficial for perceived bargaining power in negotiations, a perspective previously neglected. Contrary to our expectations, we can confirm that only size specialization enables PE firms to increase bargaining power from bidder competition, expertise advantage, and seller's time pressure.

There might be several reasons why PE size specialization is perceived to be more effective during negotiations than industry specialization. More fine-grained analysis of our sample, not reported here but available from the authors, shows that size specialization occurs both among smaller as well as among larger PE firms. Size-specialized PE firms can increase the number of deal alternatives from across a range of sectors that are available as substitutes for the current negotiation relationship (i.e., dependency reduction), which leverages their negotiation power (Bacharach and Lawler 1984). By developing horizontal networks, size-specialized PE firms could develop a better understanding of the seller needs and specific business requirements to be leveraged on in negotiations. Size-specialized PE firms will also be able to identify additional potential for value creation and risk reduction, complementing PE firms' (traditional) valuation and synergies knowledge (expertise

advantage) based on their size-specific expertise. Last, size specialization speeds up due diligence, valuation, and investment decision-making processes so allowing deals to be finalized more quickly. It has to be acknowledged that PE firm size can be a proxy for large cap specialization because only these PE firms will be capable of financing large deals. But, large PE firms also focus on mid- or low-cap deals despite their significant size, especially during the time period of our study when restrictions on debt availability meant that very few large cap deals could be completed.

Industry specialization, although it might bestow competitive advantages in later stages of the investment process (Cressy Munari, and Malipiero 2007; De Clercq and Dimov 2008), has no beneficial effect on bargaining power during the negotiation stage of buyouts. This might have to do with the relative deal inexperience of European industry-specialized PE firms vis-à-vis U.S. American counterparts as evidence from the VC industry suggests (Botazzi 2009). In addition, PE firms might not have fully set up organizational structures ("industry practices") that really allow them to capitalize on their industry specialization. Alternatively, it might be that market conditions do not give industry specialization a comparative advantage because too many industry specialized firms chase after too few deal opportunities. Indeed, this may explain why size specialization is more effective in our analysis. For some buyout deals, size-specialization could be more effective in developing trust-infused relationships (e.g., family firms) and critical business knowledge. If industry-specialized PE firms have shorter investment durations (Knill 2009), potential sellers who are looking for a stable and long-term perspective of their business might not assume sufficient goal congruence.

Overall, we contribute to the literature in multiple ways. First, we add to the literature on PE-backed buyouts and strategic entrepreneurship by applying bargaining power theory to the context of the negotiation stage of buyout transactions, with a specific focus on the PE perspective. Second, we contribute to a growing body of research that recognizes the heterogeneity of PE firms by examining how different forms of specialization can provide a competitive advantage in negotiations. By distinguishing between size and industry specialization and by showing their different effects on perceived bargaining power, we are able to gain a

better understanding of PE firms. Third, we add to the entrepreneurship and entrepreneurial finance literature more generally which has tended to neglect analysis of the negotiation of deals that entrepreneurs engage in when they enter entrepreneurship. Other relevant avenues that could be explored include the negotiation of purchasing a business or accessing finance from venture capital firms. Finally, we add to the bargaining power literature by highlighting a specific context, in which PE firms are typically involved more frequently in negotiations than other types of acquirers, and the moderators to which the theory applies.

Limitations and Future Research

A number of limitations need to be considered when reviewing our findings. First, we investigated only one side of the buyout deal—the PE (i.e., buying) side. As PE firms regularly engage in this kind of transaction, the PE side of the buyout deal surely provides a reliable source of information. The duration of negotiations to realize buyout deals usually extends across several months or even years if one considers the deal initiation phase. The length of negotiations likely contributes to accurate perceptions of bargaining power by PE firms. Previous research pointed out that negotiation partners in inter-organizational transactions usually have valid perceptions on their negotiation partners (Geringer and Hebert 1989). Additionally, our sample contains responses mainly from managing and investment directors, who usually have profound deal experience, which further increases response validity of the key informant approach (Kumar, Stern, and Anderson 1993). We share the limitation of only surveying one side of the deal with leading research on bargaining power (Mjoen and Tallman 1997) and negotiations in buyouts (Scholes et al. 2007). But, because of our focus on perceived bargaining power of PE firms, we suggest that this does not present a major hurdle. In contrast, further work assessing the extent to which there are asymmetries in bargaining power between PE buyers and vendors of businesses would indeed require the selling side to be surveyed as well. But, it needs to be recognized that surveying the selling side poses serious challenges due to confidentiality restrictions. As management buyouts usually involve privately owned businesses, the information on deals is not publicly available and neither is the personal identity of corporate sellers.

Second, as it was beyond the scope of this paper, we did not investigate specific bargaining tactics (e.g., De Dreu and Van Kleef 2004). Because tactics to utilize bargaining power or to compensate for a lack of bargaining power might play an important role (e.g., Bacharach and Lawler 1981), future research should examine tactics in the context of buyouts, building on different situations of bargaining power.

Third, the effect of PE size specialization needs further investigation. We have investigated the negotiation stage of the deal process and illustrated the benefits of size specialization. Although we have shown that size specialization is important for a deal's negotiation phase, other forms of specialization might also be important for the operational and strategic development of the buyout company. Because size specialization has not yet been tested in these situations, we encourage future research to validate the role of size specialization in various stages (other than negotiation) of the investment process. Relatedly, although our focus was on size specialization per se, further research might also analyze the impact of the particular size ranges that PE firms specialize in, such as large versus mid-market versus smaller deals where the informational and competitive bidding conditions may vary. Such analyses also need to take place under different market conditions such as where the paucity of larger deal available means that larger size specialists attempt to compete in negotiations against mid-market specialists.

Fourth, we encourage future research to investigate industry specialization given its coverage in prior research, prevalence in practice, and our unconfirmed hypotheses. In particular, we suggest to investigate the effect of industry specialization in different phases of the investment process and in different market environments. It might also be fruitful to study the interplay of experience, expertise, and specialization. For example, while it certainly holds true that expertise comes in part from industry experience, which might be driven by industry specialization, there are also dimensions relating to expertise in deal-making, financial structuring, restructuring, monitoring, exiting, and so forth which transcend knowledge from industry specialization. It would be particularly interesting to find out about circumstances under which industry specialization can be translated into expertise advantage and in which phases of the investment process.

Fifth, it might be fruitful to study other forms of PE firm specialization. For example, specific type of sellers/owners such as family firms might require different approaches of PE targeting and deal-making. Family sellers often prioritize nonfinancial objectives associated with the deal (e.g., future strategy of the buyout business) and could prefer those PE firms as transaction partners in which the relationship plays a key role (Tappeiner et al. 2012). If PE firms could specialize in family firm targeting and excel in addressing family sellers' specific requirements, needs, and objectives associated with the deal, PE firms' might gain a competitive edge.

Sixth, it could be promising to analyze whether the structure of co-investing when more than one PE firm undertakes certain buyouts is driven by different specializations. Higher-risk investments appear to trigger co-investment of VC firms (Wright and Lockett 2003), as interconnectedness among firms is driven by an uncertain environment (Pfeffer and Salancik 1978). Similarly, it is possible that when co-investing occurs (which we have excluded from our research), different PE firms pool different specializations to reduce investment uncertainty. In addition, the under-bidding PE firm may subsequently join a syndicate led by the winning PE firm. Further research might provide further insights in that respect.

Seventh, the geographic scope of our research is limited to the larger European countries. It is not clear whether our findings also have validity for other geographic areas such as the United States, Asia, or emerging economies (e.g., Wright, Lockett, and Pruthi 2002). But, given that PE firms are highly internationalized and deals usually occur across geographic boundaries (Cumming and Walz 2009), we have reason to believe that validity of our results also extends to regions outside Europe.

Eighth, one could also question the operationalization of our variables. For example, expertise advantage has been operationalized on dimensions such as process, valuation, and synergies in our study, but might be leveraged along other expertise dimensions. We encourage future research to test alternative operationalization of our constructs.

We hope to have contributed to the previously neglected issue of buyout negotiations and in particular how power is created therein. We added another piece of evidence on how PE firms as a distinctive form of entrepreneurship

achieve competitive advantage by narrowing down their scope of activities to size specialization.

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Appendix—Scale Items and Reliabilities

Construct	Items	α
Dependent variable		
Perceived bargaining power	My PE firm had a more powerful initial negotiation position than the seller.	0.78
	My PE firm had the potential to be the stronger party during negotiations.	
	My PE firm had all prerequisites to negotiate a favorable deal.	
	My PE firm realized a very lucrative deal price compared to other deals.	
	My PE firm was the stronger party during negotiations.	
Independent variables		
Competition	Please rate the degree of other potential buyers interested in the buyout target.	0.79
	Please rate the degree of buyers who extended an offer for the buyout target	
Expertise	My PE firm was able to challenge the seller's valuation.	0.70
	My PE firm knew more than the seller about the management of the sale process.	
	My PE firm knew more than the seller about synergies applicable to the seller's business.	
Time pressure	The seller was under pressure to reach an agreement quickly.	0.87
	The seller had limited time available to reach an agreement.	
	The seller would have faced negative consequences if no agreement had been reached.	
Moderator		
Industry specialization	My PE firm has a particular deal focus on the buyout target's industry affiliation.	N/A
Size specialization	My PE firm has a particular deal focus on the buyout target's firm size.	N/A

Growth, Uniformity, Local Responsiveness, and System-Wide Adaptation in Multiunit Franchising*

by Jacques Boulay, Barbara Caemmerer, Heiner Evanschitzky, and Krista Duniach

Using the resource-based view framework, we investigate the link between multiunit franchising (MUF) and performance on four key challenges in franchise chain management: growth, uniformity, local responsiveness, and system-wide adaptation. Our findings support the assertion that system growth is positively related to MUF rate within a system, in particular in relation to geographic expansion. Interestingly, while uniformity does not seem to be related to MUF rate, we find marginal support for an inverted u-shaped relationship between system-wide adaptation and MUF rate. Furthermore, the data suggest that local responsiveness and MUF rate are related in a u-shaped function.

Introduction

Franchising has been widely adopted by entrepreneurs as a way of doing business and has, thus, gained great economic importance as well as academic interest (e.g., Blut et al. 2011; Castrogiovanni, Combs, and Justis 2006; Hunt 1977; Kaufmann and Dant 1999; Kaufmann and Rangan 1990; Kidwell and Nygaard 2011; Nair, Tikoo, and Liu 2009; Tracey and Jarvis 2007; Windsperger and Dant 2006). In the United States, for example, franchised outlets account for 18 million jobs and contribute more than $2.1 trillion to the country's economic output (International Franchise Association, 2012). Furthermore, the number of franchisors in Brazil has tripled within a decade, growing from 600 in 2001 to 1,855 in 2011 (Brazilian Franchise Association, 2012), and China now has more than 4,500 franchise systems (China Chain and Franchise Association, 2012).

The rapid growth of franchising worldwide is sustained by many franchisors expanding through a multiunit development strategy, a phenomenon which has recently gained increased attention in the literature (Bercovitz 2003; Cox and Mason 2009; Garg, Rasheed, and Priem 2005; Gruenhagen and Dorsch 2003; Gruenhagen and Mittelstaedt 2005; Hussain and Windsperger 2010, 2012; Kalnins and Lafontaine 2004; Kalnins and Mayer 2004; Kaufmann and Dant 1996; Kaufmann, Donthu, and Brooks 2000, 2007; Vazquez 2008; Weaven and Frazer 2003, 2006). Indeed, one of the misconceptions about franchising is that franchisees operate small "mom-and-pop ventures" (Blair and Lafontaine 2005), primarily developed through single-unit franchising (SUF). However, the use of multiunit franchising (MUF) is on the rise. A recently published survey by the Franchise Update Media Group (2013) highlights that the majority of the

Jacques Boulay is Professor in the Marketing Department at ESSCA School of Management.

Barbara Caemmerer is Professor in the Marketing Department at ESSCA School of Management.

Heiner Evanschitzky is Professor in the Marketing Department at Aston University.

Krista Duniach is Associate Professor in the Marketing Department at University of Montpellier.

Address correspondence to: Jacques Boulay, Marketing Department, ESSCA School of Management, France. E-mail: jacques.boulay@essca.fr.

American top 50 MU franchise chains (based on the number of MU franchisees in the chain) have more than 40 percent of franchisees that are MU owners. For example, 81.10 percent of all franchisees at McDonald's, 63.52 percent at Taco Bell and 51.53 percent at Pizza Hut are MU franchisees.

