

THE IMPACT OF SOCIALIST IMPRINTING AND SEARCH ON RESOURCE CHANGE: A STUDY OF FIRMS IN LITHUANIA

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Firms in transition economies experienced a large exogenous shock in their external business environment in the late 1980s when these economies moved from a socialist-oriented economic environment to a more market-oriented economic environment. This paper examines the following research question in the context of this change: What are some factors that influence transition economy firms to successfully change their operating know-how or knowledge sets to reflect the demands of their new environment? Building on some core ideas from literature on organizational imprinting, knowledge-based view of the firm, and firm search, we suggest that two factors have a profound impact on a firm's ability to change. The imprinting effect of firms' prior socialist institutional and market environment adversely impacts their ability to change their operating knowledge. At the same time, firms that search for new knowledge from distant sources (located in mainly non-socialist countries) are able to successfully change their knowledge to meet the demands of the new market-oriented economy. Both of these aspects also have joint interdependent effects on the success of change; distant search mitigates some of the adverse impact of socialist market imprinting, but that is not the case for the impact of socialist institutional imprinting. These findings have interesting implications for both researchers and practitioners involved in transition economy settings. Copyright © 2006 John Wiley & Sons, Ltd.

INTRODUCTION

In the last few years there has been a significant increase in research on transition economies (Chikan and Demeter, 1995; Filatotchev *et al.*, 2001; Lizal, Singer, and Svejnar, 2001). Transition economies are countries in Central and Eastern Europe that had a central planning regime until 1990 but since then have begun moving toward a market-based economy with weakened bureaucratic control and widespread private ownership (Peng and Heath, 1996; Svejnar, 2002). Extant

research on transition economies has examined various important issues, such as privatization (Uhlenbruck and De Castro, 2000), organizational restructuring (Filatotchev, Buck, and Zhukov, 2000), alliances and joint ventures (Lyles and Baird, 1994; Hitt *et al.*, 2000; Steensma and Lyles, 2000), managerial behavior (Makhija and Stewart, 2002), and institutional change (Peng, 2003), in the context of these settings.

This paper extends this research stream by investigating some critical challenges associated with transition economy firms' attempts to adapt to the market-oriented economic environment prevalent in the post-shock period in these countries. In doing so, it responds to the call made by some of the leading scholars in this area: 'There is a need to develop theoretical and empirical understanding

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of the factors promoting and restricting the emergence of new market economies . . . The challenge ahead for strategy researchers is to identify and understand how enterprises in differing emerging economies can address and overcome impediments to the design and implementation of successful market-based strategies' (Hoskisson *et al.*, 2000: 264).

When transition economies experienced the economic shock of 1990–91, firms there were confronted with a different economic environment that gradually reflected the demands of a free market system. This new environment was characterized by greater competition, loss of assured markets, currency changes, loss of assured suppliers, etc. (Svejnar, 2002). In order to survive and operate successfully in such an environment, firms had to change or adapt in many ways to meet these new demands. Here, among other things, firms were under pressure to change or adapt how they perform various activities or functions relevant to their business (i.e., their production techniques, sales practices, human resource practices) and, thus, correspondingly change the know-how or knowledge sets underlying each activity (Hitt *et al.*, 2000; Newman, 2000). A knowledge set refers to the know-how relevant to performing each of the above-mentioned activities or functions in the context of the firm's operations. If the need to change knowledge sets is fundamental to firms in transition economies, an important question must be addressed: What are some of the factors that influence a firm's ability to successfully change its operating know-how or knowledge sets to reflect the demands