Given the economic importance of MUF, it is surprising that—in relation to the magnitude of franchising studies in general—this field of investigation is relatively underdeveloped. The emerging literature in the field of MUF has mainly concentrated on investigating the antecedents of MUF and, in particular, the motivations for entering into MUF agreements (Dant et al. 2013; Hussain et al. 2013; Hussain and Windsperger 2010). For example, Garg, Priem and Rasheed (2013) contribute to the extant knowledge by suggesting that MUF provides asymmetric cost advantages for franchisors and franchisees. In addition, Gomez, Gonzalez, and Vazquez (2010) find that the use of MUF is impacted by ex-ante and ex-post contractual problems, as well as network characteristics, such as the geographical concentration of units and type of customer contact. From an agency theory perspective, Gillis et al. (2011) further support the notion that franchisors use MUF as a reward for franchisees to reduce agency problems that may, for example, arise from the opportunistic behavior of franchisees in fast growing systems (Bercovitz 2003). Perryman and Combs (2012) expand on agency theoretical considerations to explain the motivations behind the coexistence of company-owned outlets and franchised units in systems. Windsperger and Hussain (2012) use the relational governance perspective to show that knowledge-based trust positively impacts franchisors' propensity to use MUF. From an organizational governance view, Jindal (2011) states that MU franchisees exert more efficient control than franchisors' employee monitors. Hussain et al. (2013) use transaction cost theory, property rights view, and agency theory to assess MUF rate within systems, thus proposing the use of a combination of different theoretical perspectives to explain the phenomenon.

Based on the resource-based view (RBV) of the firm (Barney 1991; Barney, Wright, and Ketchen 2001; Hussain and Windsperger 2010, 2013), we contribute to the extant literature by building on Bradach's (1995, 1997) seminal work on how chains are organized and managed. A series of hypotheses is developed in this research to test how MUF rate (i.e., the rate of MU franchisees within a system) is linked to performance in system growth (in terms of business units as well as geographic spread), uniformity, responsiveness to local conditions and system-wide adaptation to threats and opportunities in the competitive environment. Recently, Bodey, Weaven, and Grace (2011) examined the extent to which different forms of MUF, such as master franchising and area development arrangements, satisfy each of these four imperatives. In contrast, our study focuses on the rate of MUF within a system, rather than the type of MUF. While some empirical evidence suggests that there is a link between MUF and system growth (Kaufmann and Dant 1996; Kaufmann and Kim 1995; Weaven and Frazer 2007), less is known about the relationships between the rate of MUF within a chain and the three latter challenges (Garg, Rasheed, and Priem 2005). The investigation of these links is the key contribution of our study.

The following part of this paper presents our research framework based on Bradach's arguments regarding the performance of SUF versus MUF. A review of the empirical studies dealing with the benefits of MUF from the perspective of the RBV of the firm complements Bradach's arguments and leads to the development of our research hypotheses. This is followed by an explanation of our research design and a description of the methods used for data collection and analysis. After the presentation and discussion of the key findings, the paper concludes with the study's contribution to theory and its managerial implications.

Multiunit Franchising as Hierarchy

Bradach's (1997) study "Using the plural form in the management of restaurant chains" marked a shift in the focus of franchise research. Until then, franchise scholars mainly focused their attention on the ownership structure of franchise systems and aimed at answering the "why" question: Why do chains decide to operate through franchise units rather than through company-owned units (Oxenfeldt and Kelly 1969; Caves and Murphy 1976; Rubin 1978; Brickley and Dark 1987; Bates 1998; Kaufmann and Eroglu 1999; Windsperger and Dant 2006)? With Bradach, the focus shifted to the "how" question: How should chains be managed once they are in place?

Bradach's central argument is that by using the plural form—a mix of company-owned units and franchised units—chain management is more likely to meet four primary challenges in franchising (Bradach 1997, 1998): growth, uniformity, local responsiveness and system-wide adaptation. This plural form argument has led to an extensive body of literature (e.g., Botti, Briec, and Cliquet 2009; Cliquet and Penard 2012; Dant, Perrigot, and Cliquet 2008; Perrigot and Herrbach 2012; Perryman and Combs 2012), sometimes going beyond the field of franchising research—see, for example, Heide's (2003) study on the plural form phenomenon in the context of industrial purchasing.

Bradach (1998) observed that former employees as well as MU franchisees tend to replicate the management structures observed in the company arrangement in terms of control, performance evaluation systems and operations reporting schemes. MU franchisees operate mini-chains within the chain and can thus be seen as forms of hierarchical organizations within the plural form structure. Based on an exploratory study of five major restaurant chains in the United States, Bradach (1995) found differences between SU and MU franchisees within the same system regarding their performance on the four key challenges in chain management. As seen in Table 1, Bradach suggests that MU franchisees perform better in both unit growth and adaptation to system-wide changes, whereas SU franchisees are better in responding to local challenges. Both SU and MU franchisees perform similarly in relation to the uniformity with system standards.

Table 1
Performance of Multiunit versus Single-Unit Franchisees

	Single-Unit Franchisee	Multiunit Franchisee
Unit Growth	0	+ +
Uniformity	+	+
Local Responsiveness	+ +	+
System-Wide Adaptation	0	+ +

0 = low performance; + = medium performance; + + = high performance (Bradach, 1995).

Surprisingly, most of these propositions still remain to be tested. Bradach (1998) speaks of "*speculation*" when presenting his own findings as his "*data are not fine-grained enough to enable detailed analysis*" (p. 162). As they are derived from a limited number of case studies (five large and successful chains with between 800 and 6000 units operating in a specific market—the US fast food sector), the generalizability of the results may also be questionable. We therefore suggest a multisector, multisize, and multichain approach to test Bradach's assertions about the performance of SUF versus MUF as a development strategy for franchisors.

The Impact of MUF on System Outcomes—A Resource-Based View

The RBV of the firm focuses on the development of competitive advantage through internal capabilities. Barney (1991) suggests that to gain competitive advantage in the long-term, organizations need to develop resources that are valuable, rare, and difficult to imitate and to substitute. These tangible or intangible resources can be categorized as being physical capital (such as equipment and geographical location), human capital (such as experience, intelligence and insight) and organizational capital (such as planning and controlling systems). This resource-based perspective of the firm allows us to develop research hypotheses in relation to the four key challenges identified by Bradach.

Growth

While resource scarcity theory suggests that the rate of MUF in a system should decline with a certain size and maturity, the opposite appears to be the case (e.g., Weaven and Frazer 2007). This may be explained by the fact that, apart from larger financial resources brought to the system by large-scale entrepreneurs, there are other resources that franchisors can benefit from when employing MUF. These other resources may lead to a sustainable competitive advantage (Barney 1991).

For example, MUF may contribute to building resources through organizational capital as this form of franchising supports accordance to organizational guidelines (Jindal 2011; Kaufmann and Dant 1996). There is also the notion that MUF enhances knowledge transfer capacities within the system (Hussain and Windsperger 2010). From a human capital

perspective, MU franchisees may provide more profound managerial experiences than SU franchisees, thus transferring their insights from previous appointments to the franchise. In the long run, this can lead to a better position in the market, which may in turn attract further interest of potential MU franchisees with a strong performance profile (Kaufmann and Kim 1995).

Another factor linking MUF to system growth is the notion that MUF can create economies of scale, which further contribute to the resources of the firm (Garg, Priem, and Rasheed 2013; Kaufmann and Dant 1996). For example, in comparison to SUF, fewer resources need to be invested into personnel selection and induction if multiple units are under the management of one franchisee. The costs of hiring, training, and monitoring may also be reduced as MU franchisees usually have a proven and successful track record, thus having a greater chance of doing well in the new appointment. Overall, the resource-based arguments outlined here support the idea that MUF is positively related to system development and expansion (Gomez, Gonzalez, and Vazquez 2010). We, therefore, test the following:

H1a: Growth (number of units in the system) is positively related to the rate of MUF within the chain.

As Barney (1991) suggests, geographical location is a factor that can contribute to the physical capital of the organization. Therefore, it is important to understand how MUF is linked to territorial coverage that may, in the long run, enhance the competitive position of the system. For example, fast chain growth across territories can lead to the development of a strong presence and create barriers to entry for competitors. However, as outlined by Cox and Mason (2009), there is still a lack of research regarding the spatial growth of franchise systems. This suggests that, beyond the mere number of units, a MU development strategy should also be assessed in terms of territorial coverage. As it is likely that the two are interrelated, we hypothesize:

H1b: Growth (territorial coverage of the system) is positively related to the rate of MUF within the chain.

Uniformity

From the resource-based perspective, uniformity in coherence with system standards is a

key challenge in franchising (Brickley and Dark 1987; Rubin 1978). It contributes to intangible capacities of the firm and thus to a sustainable competitive advantage. In particular, uniformity of aspects such as point of sale design, layout, choice of products and services and service levels can impact consumers' perceptions of the organization, its brand image and reputation (Nelson, Loken, and Bennett 2009). If these aspects differ across outlets, the brand can potentially become diluted, which can ultimately weaken the market position of the firm. The question thus arises as to what extent the MUF rate within a given system contributes to or detracts from uniformity.

Comparing SU to MU franchisees, Bradach (1995) outlines arguments for why one may outperform the other as well as for why, in fact, they may perform similarly in establishing levels of uniformity in their units. On the one hand, MU franchisees who have to manage their mini-chains within the system may model their franchisors. This, in turn, can lead to the establishment of common practices across units (Bradach 1997). Moreover, with franchisees operating various units simultaneously, the franchisor has to deal with fewer franchisees than if each of these units was operated by individual franchisees. This means that, first of all, uniformity should be easier to control as there are fewer franchisees that need to be monitored. Second, fewer franchisees also means fewer opportunities for divergence from system standards. Third, well-established standards that have proven successful in the past should be easier and faster to transfer across units if fewer franchisees are involved in the implementation of these (Hussain and Windsperger 2010; Weaven and Frazer 2007). Therefore, it could be argued that the rate of MUF is positively related to uniformity. Conversely, Kaufmann (1992) suggests that SU franchisees may devote more time to their outlets and thus ensure better adherence to system standards. In this case, systems with a higher proportion of SU franchisees would outperform others on uniformity.

Bradach (1995) does not find support for either argument. He observes that SU and MU franchisees perform similarly in terms of uniformity. One explanation he puts forward is that better-performing franchisees may be granted more units, which increases the challenge of safeguarding uniformity within their mini-chains. This, in turn, could lead to lower uniformity across their units. As this suggestion

needs further empirical investigation, we test the following:

H2: Uniformity is not related to the rate of MUF within the chain.

Local Responsiveness

Franchisees' local market knowledge also forms a part of the organization's intangible assets (Barney 1991). Compared with company-owned units, franchised units perform better in terms of being more responsive to local circumstances as they are under less control from central management and can thus react more flexibly to changes (Bradach 1998; Kaufmann and Eroglu 1999). Indeed, in many chains, franchisors give some room for maneuver to their franchisees so that they can better adapt to local market conditions. Some franchisors even encourage their franchisees—within some limits—to innovate under the premise that the whole system may ultimately benefit from these innovations (Cox and Mason 2009).

Comparing SUF and MUF, Hussain and Windsperger (2013) suggest that local market know-how is better deployed in SUF than in MUF for two main reasons. First, the residual income of SU franchisees is entirely dependent on the success of their unit, which may increase the motivation to respond to their customers' changing needs. Bradach (1995, 1998) complements this suggestion, arguing that SU and MU franchisees differ in their capacity to adapt to changes in their local environment. SU franchisees may dedicate all their attention and resources to the success of their unit whereas MU franchisees have to spread their attention across several units. Moreover, as their units are often located in various markets, MU franchisees may not have as profound insights into each of these local circumstances as SU franchisees. Second, the decision rights in MUF may be transferred from the MU franchisees to their outlet managers. This could actually dilute decision-making processes and responsiveness (Hussain and Windsperger 2013). Systems developing through MUF should then perform worse in terms of local responsiveness than systems with high levels of SUF:

H3: Local responsiveness is negatively related to the rate of MUF within the chain.

System-Wide Adaptation

The dilemma that arises when employing MUF is how to manage the trade-off between local responsiveness and system-wide adaptation (Bradach 1997). The literature provides arguments for why local market responsiveness constitutes an important intangible organizational resource (Barney 1991; Kaufmann and Eroglu 1999). However, there are also arguments put forward supporting the notion that an efficient and effective system-wide adaptation may be equally or even more important (Hussain and Windsperger 2010; Weaven and Frazer 2007). Bradach (1995) found that system-wide adaptation may be the most important challenge that companies face. In highly competitive markets—as is the case for franchise chains in most developed economies—it is of crucial importance for a franchisor to respond quickly to the competition by implementing changes within the chain. The adaptation of such changes should ideally take place at a system-wide level to ensure competitiveness of the entire chain, as well as uniformity. Bradach (1995) describes four stages of system-wide adaptation: idea generation, idea testing and evaluation, deciding which one to pursue and implementation. In the first stage, it often occurs that franchisees identify opportunities that are not only interesting for their local markets, but for the entire chain. In the second stage, franchisees can discuss the feasibility of the idea from their local market viewpoint with the chain operators. On this basis, franchisors decide which ideas to pursue. While they can control that these ideas are implemented in company-owned units, they can only try to persuade franchisees to accept the new practice. As franchisees are independent business owners, they must be convinced that they will benefit from the new idea that the franchisor is proposing. Thus, franchisees make individual decisions about which practices to use locally.

With a higher ratio of MU franchisees, it is more likely that new ideas will be adapted at a wider system level, as fewer individual decisions are made and as those decisions are valid for a greater number of units. Furthermore, it is suggested that the transfer of system specific knowledge and practices as an organizational resource is more likely to be achieved through MUF. This is why systems that have a strong focus on corporatization and system-wide adaptation are more likely to use MUF (Hussain and Windsperger 2010; Weaven and Frazer 2007). We thus hypothesize:

H4: System-wide adaptation is positively related to the rate of MUF within the chain.

Table 2
Sample Structure by Sector

Sector	n	Percent
Clothing and Personal Accessories	19	10.1
Household Goods	19	10.1
Food Trade	19	10.1
Other Retailing	19	10.1
Automotive Services	10	5.3
Construction and Energy	16	8.5
Hairdressing and Beauty	20	10.6
Other Personal Services	20	10.6
Business Assistance Services	12	6.4
Hotels	5	2.7
Quick Service Restaurants	9	4.8
Table/Full-Service Restaurants	12	6.4
Real Estate	7	3.7
Travel	1	0.6
Total	**188**	**100.0**

Method

Sample

To test our model, quantitative data was collected from franchise systems across a wide range of sectors. We were granted access to a comprehensive list of franchise systems in France from the French Franchising Association (FFF). Their franchise base contains a total of 593 franchise systems and is representative of the French franchising industry.

The questionnaire was posted to each franchisor on the list, together with an introductory letter explaining the purpose of the survey and offering the respondents a summary of the findings. A return prepaid envelope was included. The mailing resulted in 188 usable returns from franchisors, giving a response rate of 31.7 percent. Table 2 provides an overview of the sectorial structure of the sample, which is a good representation of the total franchise market in France.

Measures

The independent variable of our model is *percentage of MUF* (or "rate of MUF") in a franchise system. This ratio is calculated by dividing the number of MU franchisees in any given franchise system by the total number of franchisees in that system for an objective account of the degree of MUF as suggested in the literature (for a summary of measures: Hussain and Windsperger 2010). The theoretical range of the variable is then from 0 percent (no MU franchisee in the system) to 100 percent (all franchisees within the system have at least two units).

It is, however, important to note that the variable is not normally distributed, but censored: 22.9 percent of all franchise systems have no MU franchisees, whereas the remaining 77.1 percent have a rate of MUF varying between 2 percent and 88 percent. This non-normal distribution has implications for the regression analysis, an issue that will be addressed later.

All dependent variables are either assessed with objective single-item measures or with self-reported multi-item measures. As suggested in the literature (Combs and Ketchen 2003), we measure *growth rate* using the objective change in the number of franchise units over a period of time. *Territorial coverage* is objectively measured by the number of French departments within which franchise units of the system are located (France is divided into 100 geographical departments, similar to counties).

The *level of uniformity* is measured by using existing scales which assess how franchisees comply with their franchisor's directives in various fields: point of sale design/store layout; work methods, choice of products or services on offer, level of margins; application of know-how (Boulay 2010; Gassenheimer et al. 1994). All measurement properties are above the required threshold (critical ratio (CR) = 0.889; average variance extracted (AVE) = 0.557).

Local responsiveness is a three-item scale based on Bradach's work: *Our franchisees permanently adapt to their local environment; When under pressure by the local competition, our franchisees do not hesitate to innovate without our permission; Major innovations in the system often come from ideas initially developed by our franchisees at their local level.* We find the CR (0.733) and AVE (0.478) to be slightly below the cut-off suggested by Bagozzi and Yi (1988) and Hair et al. (2006). However, we decided not to change the scale because of face validity issues if items were deleted.

The scale for *system-wide adaptation* is also developed on the basis of Bradach's observations and aims at measuring how franchisors perceive the system as being able to adapt to changes in the environment. It consists of four items: *Our franchisees generate many ideas*

Table 3
Key Psychometric Properties of the Measures

Growth (change in #units)	1.000				
Growth (#regions)	0.382	1.000			
Local Responsiveness	0.076	0.062	1.000		
Uniformity	0.147	−0.030	0.053	1.000	
System-Wide Adaptation	−0.052	−0.133	0.224	0.389	1.000
Critical Ratio	n.a.	n.a.	0.733	0.889	0.887
AVE	n.a.	n.a.	0.478	0.557	0.663

Table 4
Regression Results

Hypotheses	Coefficient	*p*-Value	Supported
H1a: Growth (Change in #Units)	13.95	0.08	Marginal support
H1b: Growth (#Regions)	23.27	0.05	Yes
H2: Uniformity	0.33	0.16	Yes
H3: Local Responsiveness	0.37	0.18	No
H4: System-Wide Adaptation	−0.26	0.22	No

that help us to improve our offer; We offer our company-owned units the same improvement support as we offer our franchisees; All our units—company-owned and franchised—actively participate in improving methods and processes that will ultimately help the whole system; Company-owned units and franchised units learn permanently from one another. The CR (0.887) and AVE (0.663) indicate an acceptable psychometric quality of the scale.

We also test for discriminant validity between constructs and find it to meet the criteria suggested by Fornell and Larcker (1981). A summary of the key psychometric properties of the measures are shown in Table 3.

The independent variable of our analysis is "rate of MUF" in a given franchise system. As mentioned already, the variable is not normally distributed, but (left-) censored which, in consequence, prevents us from running traditional OLS-regressions. We thus follow Muthen and Muthen's (2006) suggestions and estimate the model using the maximum probability estimator with robust standard errors (MLR). To do so, we utilize the software Mplus, version 6.11.

Analysis and Results
Testing of Hypotheses

Our main hypotheses are tested with a regression analysis. In accordance with Bradach (1995), we hypothesized that franchise system growth rate, by unit (H1a) as well as by territorial coverage (H1b), is positively related to the rate of MUF within a chain. We find strong support for territorial coverage ($B = 23.27$; $p = .05$) and marginal support for growth rate by unit ($B = 13.95$; $p = .08$). Also as expected, franchise chain uniformity is unrelated to the rate of MUF ($B = 0.33$; $p = .16$) (H2). However, contrary to expectations, we do not find a negative relationship between local responsiveness of the chain and the rate of MUF ($B = 0.37$; $p = .18$) (H3). Similarly, we do not find system-wide adaptation to be related to the rate of MUF ($B = −0.26$; $p = .22$) (H4). Table 4 summarizes the key results of the hypotheses test.

Robustness Check

As indicated already, we calculated the independent variable of our model, *percentage of MUF* (or "rate of MUF"), by dividing the number

Table 5
Mean Values for Local Responsiveness and System-Wide Adaptation

Variable	Group (MUF Rate)	Group Size	Mean Value
Local Responsiveness	Group 1 (<7.65 percent)	33	3.99
	Group 2 (7.65–16.25 percent)	34	3.87
	Group 3 (16.25–28.80 percent)	34	3.81
	Group 4 (>28.80 percent)	33	3.96
System-Wide Adaptation	Group 1 (<7.65 percent)	33	5.03
	Group 2 (7.65–16.25 percent)	34	5.27
	Group 3 (16.25–28.80 percent)	34	5.39
	Group 4 (>28.80 percent)	33	5.01

of MU franchisees in any given franchise system by the total number of franchisees in that system (Hussain and Windsperger 2010). However, as MUF is our central construct, we also used alternative MUF measures to ensure findings are not biased by the measure and that they reflect the underlying phenomenon. Therefore, we created two alternative measures: (1) "intensity of MUF" (= number of units divided by number of franchisees) and (2) "size of the mini-chain" (= average number of units a MU franchisee operates). When running the regression with these two alternative measures, we note that none of the substantive results change (i.e., the directions and significance levels remain unchanged). Apparently, findings hold irrespective of the measure used for MUF.

Further, our findings may also be biased by the fact that our sample of 188 franchise systems is spread across a variety of business sectors. Therefore, we included a dummy variable to account for potential business sector effects. The analysis shows that even when business sector is accounted for, results of the hypotheses tests remain stable. Notably, the significance levels are unchanged.

In sum, both robustness checks confirm the results of the main model, providing convincing evidence for our substantive findings.[1]

Follow-up Analysis

While confirming two of Bradach's (1995) predictions (H1a/H1b and H2), we do not find support for the other two propositions in our data. To better understand the relationship between local responsiveness and rate of MUF (H3) and the relationship between system-wide adaptation and rate of MUF (H4), we split the sample into subgroups based on the rate of MUF. We are thus able to further explore potential nonlinear effects.

More precisely, from our initial sample of 188 franchise systems, we deleted all SU franchisees as we are mainly concerned with differences in the two dependent variables between systems with different rates of MUF. After further deleting all missing values, we were left with 134 MU franchisees that vary in their rate of MUF. We split this sample into four subgroups with MUF rates of less than 7.65 percent (group 1; $n = 33$), between 7.65 percent and less than 16.25 percent (group 2; $n = 34$), between 16.25 percent and less than 28.80 percent (group 3; $n = 34$) and more than 28.80 percent (group 4; $n = 33$).

Next, we calculated mean values for local responsiveness and system-wide adaptation for each group. The results suggest a u-shaped relationship for local responsiveness and an inverted u-shaped relationship for system-wide adaptation in relation to MUF rate (Table 5).

To more rigorously assess these two nonlinear relationships, quadratic effects can be estimated. Interestingly, we find a positive and significant quadratic effect for local responsiveness ($B = 0.035$; $t = 2.490$, $p < .05$), suggesting that high and low rates of MUF are associated with high levels of local responsiveness whereas medium-levels of MUF relate to low levels of local responsiveness.

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[1]We thank two anonymous reviewers for suggesting conducting robustness checks.

We do not find a significant effect for system-wide adaptation ($B = -0.006$; $t = -1.451$, $p > .1$). It is worth noting, however, that the sign of the coefficient is negative, which would suggest (if significant) an inverted u-shaped effect. To further investigate that effect, we assessed the mean values of system-wide adaptation across the four MUF-groups. We note that group 3 seems to perform better than both, group 1 ($t = 1.731$, $p < .1$) and group 4 ($t = 1.688$, $p < .1$), whereas none of the other pair-wise comparisons are significant. This finding suggests further evidence for an inverted u-shaped relationship between rate of MUF and system-wide adaptation. It is, however, worth mentioning that the discussed effect can be considered marginal and our interpretation should be seen as speculative. Further research should attempt to (dis-)confirm our findings as we are only offering initial exploratory speculations about potentially interesting nonlinear relationships between rate of MUF and local responsiveness as well as system-wide adaptation.

Discussion and Implications

In essence, our findings only support some of Bradach's assertions. We find marginal support for a positive relationship between the rate of MUF and system growth by unit (H1a). The positive link between MUF rate and system growth by territorial coverage (H1b) is, however, significant. Our interpretation is that fast business growth may be successfully accomplished with expansion through MUF. This could be particularly important at the early stages of the lifecycle of a given chain to gain market share and create barriers to entry for competitors. More importantly, if presence across territories within a given country is due to the competitive environment, a greater MUF rate may be desirable. This implies that capital scarcity alone cannot explain the MUF phenomenon, as the theory suggests that, with a certain size and maturity of the system, the propensity for MUF should decrease. However, MUF may contribute positively to other organizational resources that enable the firm to develop a sustainable competitive advantage in the long-term, such as more efficient monitoring, knowledge transfer, extensive managerial experience and the creation of economies of scale (Barney 1991; Garg, Priem, and Rasheed 2013; Gomez, Gonzalez, and Vazquez 2010; Hussain and Windsperger 2010; Jindal 2011; Kaufmann and Dant 1996).

With regard to uniformity, Bradach (1995) suggests that SU and MU franchisees may perform similarly. This proposition is supported by our findings (H2). The potential reason for this is that the advantages of one form of franchising outweigh those of the other—as suggested by Bradach (1997) and Kaufmann (1992). On the one hand, a higher MUF rate indicates that there are fewer franchisees in the system, which means easier control of franchisee actions within the chain, as well as fewer opportunities for deviant behavior. On the other hand, SU franchisees may be more devoted to their outlets and thus ensure better adherence to system standards (Kaufmann 1992). Moreover, the best franchisees may become victims of their own success (Bradach 1995). While successful franchisees may be granted more units, they will find it increasingly difficult to adhere to system standards and control for uniformity with the growth of their mini-chains. This may, in the end, lower their performance on these challenges.

However, from a resource-based perspective uniformity in coherence with system standards is a key challenge in franchising (Brickley and Dark 1987; Rubin 1978). Thus, to establish and maintain uniformity across a system, it is important that franchisors provide support to MU franchisees to help them to comply with standards within their mini-chains. In particular, training can be offered to local managers that are hired by franchisees to ensure that standards are well understood across the system.

Local market knowledge is also an intangible asset, as it allows the firm to respond to changing market needs in a competitive manner (Barney 1991). The literature suggests that SUF outperforms MUF in local responsiveness (Bradach 1995, 1998; Hussain and Windsperger 2013). Interestingly, we do not find support for the proposition that local responsiveness is negatively related to the rate of MUF within the chain (H3). Our follow-up analysis shows that the link between local responsiveness and MUF rate follows a u-shaped curve. Bradach (1995) himself puts various explanations forward for why this may be the case. In particular, he suggests that issues which demand a local response may be of regional, rather than unit, nature. MU franchisees with only a few outlets in a particular region may be very effective in catering for such regional contingencies. With the opening

of more outlets across different regions and the entering of more MU franchisees, this effectiveness may weaken across the chain. Therefore, local responsiveness may drop with the rate of MUF up to a certain point. However, with system and MUF rate growth, individual MU franchisees also endeavor to further develop their businesses. Bradach (1995) outlines that as MU franchisees open more units, they are more likely to hire staff specialized in different functions, such as marketing, which again enables them to understand and cater to local and regional demands. This chain of events could explain the u-shaped relationship between local responsiveness and MUF rate.

Finally, we do not find support for Bradach's (1995) assertion that system-wide adaptation is positively related to the rate of MU franchisees within the chain (H4). Rather, our data suggest some initial evidence that the relationship between the two follows an inverted u-shape function. The explanation for this may be grounded in the lifecycle of systems (Blut et al. 2011; Lillis, Narayana, and Gilman 1976), which suggests that organizations will need different organizational capacities in the different stages of the lifecycle (Barney 1991). In relation to franchise systems, growth is the most important objective in the maturity stage. Growth may be most rapidly achieved by an increased MUF rate, as suggested already. Once a certain system size is achieved, other objectives may be given a greater priority, in particular defending market share from new competition by ensuring excellent performance across the chain. Simultaneously, control becomes more complex with a greater number of franchisees and units that are dispersed over a wider territory (Blair and Lafontaine 2005). This also detracts from investment into further growth, as well as other managerial activities, such as persuasion and monitoring of system-wide adaptation of innovations within the chain. The same may hold for MU franchisees who might find it increasingly difficult to control actions in their growing mini-chains within the system (Jindal, 2011).

Overall, the findings suggest that, while MUF increases the likelihood of innovations being adapted across the system at the start, this probability diminishes if the MUF rate goes beyond a certain point. Franchisors need to understand when their systems reach this tipping point to implement initiatives that support further system-wide adaptation, such as investment into internal communication events to present novelties and their benefits to the different franchisees.

To conclude, we find that the links between MUF rate and system performance on the key challenges of growth, uniformity, local responsiveness and system-wide adaptation—and thus the development of organizational capacities— may not be as straightforward as previously suggested. Particularly noteworthy are the findings that there is no link between MUF rate and uniformity, as suggested by Bradach, but that the relationship between MUF rate and system-wide adaptation resembles an inverted u-shape function. As one could argue that uniformity and system-wide adaptation should develop in parallel and given that our results with regards to system-wide adaptation were nonsignificant, future research should investigate whether the findings presented here can be replicated.

While we consider our results to be robust across different industries and different measures of MUF, we would call for establishing different MUF measures. For example, a measure for "MUF concentration" would be another interesting indicator that could take into account that a MU franchisee operating two units might be very different, for instance, from one with— say—50 units.

Moreover, it is important to further investigate the finding of a u-shape relationship between local responsiveness and MUF rate, as it may support some of Bradach's rivalry explanations in relation to MU franchisees' behavior. Generally, the idea that the functions for local responsiveness and system-wide adaptation are in an inverse relationship to each other seems intuitive—as they are opposite managerial outcomes. However, as we can only present initial exploratory results, further research is necessary to assess whether these findings hold across other samples.

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SME Performance and Public Support for International RJVs*

by Ascensión Barajas, Elena Huergo, and Lourdes Moreno

The objective of the present study is to analyze the impact of public support for international research joint ventures on SME performance considering two dimensions: technological and economic results. The research is also intended to examine the time pattern of this effect. For that purpose, we use a panel dataset containing information about Spanish participants in consortia supported by the SME-specific measures of the sixth *Framework Programme. Empirical evidence corroborates a direct and positive impact on technological assets of participants. On the part of the* economic indicators, EBITDA *per employee and labor productivity are positively influenced by the improvement of technological background. All those effects are effective three years after the end of the project, confirming that SMEs are involved in market-oriented R&D projects.*

Introduction

In general, empirical literature on R&D cooperation concludes that big companies are more likely to cooperate because of their higher technological capability and the considerable scope of their R&D projects (Bayona et al., 2001; Cassiman and Veugelers, 2002; López, 2008). Nevertheless, current trends indicate that cooperation is taking a relevant role within corporate strategies of innovative firms, regardless of their size. The increasing dynamism of small and medium-sized enterprises (SMEs) in technology-intensive industries, such as biotechnology and ICT, cooperating with other companies and with research institutions, illustrates this fact. Although the percentage of firms cooperating on innovation activities is much higher considering large firms, the available data (OCDE, 2009) show relevant activity of SMEs in some countries such as Finland (28% of all SMEs cooperate), Austria (18%) and France (24%, considering only manufacturing SMEs).

The literature also points out the interest and the difficulty of analyzing the distinct impact (if it exists) of research joint ventures (RJVs) on SME performance due to their different targets and capabilities and the restrictions on data collection. Both the interest in and the difficulty of knowing the economic effects of RJVs are even higher when cooperation is supported by public funds (Combs and Link, 2003). In this case, subsidized RJVs affect innovative or economic results through two different channels: the spillovers of the cooperation among firms and the public financing of R&D expenditures. As we will see in the next section, this discussion determines our understanding of the core topic of the present paper: the impact of SME participation in subsidized RJVs.

Specifically, our objective is to analyze whether consortia supported by the so-called SME-specific measures under the sixth EU Framework Programme (FP) (2002–2006) have a positive impact on SME performance considering two dimensions: technological and economic results. SME-specific measures were introduced by the European Commission in order to promote cooperation between small firms and R&D organizations. The target group is the collective of SMEs with no capacity to independently carry out practically any of the R&D activities needed to solve a concrete technical problem. Therefore, these firms have great difficulties participating in the traditional thematic programmes of the FP, more focused on technology leaders, and need a different support scheme.

According to qualitative analysis carried out under the auspices of the European Commission, a high percentage of supported SMEs reach their own goals (European Commission, 2010). Nevertheless, this approach is not able to quantify to what extent this aid improve firms' performance. With our approach, we study a set of key performance indicators. Our investigation is also intended to examine the time pattern of these effects, in case they exist.

The empirical research is divided into two phases. First, through the estimation of a knowledge production function, we measure the impact of the SME participation in R&D consortia supported within the FP on technological results, proxied by intangible fixed assets. Second, we analyze whether the participation also has a significant impact on two economic performance indicators: labor productivity and EBITDA per employee. In doing so, we take into account that the firm's participation within the FP probably depends on the same firm (or consortia) characteristics that determine its performance. In particular, we use several econometric specifications to control for unobserved firm characteristics and endogeneity, including a matching procedure.

For this purpose we integrate two dataset. The first one, owned by the Center for the Development for Industrial Technology (CDTI, the public organism in charge of monitoring the participation of Spanish firms within the FP), contains much relevant information about the SME-specific measures of the sixth FP (rejected and supported projects) and the participants. The second one is the SABI database, which consists of company accounts for over 1,000,000 Spanish firms. The resulting database consists of an unbalanced panel of 41,800 observations, 10,450 SMEs, 1,526 proposals and 253 awarded firms for the period 2003–2009. This period is large enough to capture the medium and long-term effect of the FP R&D projects. Available data allow us to consider variables related to the characteristics of consortia (leadership, geographical origin of partners, technological area) and the economic performance of SMEs.

Our results corroborate a direct and positive impact of SME-specific measures on technological assets of participants. Labor productivity and EBITDA per employee are also positively influenced by the improvement of technological background. After testing several lags, we find that all these effects are effective three years after the approval of the project, though no significant impacts are obtained for shorter periods. However, this three-year lag is smaller than in the case of other FP measures, confirming that SMEs are involved in market-oriented R&D projects (Polt et al., 2008). From the aforementioned results and complementary evidence obtained in this paper, some conclusions will be drawn regarding the interest of policy makers.

The rest of the paper is organized as follows. First, we summarize previous evidence about the impact of cooperative agreements by SMEs and we explain the specific measures for SMEs within the FP. This is followed by an illustration of the empirical model and the data. We then present the results and, finally, we conclude with the contributions and limitations of our study.

Technological Agreements and Their Relevance for SMEs

Although the theory states clearly that technological collaboration improves firms' innovativeness, empirical research faces many obstacles to measuring the effect of R&D partnerships on firms' performance, mainly because of the lack of suitable and homogeneous indicators.

Following the resource-based theory, cooperative and in-house R&D activities are considered complementary strategies aiming to increase technological capacities of firms. To measure this effect, many authors build objective performance indicators related to technological capabilities (mainly from patents databases) and conclude that R&D partnerships have the predicted positive effect on internal capacity (Branstetter and Sakakibara, 2002; Mowery et al., 1998; Scott, 2003). Other papers find a positive relationship between cooperation with universities and research centers and innovation

output measured by the volume of sales due to new products (Faems et al., 2005; Lööf and Heshmati, 2002; Lööf and Broströn, 2008) or the number of publications (Schwartz et al., 2012).

Empirical evidence also seems to corroborate that, taking into account different types of partners and different cooperation objectives, the more market-oriented the project is, the higher the probability of finding positive economic effects (Benfratello and Sembenelli, 2002; Belderbos et al., 2004; Bayona-Sáez and García-Marco, 2010; Cincera et al., 2003).

For the specific case of SMEs, Bougrain and Haudeville (2002) do not find a significant effect of cooperation in innovation success (measuring success as not having incidences in the development of supported projects). Other authors explore new perspectives, aiming to measure the theoretically positive effect of cooperation on SMEs. Nieto and Santamaría (2010) draw a comparison with big companies and conclude that technological partnerships could improve the innovativeness of SMEs compared to large firms. They also find a significant pushing effect of collaboration on non-innovative SMEs, which decide to start to innovate with partners. Kaiser and Kuhn (2012) support this favorable result for SMEs: although the membership increases the number of patent applications for the whole sample of participants in the Danish Innovation Consortia program, there are no statistically significant effects for large firms.

The literature shows a growing interest in analyzing the collective of new technology-based firms (NTBFs), as they are a clear example of SMEs with great internal R&D capacity and high constraints of resources. Colombo et al. (2009) find a positive relationship between the number of partnerships and NBTFs performance (measured by total factor productivity). They remark that this effect increases when industrial partners are located in countries, which are in the forefront of knowledge generation.

These conclusions about the relationship between technological cooperation and firms' performance are also valid for the case of subsidized cooperative projects. However, in this case, technological or economic results can be affected not only by the spillovers of cooperation among partners but also by the impact of public support on their innovative private expenditures activity.

There are few papers that integrate both topics (technological cooperation and policy

evaluation) while considering R&D collaboration and R&D public support as alternative instruments for increasing technological results. Czarnitzki et al. (2007) is an exception. They interpret RJVs and subsidies as heterogeneous treatments for a sample of German and Finnish firms. Using matching techniques, they find that the combination of both treatments has a positive impact on the firm's R&D expenditures or the number of patents. And what is more relevant, when cooperation and public support are separately analysed, subsidies for individual research do not exhibit a significant impact on either R&D or on patenting by German firms.

In spite of Czarnitzki et al. (2007), most papers that study the impact of FP projects on technological outputs or inputs consider the participation in this kind of agreement to be an integrated treatment (Arnold et al., 2008; Aguiar and Gagnepain, 2011; Benfratello and Sembenelli, 2002; Dekker and Kleinknecht; 2008; Luukkonen, 1998; Polt et al., 2008). Again, whereas the effect on innovativeness is demonstrated, no clear evidence is obtained about economic performance. Barajas et al. (2012) go a step forward and corroborate that the impact of cooperation within the FP on firms' productivity is produced through the indirect channel of intangible assets.

For the specific case of SMEs, empirical evidence reinforces the existence of a positive technological effect. Thus, Arnold et al. (2008) remark that, in live sciences or energy, the most relevant impact of the FP is related to the increasing technological capabilities of SMEs. Dekker and Kleinknecht (2008) find a positive influence on R&D intensity for companies with fewer than 100 employees. The European Commission (2010) carried out a descriptive analysis of SME specific measures and states that, whereas 30% of participants obtained new IPR, the commercial exploitation of results is the least effective factor. On the contrary, the survey undertaken by the EC confirms that SMEs have improved the degree of R&D formalisation and their own R&D capabilities, incorporating new scientific and technological knowledge and reinforcing their network abilities.

In line with previous literature, in the next sections we analyze the effect of R&D consortia supported within the FP on SMEs, considering both technological and economic outputs and using a methodology that allows for capturing its direct effect as well as the indirect one. A major difference with respect to the

works mentioned already is that our dataset is rich enough to measure medium-term effects on relevant and objective performance indicators, such as intangible assets, EBITDA and labor productivity. In the next subsection, we introduce the special features of the FP for SME participation.

SMEs within the Framework Programme

Cooperative R&D within the European Union is supported mainly by the Framework Programme. Although this program includes several modalities of public aid, its core activity has followed a general scheme over its seven editions, since it began in 1984. All projects are promoted by self-organized consortia, which have a limited duration. Their R&D activities are co-financed by grants, coming from the European Commission, and private funds, coming from the consortia partners. Consortia are shaped by different kinds of partners, located in different nations (usually, consortia are made up of firms, public research centers, universities and users). And, finally, evaluation is carried out by independent experts in each technological area and coming from all EU member countries.

Public policies aiming to encourage cooperation between SMEs and research centers have been implemented by the R&D Framework Programme of the European Union (FP) since its third edition, and were strongly reinforced in the fifth and the sixth ones. In order to design suitable financing schemes for SMEs, the EC distinguishes two broad categories of firms: those with in-house R&D activity and core competences in one of the priority areas supported by the FP, and those operating in medium-technology businesses and mature sectors (European Commission, 2010). SMEs belonging to the first group are able to be involved in the traditional R&D consortia supported by the FP (thematic programmes), whereas the second group needs specific instruments.

The specific measures for small companies financed by the FP follow two schemes. The first one, called a "cooperative research" scheme, supports European SMEs with a defined research objective or need but with no (or limited) technological capacity. Thus, a great part of the technological development will be done by the R&D performers involved in consortia. Consortia consist of a minimum of three SMEs from two different countries and 2 R&D performers from two different countries.[1] The development phase is 1 or 2 years long and the total budget is around €500,000 to €2 million. The financial support covers 50% of the project's R&D and innovation activities and 100% of the management costs (up to 7% of the European Commission contribution).

The "Collective Research" scheme is similar, but specifically oriented to SME associations. Consortia should be formed by a minimum of two national associations from different countries or one European industrial association and two R&D performers from two different countries. The duration of the project is longer, between 2 and 3 years, and the total budget is around €2–€5 million. The financial support covers not only R&D and management activities, but also 100% of training costs.

Both schemes follow a bottom-up approach and there is neither thematic nor technological priority set up by the European Commission. Consortia could be coordinated either by an SME or by an R&D performer, and SMEs own all intellectual property rights resulting from the project, although R&D performers may benefit from preferential use of the outcomes. And in both cases, the measures promote the application of technology to specific problems of the firm. Using a synthetic description, we can say that the collaboration scheme is based on the role of SMEs as technology users and the role of R&D organizations as technology providers. The interaction between the partners should generate innovations and new knowledge applied to the productive processes of the firms. As there is no technological restriction, proposals come from all productive fields: Material and Processes; Environment; Energy; ICT and Electronics; Agri-Food and Aquaculture; Biotechnology and Health; Forestry; Construction; Transport. From the point of view of the industry, this is a wide-ranging programme.

In the sixth FP (2002–2006), €470 million was allocated to these two schemes, which account for around 2.5% of the total budget of this sixth edition. Almost 4,000 proposals were received, 12% of which were ultimately supported.

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[1]These countries can be European Union Member States or Associated Candidate Countries (European Commission, 2002).

The underlying motivation of these measures is to facilitate access to those companies that do not have the necessary capacity to carry out an R&D project on their own, either because they would like to accomplish an additional research line or because they have little or no internal R&D capacity. Under the sixth FP, the evaluation criteria stress the business interest of the project and not only its technological novelty.

Empirical Model and Data

The database used for the analysis is provided by the CDTI, which is the public organization in charge of monitoring the participation of Spanish firms within the FP. The CDTI database includes information about all the applications for the SME-specific measures financed by the sixth FP (2002–2006). Granted and rejected proposals in which at least one Spanish SME participated are considered for the present study.

This information from the CDTI database has been complemented with the SABI database that contains the company accounts of more than 1,000,000 Spanish firms between 1998 and 2009. The merger has been possible because Spanish SMEs are identified through their company tax codes in both databases.

From the SABI database, we have selected a control sample that takes into account the availability of data about the relevant variables for each firm. Given that Spanish firm size is smaller than the European average (European Commission, 2003), we have designed the sample selection considering a firm to be an SME when its number of workers does not exceed 200, although the threshold in international statistics is usually set at 250. Firms employing between 10 and 200 employees are selected by a random sampling scheme for each NACE class (two-digit) level, and represent around 4% of the Spanish Central Companies Directory (CCD), which comprises all Spanish companies. We have also included 615 micro-companies (0.5% of the CCD, chosen again by means of a random sampling scheme), given that 330 applications for SME-specific measures belong to this category. This makes our control sample of non-

applicants representative of the Spanish economy. The sample used in the empirical analysis of participation refers to the period 2003 to 2009[2] given that we use the forward values of output measures to capture long-term relationships.

As our objective is to analyze the impact of collaboration within the SME-specific measures of the FP on performance variables, our unity of analysis is the firm. In this sense, although some firms have applied in more than one proposal every year, we only consider one project per firm and year. We have given priority to those supported projects with bigger subsidies. We have also excluded observations of the extreme values of employment and sales growth rates and EBITDA per employee. Specifically, we have eliminated values in the extreme percentiles (1 and 99%). In addition, we have dropped six negative values for intangible fixed assets. Overall, the final sample consists of an unbalanced panel of 41,800 observations; 10,450 companies; and 1,526 applications, 253 of which were accepted.

Therefore, this database allows us to specifically analyze those aspects that determine a firm's decision to engage in a cooperative project, those factors related to agency selection,[3] and the impact of participation on the firm's output. Given this information, and as we have explained previously, we want to quantify the impact of SME-specific measures financed by the sixth FP on SME performance. Specifically, in a first step, we analyze how the participation of an SME in an FP project affects its generation of new knowledge. This new knowledge is approached by intangible fixed assets reported in firms' accounting, which include, among other things, capitalised R&D expenditure, intellectual property and software.[4]

Corrado et al. (2005) distinguish three main categories of intangibles: (1) computerized information; (2) innovative property; and (3) economic competencies. The last one, which refers to brand equity, human capital training and organisational management, is beyond the scope of this work because of the lack of data. According to Van Ark et al. (2009), investments

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[2]Although the sixth FP was formally launched in 2002, during that year there was no application registered.
[3]Proposals are evaluated by independent experts according to some common criteria. However, such information is absent from our database.
[4]Other measures of technological outputs used in previous empirical evidence like product and process innovations or patents are not available in our database.

of Spanish firms in computerized information and innovative property represent more than 65% of total intangible private investment.

We suppose that our data on intangible assets constitute an indirect measure of innovation output, given that expenditures generated in the cooperative project related to R&D, software and patenting will be capitalised once the firm recognizes that these outlays will generate future benefits. Formally, the equation in our model in year t is:

$$k_{it} = p_{it-s}\gamma + x'_{it}\beta_1 + e_{it}, \quad 2 \leq s \leq 4, \quad (1)$$

where $i = 1, \ldots, N$ index firms, k_i stands for a firm's intangible fixed assets per employee, p_i denotes the SME participation within the FP, and x_i is a vector of other control variables.

In a second step we use two alternative measures of economic success g_i as dependent variables: EBITDA per employee and labor productivity. The equation takes the form:

$$g_{it} = p_{it-s}\delta + k_{it}\beta_k + z'_{it}\beta_2 + u_{it}, \quad 2 \leq s \leq 4, \quad (2)$$

where z_i stands for additional controls in the equation. As control variables in both equations (1) and (2), we consider dummy variables referring to size, industry, year, firm age and location. In addition, in equation (2) we also include intangible assets per employee as an explanatory variable. Therefore, if we find that intangibles are affected by participation within the FP, and that these intangibles increase the firm's performance, the economic impact of the cooperative project will also be supported by the evidence.

Given that R&D projects supported by the SME-specific measures of the FP are generally medium-term projects (around 24 months long) and that target recipients are European SMEs with a specific research objective or need but with no (or limited) technological capacity, we believe that it is reasonable to analyze their impact once the project has formally finished. For this reason, we will experiment alternatively by including our indicator of the SME participation in equations (1) and (2), referring to projects awarded 2, 3, or 4 years ago. This allows us to study the lag required to obtain a positive impact of FP participation on technological capabilities, EBITDA per employee and labor productivity.

Following the literature on impact assessment of R&D policies,[5] the implicit question to answer in both equations is what the behaviour of a supported firm would have been if it had not received this public aid. The problem is that each firm can only be observed either in the status of receiving the support or not. As is well known, if aid was granted randomly to firms (or consortia), we could estimate the effect of public aid on (for instance) performance as the difference between the average one in supported and non-supported firms. However, the evidence shows that aid is not granted randomly. Therefore, to measure the effect of public aid, we need to estimate the counterfactual. That is, we have to take into account that the awarding decision by the public agency probably depends on the same firm (or consortia) characteristics that determine performance.

The econometric literature has developed several methods in order to solve these difficulties (Bertoni et al., 2011; Cerulli and Potì, 2012; Heckman, 1979). In this paper, we use three different procedures. First, instead of the dummy for observed participation, in empirical specifications of (1) and (2) we include the prediction of the probability of participating that we obtain from an auxiliary estimation. Using the predicted value instead of the participating status, we not only take care that it is possibly endogenous, but we also qualify the relevance of the project for the applicant and the public agency. The idea is that we believe that the predicted probability of participating reflects both the firm's expectation about the economic and technological results of the project and the agency's expectation about its social and monetary returns. Therefore, it would be a "continuous" indicator of the quality of the project. This type of pseudo-instrumental variables approach has been used, for instance, in Griffith et al. (2006), Huergo and Moreno (2011), and Barajas et al. (2012) in other innovation-related contexts.

In addition, we undertake instrumental variables (IV) regressions and matching methods, which are two of the most used alternatives in the literature, and compare the estimated

[5]See, for example, Busom (2000), Lach (2002), González et al. (2005), or Czarnitzki et al. (2007).

Table 1
Variables Definitions

Dependent variables:

EBITDA per employee[a]	Earnings Before Interest, Taxes, Depreciation and Amortization in real terms per employee.
Intangible fixed assets per employee[a]	Ratio between intangible fixed assets in real terms and total employment in the current year.
Labor productivity[a]	Sales in real terms per employee.
SME participant	Dummy variable which takes the value 1 if the firm participates in a consortium awarded by the SME-specific measures of the sixth FP in the current year.

Firm characteristics:

Prior experience in FP:	Application in previous year	Dummy variable which takes the value 1 if at least one of the Spanish firms involved in the consortium applied to the FP the previous year.
	Granted project in the previous year	Dummy variable which takes the value 1 if at least one of the Spanish firms involved in the consortium participated in a granted project the previous year.
	Prior experience in 5FP granted projects	Dummy variable which takes the value 1 if at least one of the Spanish firms involved in the consortium participated in a cooperative project financed during the fifth FP.
	Prior experience in 5FP proposals	Dummy variable which takes the value 1 if the Spanish firm applied to the fifth FP.
	Rejected proposal in the previous year	Dummy variable which takes the value 1 if at least one of the Spanish firms involved in the consortium participated in a rejected project during the previous year.
Age		Difference between the current year and the constituent year reported by the firm.
Exporter		Dummy variable which takes the value 1 if the company exports during the period.
Leverage ratio		Ratio of total debts to total liability.
Size		Firm's number of employees in the current year.
Tangible fixed assets per employee[a]		Ratio between tangible fixed assets in real terms (deflated by the price index) and total employment in the current year.
Sector of Activity:	Construction	Dummy variable which takes the value 1 the company works in construction activity.
	High-tech services	Dummy variable which takes the value 1 if the company belongs to high-tech services (NACE2 codes 64, 72, 73).
	High and medium-tech manufacturing	Dummy variable which takes the value 1 if the company belongs to any high or medium-tech manufacturing sectors (NACE2 codes 24, 29, 30, 31, 32, 33, 34, 35).

Project characteristics:

Biohealth	Dummy variable which takes the value 1 if the project is related to bio and health technologies.
Collective	Dummy variable which takes the value 1 if the project is a Collective research project.

Table 1
Continued

Core Europe partners	Percentage of core European partners (that is, from Germany, Austria, Belgium, France, the Netherlands, Ireland, Liechtenstein, Luxembourg, the United Kingdom, Switzerland) involved in the consortium.
ICT	Dummy variable which takes the value 1 if the project is related to information and communication technologies.
Leadership	Set of dummy variables which take the value 1 if alternatively the leader of the consortium is: Non-Spanish firm, Spanish firm, Spanish Organism, Dutch, English, French, German or Italian.
Non-EU partners	Percentage of non-EU partners involved in the consortium.
Total budget (of consortium)	Total budget of the project financed during the sixth FP.

[a]Nominal variables are deflated using price indexes for 25 branches (2006=1).
Sources: EUROSTAT, INE and Spanish National Accounts.

impacts of SME participation with the previous ones to test the robustness of the results.

The list of the variables used in our estimates and their definitions can be found in Table 1 and the main descriptives are reported in Table 2 for the whole sample. Notice that the variables that capture the features of the proposals are only available for applicants. That is why we include the descriptives of these variables at the bottom of Table 2 only for this sub-sample.

Furthermore, Table 3 displays the means of all variables in the application year, distinguishing between recipients and rejected applicants. The difference of means tests confirm that, apart from intangible fixed assets per employee and past experience in granted FP projects, the averages of other firm characteristics in the table are not different between awarded and rejected applicants.

Notice that the average of intangible fixed assets per employee, which will be our indirect measure of the firms' technological capabilities, is lower for awarded firms. This is coherent with the evidence provided by the European Commission (2010) that suggests that SMEs that participate in the SME-specific measures have less formalised R&D activities compared to the SME participants

in the other FP measures. However, regardless of the measure of economic performance, we do not observe that awarded firms obtain better economic results than rejected applicants.

Table 3 also reports information about the features of the proposal that relate to the budget of the project; the nationality and type (firm or organism) of the leader, which plays a critical role in coordinating partners; the presence of geographically close and distant partners (from Core Europe and non-EU countries, taking Spain as the point of reference);[6] and some specific types of projects (Collective, in Bio-health or ICT areas), that have traditionally received a greater amount of financial resources in FP editions.

In what follows, we econometrically investigate the relationships between these variables and the SME participation in the sixth FP, taking into account that the impact of these cooperative agreements is likely to occur in the medium to long term.

Results

In this section, we present the results of estimating the impact of SME-specific measures

[6]Around 16% of all non-Spanish partners involved in awarded projects belong to Germany. Italy accounts for 15%, the United Kingdom for 13% and France for 9%. Partners from Greece, Poland, Portugal and the Netherlands are present in around 5% of foreign participations.

Table 2
Descriptives of Main Variables (Total Sample and Applicants)

	Total Sample				
	Mean	SD	Min	Max	Median
Measure of knowledge accumulation:					
Intangible fixed assets per employee (K€)	14.4	188.0	0	15,876.5	1.1
Measures of economic performance:					
EBITDA per employee (K€)	20.6	164.5	−4,691.7	14,958.0	8.0
Labor productivity (K€)	231.7	1,435.2	0.3	167,767.5	112.7
Firm characteristics:					
Prior experience in FP:					
- Application in previous year (0/1)	0.032	0.176	0	1	0
- Granted project in previous year (0/1)	0.008	0.087	0	1	0
- Prior experience in granted 5FP projects (0/1)	0.020	0.140	0	1	0
- Prior experience in 5FP proposals (0/1)	0.028	0.164	0	1	0
- Rejected project in previous year (0/1)	0.024	0.154	0	1	0
Age (years)	15.8	16.0	0	1,120	13
Exporter (0/1)	0.253	0.435	0	1	0
Leverage ratio (%)	66.4	36.9	0	942.7	67.1
Size (no. of employees)	30.8	37.6	1	199	16
Tangible fixed assets per employee (K€)	75.4	657.4	0	90,229.5	17.9
Sector of activity:					
- Construction (0/1)	0.036	0.186	0	1	0
- High and medium-tech manufacturing (0/1)	0.112	0.315	0	1	0
- High-tech services (0/1)	0.045	0.208	0	1	0
Number of observations			41,800		

	Sample of Applicants				
	Mean	SD	Min	Max	Median
Project characteristics:					
Bio-health (0/1)	0.047	0.212	0	1	0
Collective (0/1)	0.087	0.282	0	1	0
Core Europe partners (%)	33.9	20.2	0	90.0	33.3
ICT (0/1)	0.149	0.357	0	1	0
Leadership					
- Non-Spanish firm (0/1)	0.313	0.464	0	1	0
- Spanish firm (0/1)	0.100	0.300	0	1	0
- Spanish organism (0/1)	0.184	0.388	0	1	0
Non-EU partners (%)	10.5	8.4	0	61.5	10.0
Total budget (K€)	1,553.5	657.5	1.2	5,542.7	1,441.5
Number of observations			1,526		

Notes: All monetary variables are expressed in real terms (K€, 2006). The symbol (0/1) means dummy variable.

financed by the sixth FP on some SME performance measures. First, we estimate the determinants of the generation of new knowledge (equation [1]), approaching the innovation output by the ratio of intangible fixed assets over employment. Second, we estimate equation (2) by using two alternative dependent variables—labor productivity and EBITDA

Table 3
Means of Main Variables

	Rejected Applicants	Award Recipients	Difference of Means Test[a]
Measure of knowledge accumulation			
Intangible fixed assets per employee (K€)	13.6	9.3	0.010
Measures of economic performance			
EBITDA per employee (K€)	19.2	21.7	0.656
Labor productivity (K€)	216.6	220.3	0.928
Firm characteristics:			
Prior experience in FP:			
- Application in previous year (0/1)	0.388	0.407	0.571
- Granted project in previous year (0/1)	0.057	0.107	0.003
- Prior experience in granted 5FP projects (0/1)	0.154	0.202	0.060
- Prior experience in 5FP proposals (0/1)	0.190	0.245	0.046
- Rejected project in previous year (0/1)	0.332	0.300	0.335
Age (years)	17.5	17.1	0.650
Exporter (0/1)	0.445	0.435	0.774
Leverage ratio (%)	65.4	65.7	0.881
Size (no of employees)	42.3	42.1	0.969
Tangible fixed assets per employee (K€)	58.7	75.4	0.544
Sector of activity:			
- Construction (0/1)	0.042	0.040	0.878
- High and medium-tech manufacturing (0/1)	0.209	0.182	0.328
- High-tech services (0/1)	0.075	0.063	0.524
Project characteristics:			
Bio-health (0/1)	4.2	7.1	0.049
Collective (0/1)	6.1	22.1	0.000
Core Europe partners (%)	33.1	37.8	0.000
ICT (0/1)	15.0	14.6	0.877
Leadership			
- Non-Spanish firm (0/1)	0.296	0.039	0.001
- Spanish firm (0/1)	0.105	0.075	0.145
- Spanish organism (0/1)	0.190	0.150	0.127
Non-EU partners (%)	10.9	8.8	0.000
Total budget (K€)	1,510.8	1,768.0	0.000
Number of observations	1,273	253	

Sample of applicants.
Notes: All monetary variables are expressed in real terms (K€, 2006). The symbol (0/1) means dummy variable.
[a]*p*-value of a two-sample difference of means test between rejected and awarded applicants. This test is a *t*-test for continuous variables and a two-sample z-test of proportions in case of dummy variables.

per employee—as measures of a firm's economic performance.

As we have explained before, our first methodology consists of using the predicted value of the probability of SME participation instead of the observed status in equation (1). This prediction is initially obtained from an auxiliary estimation of two equations for the

Table 4
Participation within SME-Specific Measures of FP

	Heckman Probit Model		Probit Model	Probit Model
	Probability of Applying (1)	Probability of Being Awarded (2)	Probability of Being Awarded (3)	Probability of Being Awarded (4)
Firm characteristics:				
Prior experience in FP:				
Application in previous year	1.029 *** (0.086)			
Granted project in previous year		0.386 (0.259)	0.311 * (0.184)	0.384 ** (0.173)
Prior experience in 5FP granted projects		0.156 (0.143)	0.136 (0.124)	0.159 (0.118)
Prior experience in 5FP proposals	0.529 *** (0.059)			
Rejected proposal in previous year	0.726 *** (0.091)	0.382 (0.322)	0.316 ** (0.100)	0.158 * (0.093)
Age dummies (years):				
From 6 to 10	−0.138 *** (0.043)	−0.075 (0.136)	−0.063 (0.137)	
From 11 to 20	−0.192 *** (0.042)	−0.164 (0.137)	−0.134 (0.136)	
More than 20	−0.110 ** (0.045)	−0.146 (0.137)	−0.115 (0.139)	
EBITDA	0.009 (0.007)	0.027 (0.020)	0.033 (0.020)	
Exporter	0.168 *** (0.034)	0.024 (0.099)	0.017 (0.092)	
Intangible fixed assets per employee	0.048 *** (0.010)	−0.054 (0.033)	−0.051 (0.031)	−0.045 (0.031)
Leverage ratio	0.040 (0.032)	0.055 (0.149)	0.063 (0.154)	
Sector of activity:				
Construction	0.174 *** (0.065)	−0.027 (0.211)	−0.018 (0.210)	
High and medium-tech manufacturing	0.159 *** (0.038)	−0.096 (0.110)	−0.088 (0.106)	
High-tech services	0.275 *** (0.056)	−0.028 (0.177)	0.010 (0.172)	
Project characteristics:				
Bio-health		0.442 ** (0.177)	0.453 ** (0.177)	0.444 ** (0.178)
Collective		0.967 *** (0.185)	0.965 *** (0.188)	1.049 *** (0.168)
Core Europe partners		0.687 *** (0.246)	0.723 ** (0.249)	0.832 *** (0.242)
ICT		0.066 (0.120)	0.044 (0.122)	0.069 (0.119)

Table 4
Continued

	Heckman Probit Model		Probit Model	Probit Model
	Probability of Applying (1)	Probability of Being Awarded (2)	Probability of Being Awarded (3)	Probability of Being Awarded (4)
Leadership dummies:				
Non-Spanish firm		0.547 *** (0.138)	0.541 *** (0.139)	0.583 *** (0.134)
Spanish organism		0.162 (0.132)	0.182 (0.133)	0.026 (0.125)
Non-EU partners		−1.548 *** (0.544)	−1.490 ** (0.550)	−1.396 *** (0.551)
Total budget		0.253 * (0.143)	0.276 * (0.148)	0.176 (0.126)
Selection term: Rho		0.061 (0.222)		
Log of likelihood function	−5,664.9		−596.4	−610.4
Number of observations (censored/uncensored)	41,800 (40,274/1,526)		1,526	1,526

Notes: Standard errors in parentheses. Coefficients significant at 1%***, 5%**, 10%*. All estimates include the constant. The estimate in column (1) includes size, temporal and regional dummies, and omits the dummy for firms less than 6 years old. Estimates of columns (2), (3) and (4) also include dummies for consortia whose leader is from the United Kingdom, the Netherlands, France, Germany or Italy.

probability of applying for a cooperative project (involving at least one Spanish SME) and the probability of awarding by the European Commission. Assuming that the error terms of both equations can be correlated (with a correlation coefficient equal to rho), we estimate these two equations as a Heckman Probit model by maximum likelihood. The results of this estimation are presented in columns (1) and (2) of Table 4.

The first column exhibits the coefficients of the Probit model for the SME's decision to apply for an FP project, though the second one corresponds to the determinants of the probability of being awarded the subsidy by the EC. The explanatory variables included in this estimate follow the selection made in previous empirical literature about the determinants of R&D cooperation for the Spanish economy (Barajas and Huergo, 2010; Marín and Siotis, 2008; Segarra-Blasco and Arauzo-Carod, 2008). In addition, together with firm characteristics, the agency equation includes the variables that capture the features of the proposal.

The results in column (1) basically confirm the regularities obtained in existing research: previous experience in FP proposals increases the probability of applying in future editions, especially when the prior experience took place during the previous year. Exporters and firms with a higher ratio of intangible fixed assets per employee are also more likely to apply. As for column (2), most of the coefficients for firm characteristics are not significant, in line with the evidence from the difference of means tests in Table 3. The results also suggest that the probability of being supported increases when the project belongs to the Bio-health area, when the proposal is led by a foreign (non-Spanish) firm and when the proposal includes core European members.

Notice that the correlation term rho in the second column of Table 4 is not significant, suggesting that in this case there is no need to estimate a selection model for the awarding decision. However, a null rho is also consistent with Heckman's model "misspecification." Using the standard criterion, if project-specific characteristics are important for firms' self-selection into the application status, they should also be included in the application equation (Angrist and Pischke, 2009). This cannot be done in our case, as the features of the proposals are missing for nonapplicants. It is well established that when important variables that cause selection bias are not included, the use of this sample selection model to estimate treatment effects would be biased.

To test the robustness of these results, we also measure the impact of SME participation by undertaking IV regressions for the sample of applicants. Therefore, in column (3), the estimation for the decision of the agency is obtained as a Probit model only for the sample of applicants.[7] The results remain almost unchanged with respect to column (2), with one important difference: previous experience in FP projects now appears to increase the probability of being supported. The results also suggest that this probability increases when the project belongs to the Bio-health area, when the proposal is led by a foreign (non-Spanish) firm and when the proposal includes core European members. Finally, in column (4), the results correspond to the specification that provides the best support for the matching procedure used in the next section.

Impact on Knowledge Accumulation
Table 5 shows the results of the estimation associated with equation (1) using three different econometric methods. First, we estimate the specification by OLS using a random effects (RE) model for panel data where the predicted probability of participating is included as an explanatory variable instead of the observed participation (columns [1], [4], and [7] in Table 5).[8] Given that we want to compute the impact for the entire population, to obtain this prediction, we use the results for the Heckman Probit model in Table 4, assuming a null expected probability of participation for non-applicants.

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[7]The information is considered as a pool given that most firms only have one application in this sample.
[8]The fixed effect (FE) estimator can also be used. This method allows for unbiased estimates in the presence of correlation between independent variables and unobservable firm-specific characteristics. However, we prefer to show the results obtained using an RE model for two reasons: first, when we repeat the regressions using an FE estimator, the parameters of interest keep their signs and significance; second, most of the variation in our data is in the cross-section dimension and the FE estimator eliminates useful inter-firm variation (see Hu et al., 2005).

Table 5
Intangible Fixed Assets per Employee (in Logarithms)

	Project Awarded 2 Years Ago ($s = 2$)			Project Awarded 3 years Ago ($s = 3$)			Project Awarded 4 Years Ago ($s = 4$)		
	Pseudo IV RE Model (1)	IV RE Model (2)	Matching (3)	Pseudo IV RE Model (4)	IV RE Model (5)	Matching (6)	Pseudo IV RE Model (7)	IV RE Model (8)	Matching (9)
SME participant$_{t-s}$	0.057 (0.140)	−0.121 (0.146)	0.209 (0.137)	0.343 (0.184) *	0.496 (0.160) ***	0.330 (0.171) *	0.579 (0.160) **	0.819 (0.232) ***	0.595 (0.222) ***
Exporter	0.273 (0.028) ***	0.220 (0.076) ***	0.266 (0.150) *	0.279 (0.028) ***	0.196 (0.104) *	0.400 (0.187) **	0.275 (0.027) ***	0.163 (0.098) *	0.469 (0.255) *
Age dummies (years):									
From 6 to 10	−0.021 (0.021)	−0.065 (0.105)	0.483 (0.243) **	−0.048 (0.027) *	−0.125 (0.095)	0.593 (0.288) **	−0.075 (0.028) ***	−0.136 (0.134)	0.557 (0.371)
From 11 to 20	−0.102 (0.025) ***	−0.388 (0.104) ***	−0.052 (0.239)	−0.136 (0.027) ***	−0.401 (0.105) ***	0.051 (0.279)	−0.124 (0.037) **	−0.297 (0.133) **	0.450 (0.342)
More than 20	−0.139 (0.028) ***	−0.597 (0.108) ***	0.111 (0.253)	−0.148 (0.030) ***	−0.591 (0.114) ***	0.185 (0.296)	−0.137 (0.044) ***	−0.504 (0.145) ***	0.511 (0.369)
Sector of activity:									
Construction	−0.068 (0.061)	−0.077 (0.212)	−0.029 (0.381)	−0.052 (0.052)	−0.050 (0.205)	0.386 (0.449)	−0.050 (0.060)	0.006 (0.189)	0.814 (0.633)
High & medium-tech manuf.	0.195 (0.042) ***	0.184 (0.105) *	0.030 (0.173)	0.203 (0.042) ***	0.226 (0.120) *	0.263 (0.213)	0.209 (0.038) ***	0.237 (0.101) **	0.305 (0.280)
High-tech services	0.628 (0.079) ***	0.459 (0.171) ***	1.128 (0.242) ***	0.647 (0.084) ***	0.436 (0.213) **	1.084 (0.289) ***	0.670 (0.086) ***	0.405 (0.227) *	0.897 (0.371) **
Sigma of u	1.095	1.083		1.062	1.041		0.933	0.927	
Rho	0.739	0.698		0.713	0.657		0.591	0.534	
R^2	0.072	0.038	0.137	0.082	0.033	0.156	0.100	0.033	0.148
Number of observations	36,393	3,179	372	26,487	2,299	250	16,527	1,429	169

Notes: Standard errors in parentheses (bootstrapped in Pseudo IV and IV RE regressions). Coefficients significant at 1%***, 5%**, 10%*. All regressions include the constant and size, temporal and regional dummies. Dummy excluded for firms less than 5 years old.

Second, we perform IV random effects regressions only for the sub-sample of applicants. In this case, we use the prediction for the probability of participating obtained from column (3) in Table 4 as the instrument for SME participation within the FP (columns [2], [5], and [8]). The prediction satisfies the theoretical properties of an instrument since it is correlated with the variable of interest and, as it is a linear combination of exogenous variables, should be uncorrelated with the residual. The rest of the explanatory variables are assumed to be strictly exogenous or predetermined in both econometric methodologies.

Third, results in columns (3), (6) and (9) correspond to a sample of matched firms that have been selected using a caliper propensity score matching approach. We construct a sample of participants and nonparticipants with similar pre-participation characteristics. This allows us to create the counterfactual of what happens with the technological output of a SME participant had it not participated. This technique implies calculating the predicted probability of participating or propensity score, which is obtained from the estimation in column (4) of Table 4. For the control group, we select the nearest non-participants in terms of their propensity score subject to a maximum threshold distance. The detailed explanations about the matching procedure and the tests that we use to assess the performance of the propensity score matching can be found in the Appendix.

As already stated, our measure of new knowledge is the ratio of intangible fixed assets over employment (in logarithms).[9] This measure can be interpreted as an indirect measure of technological output, given that the knowledge generated in R&D projects will usually be reflected by the volume of intangibles inside the firm.

Following the suggestion of most empirical evidence (Benfratello and Sembenelli, 2002; Dekker and Kleinknecht, 2008), we assume that the expected economic results from cooperative FP projects will be generated in the medium-long term. As the European Commission (2010)

points out, the nature of R&D activities supported under SME-specific measures of the sixth FP focuses on finding solutions to technical problems that SMEs identify, which mainly constitute applied research. Specifically, the most important objective for SMEs in this kind of project is the development of a new or improved product. Moreover, Luukkonen (1998) confirms that small firms participating in the FP have shorter-term objectives than big companies. In this sense, we experiment by alternatively including our participation variable which refers to projects awarded two, three, and four years ago.

As can be seen in Table 5, regardless of the method of estimation, SME participation positively affects our measure of technological output but a delay is necessary to obtain a positive impact. Only three years after the project has been awarded, the coefficient for the SME participation is significant.[10] In this case, being an SME that cooperates within the FP increases the ratio of intangible fixed assets over employment about 35% in the matched sample. As we expected, the impact is even higher if the project was awarded 4 years ago: the cooperation increases the ratio almost 60%. This result is in concordance with those presented by Dekker and Kleinknecht (2008).[11] In the same line, the post evaluation of the European Commission (2010) establishes that the participation of SMEs within the fifth and sixth FP increased their degree of R&D formalisation (yearly R&D budget, for example).

Impact on Economic Performance

To analyze the impact of R&D cooperation on the economic performance of SMEs, we used two alternative measures of economic success: labor productivity and EBITDA over employment. Estimations of equation (2) for these variables are shown in Table 6. Again, to check the robustness of the results, estimations are carried out using the three econometric procedures explained previously to control for the potential endogeneity of the treatment. In this case, we also use IV procedures to control for the potential endogeneity

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[9]As usual, to avoid the problem generated by zeros when logs are taken, we use the transformation: $\log(k+1)$.

[10]Note that, although the average duration of a project is around 24 months, the phase of negotiation with the European Commission before the awarding could also take several months.

[11]Kaiser and Kuhn (2012) also investigate the time pattern in the impact of subsidised Danish RJV on technological output measured by the number of patent applications. They obtain evidence of a positive effect that appears both instantaneously and with lags of up to three years.

Table 6
Labor Productivity and EBITDA per Employee (in Logarithms)

	Labor Productivity			EBITDA Per Employee		
	Pseudo IV RE Model (1)	IV RE Model (2)	Matching (3)	Pseudo IV RE Model (4)	IV RE Model (5)	Matching (6)
SME participant$_{t-3}$	−0.043 (0.077)	0.044 (0.061)	0.021 (0.112)	0.041 (0.162)	0.109 (0.148)	0.112 (0.155)
Intangible fixed assets per employee (in logs.)	0.120 (0.011) ***	0.066 (0.022) ***	0.127 (0.053) **	0.198 (0.015) ***	0.115 (0.029) ***	0.281 (0.065) ***
Tangible fixed assets per employee (in logs.)	0.172 (0.010) ***	0.160 (0.031) ***	0.218 (0.045) ***	0.287 (0.008) ***	0.266 (0.033) ***	0.307 (0.063) ***
Exporter	0.493 (0.025) ***	0.304 (0.064) ***	0.189 (0.149)	0.310 (0.027) ***	0.266 (0.064) ***	−0.077 (0.169)
Age dummies (years):						
From 6 to 10	0.026 (0.015) *	0.081 (0.039) **	0.160 (0.223)	0.048 (0.029)	0.252 (0.090) ***	0.492 (0.287)
From 11 to 20	0.067 (0.016) ***	0.102 (0.051) **	0.357 (0.203) *	0.065 (0.031) **	0.182 (0.088) **	0.719 (0.279) *
More than 20	0.123 (0.026) ***	0.092 (0.050) *	0.574 (0.221) ***	0.074 (0.036) **	0.109 (0.092)	0.663 (0.291) **
Sector of activity:						
Construction	0.246 (0.040) ***	0.197 (0.199)	0.450 (0.269) *	0.314 (0.065) ***	0.211 (0.157)	0.584 (0.374)
High & medium-tech manufacturing	−0.002 (0.019)	−0.036 (0.062)	−0.136 (0.133)	0.063 (0.035) *	−0.079 (0.082)	−0.480 (0.211) **
High-tech services	−0.289 (0.040) ***	−0.605 (0.105) ***	−0.620 (0.245) **	0.070 (0.050)	−0.071 (0.121)	−0.150 (0.278)
Sigma of u	0.872	0.721		0.927	0.795	
Rho	0.866	0.826		0.578	0.485	
R^2	0.183	0.179	0.316	0.200	0.161	0.305
Number of observations	26,204	2,276	249	26,407	2,284	249

Notes: Standard errors in parentheses (bootstrapped in Pseudo IV and IV RE regressions). Coefficients significant at 1%***, 5%**, 10%*. All regressions include the constant and size, temporal and regional dummies. Dummy excluded for firms less than 5 years old.

of intangible fixed assets.[12] In this table, SME participation refers to projects awarded three years ago, which is the first period where a positive impact of FP participation on technological output is achieved. We have also tried with this variable to refer to projects awarded two and four years ago, but the results do not differ substantially.

The coefficients reported in Table 6 are elasticities or semielasticities, since the dependent variables are expressed in logarithms. We include a proxy of physical capital intensity measured throughout the variable "tangible fixed assets per employee" (in logarithms). When the dependent variable is labor productivity, the estimation allows for comparing our results with some previous empirical evidence which relates technological output to productivity. The EBITDA per employee can also capture improvements in the firm's efficiency or market share associated with the generation of new knowledge.

As shown in Table 6, regardless of the dependent variable and the econometric methodology, the FP participation is not statistically significant.[13] Therefore, it seems that technological cooperation within the FP does not have a direct effect on performance. This result is in concordance with Dekker and Kleinknecht (2008), who obtain that the sales of innovative product per employee—as measure of innovative output—of French, German and Dutch firms are not enhanced by participation in the FP. In a similar way, Benfratello and Sembenelli (2002) do not find significant differences in the labor productivity of firms that have participated in the third and fourth FP, and the European Commission (2010) does not detect any impact of project participation on the economic performance of SMEs, suggesting that, although in many projects new technologies have been developed, these have not been translated yet into potential commercial products.

However, our results show that the impact of intangible fixed assets per employee (or intangible fixed assets) on economic performance is clearly significant, reflecting a difference in favor of innovative firms. Specifically, if the ratio of intangible assets duplicates, it causes productivity to grow between 6.6% and 12.7%. These results are in line with Hao et al. (2008), Van Ark et al. (2009), and Roth and Thum (2010). These works confirm for several countries that a relevant part of the labor productivity growth is explained by investments in intangibles. We could think that this result can be biased by the correlation of this measure with the rest of the explanatory variables and, in particular, with SME participation. However, as can be seen in Table A.3 of the Appendix, the correlation among them is considerably low.

The effect on EBITDA per employee is also positive; its magnitude is higher than for labor productivity regardless of the econometric procedure. As we have shown in the previous section, given that firms that participate in the FP present higher technological outputs, this result supports an indirect effect of cooperation on these performance variables.

Conclusions

The objective of the present paper is to analyse the effect of public support for international RJVs on SME performance. For this purpose, we use a dataset that contains information about Spanish firms that participate in consortia supported by the SME-specific measures of the FP. This type of RJV is characterised by the low technological capabilities of industrial partners in such a way that research performers involved in consortia carry out most of the R&D activity. Through this scheme, the European Commission aims to motivate SMEs to find technological solutions that improve their competitiveness.

In this context, most empirical evidence considers R&D collaboration and R&D public support to be alternative instruments for improving a firm's performance. In particular, the literature on R&D cooperation for the specific case of SMEs remarks that this cooperation could be a suitable strategy to access external knowledge when resources constraints are an obstacle to innovating (Audretsch and Vivarelli, 1996; Rothwell and Dodgson, 1991). In this line, Nieto and Santamaría (2010) find that technological partnerships could improve the innovativeness of SMEs compared to the innovativeness of large firms. In this paper, we integrate both literatures (technological cooperation and policy

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[12]Specifically, we use the predicted value of "intangible fixed assets per employee" from equation (1) as an instrument of the observed ratio in equation (2).

[13]We have also performed estimates of the equation without including the intangible assets as an explanatory variable. The results show that, even in this case, treatment variables are insignificant.

evaluation). We assume that firms' technological or economic performance can be affected not only by spillovers of cooperation among partners but also by the impact of public support on their innovative private expenditures.

Specifically, our study offers several contributions. First, using three different econometric procedures, we confirm the positive impact of R&D consortia supported within the FP on firms' performance. In particular, we find that: (1) being an SME involved in a supported RJV increases the ratio of intangible fixed assets over employment and (2) the impact of intangible fixed assets per employee on economic performance, measured alternatively by labor productivity or EBITDA per employee, is clearly significant. Our results are in line with previous empirical evidence on cooperation, although our methodology allows us to go a step further and demonstrate that the economic impact of RJVs is not direct but must be analysed as a consequence of increasing technological capabilities.[14] Considering that those small firms with limited or no technological capability are the target recipients of the SME-specific measures, we can conclude that this program has reached one of its main goals: results show that firms obtain significant gains in intangible assets. Under the sixth FP, the evaluation criteria established by the European Commission stress the business interest of the project. However, descriptive analyses (European Commission, 2010) show that firms do not exploit technological results as expected. Probably, SMEs need additional support for the postcooperation phase to overcome commercialisation barriers. Also, R&D performers should be involved in this phase to guarantee that the final output of the project meets all the market needs.

Second, we find that all effects are significant three years after the approval of the project, confirming that SMEs participating in the FP have shorter-term objectives than participants in the case of other FP measures, confirming that SMEs are involved in market-oriented R&D projects (Polt et al., 2008). In particular, although this kind of supported RJV affects the performance indicators of SMEs the same as it does for big companies, the extent of R&D projects, and consequently the time period for their impact, tends to be shorter. Assuming that SMEs with low or almost no technological capabilities are involved in different kinds of consortia, it seems appropriate to support these companies with specific measures. This evidence is relevant regarding future policy evaluation of cooperation programmes, and specifically of the FP.

Future research may wish to extend our findings in several ways. First, it would be interesting to apply our methodology to other measures of firms' technological capabilities. Most empirical evidence analyzes the impact of supported RJVs on R&D expenditures, process and product innovations or patents. However, in our case, the election of intangible assets as a proxy of technological results is conditioned by data availability. In the same line, other economic measures could be considered. Specifically, we could wonder whether employment grows or not in recipient firms as a consequence of participation. In addition, more accurate measures of productivity, like TFP growth, can be used. Our measure of labor productivity only shows a partial view of firms' productivity.

Second, our sample is limited to supported Spanish firms; the generalisation of our results would require extending the analysis to other countries of the European Union supported by the sixth FP.

Finally, it could be relevant to study whether the same time lags and effects are confirmed in other SME-specific measures within other European programmes. Specifically, following the philosophy of the 6th and 7th Framework Programmes, the European Commission will include special instruments for SMEs in the forthcoming *Horizon 2020*. These instruments will support the whole innovation value chain: from the idea to the market. Although financial aid coming from the European Union will not be allocated to market actions, other initiatives are being considered, such as a quality label for successful projects, support via networking, training, coaching, information, IPR management and access to private funding (European Commission, 2013). Considering that the exploitation phase will be strongly supported, it will be worthwhile to assess whether these new SME instruments achieve their goals. The

[14]Empirical evidence shows that RJVs have a clear positive effect on technological capabilities of large firms although there is no general accepted conclusion about the economic impact (Branstetter and Sakakibara, 2002; Scott, 2003).

methodology used in this paper shows a way to evaluate the role of these public programs as a suitable strategy for SMEs aiming to improve their competitiveness through knowledge and innovation.

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Appendix—Description of the Matching Method for the SME Participating Status

In this appendix, we describe the Propensity Score Matching (PSM) technique that we use to construct a sample of firms with characteristics similar to the treated group of Spanish SME participants.

To obtain the propensity score, we choose the caliper matching algorithm with replacing, in which participants are matched with the non-participants that are closest in terms of the propensity score subject to the constraint that there has to be at most a maximum distance of 0.005 between the treated and non-treated firm. The procedure is performed in Stata 11, using the psmatch2 routine implemented by Leuven and Sianesi (2003). Before the matching, in the sample there are 253 awarded applications and 1,273 rejected proposals. The matched sample consists of 248 award recipients that are matched with 188 rejected applicants, which form the control group.

To compute the propensity score, we have tried different specifications based on all explanatory variables included in column 3 of Table 4. To assess the final selection of the variables in column 4 of Table 4 and, therefore, the matching quality, we check whether the distribution of covariates is balanced in the treated and control groups. Table A.1 shows that, after matching, all variables have the same mean in the two groups. Table A.2 reports that, for all covariates, the mean and median absolute biases are also reduced. The Pseudo-R^2 after matching is close to zero, which suggests that after matching, the covariates do not explain the probability of participation well. Overall, it seems that the matching procedure has been able to balance the treated and non-treated groups, creating a homogenous group with common characteristics before participation.

Table A1
Balancing Tests: Difference of Means

Variables	Mean				t-test	
	Treated	Control	% bias	Reduction	t-value	p-value
Firm Characteristics:						
Prior Experience in FP:						
- Granted project in previous year	0.105	0.089	7.2	83.4	0.61	0.544
- Prior experience in 5FP granted projects	0.198	0.226	−9.4	84.5	−0.77	0.443
- Rejected proposal in previous year	0.302	0.278	7.1	91.4	0.59	0.554
Intangible fixed assets per employee (in logs.)	1.466	1.441	2.0	91.7	0.22	0.829
Project Characteristics:						
Bio-health	0.073	0.101	−15.2	60.2	−1.12	0.265
Collective	0.222	0.218	1.4	98.2	0.11	0.914
Core Europe partners	0.380	0.362	9.1	64.2	0.99	0.323
ICT	0.141	0.145	−1.6	97.0	−0.13	0.898
Leadership:						
- Non-Spanish firm	0.395	0.379	3.4	84.1	0.37	0.713
- Spanish Organism	0.153	0.194	−15.5	72.5	−1.19	0.236
Non-EU partners	0.089	0.085	5.0	79.2	0.57	0.568
Total budget (of consortium) (in logs.)	14.309	14.317	−1.7	95.3	−0.22	0.826

Note: The econometric model used for the matching procedure is based on column 3 of Table 4.

Table A2
Balancing Test: Overall Measures of Covariate Balancing

	Mean abs. std. bias	% Mean Bias Reduction	Median abs. std. bias	% Median Bias Reduction	Pseudo R^2	LR-test*	
						Chi^2	p > Chi^2
Before Matching	46.46		40.78		0.100	134.89	0.000
After Matching	7.79	83.2%	6.93	83.0%	0.023	16.15	0.582

Note: *Likelihood-ratio test of the joint insignificance of all regressors.

Table A3
Correlation of Main Variables

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
[1] Labor Productivity	1									
[2] EBITDA Per Employee	0.551	1								
[3] SME participant$_{t-3}$	0.004	0.014	1							
[4] Intangible fixed assets per employee	0.194	0.229	0.023	1						
[5] Tangible fixed assets per employee	0.302	0.393	0.011	0.160	1					
[6] Exporter	0.288	0.188	0.036	0.120	0.160	1				
[7] Age (years)	0.132	0.079	0.007	−0.001	0.120	0.220	1			
[8] High and Medium-tech Manufacturing	0.091	0.073	0.012	0.078	0.035	0.292	0.095	1		
[9] High-tech Services	−0.081	−0.011	0.010	0.101	−0.122	−0.040	−0.063	−0.078	1	
[10] Construction	0.024	0.020	−0.001	−0.018	−0.023	−0.065	−0.017	−0.069	−0.041	1

Note: The sample used for this table corresponds to column [1] in Table 6 (26,204 observations).

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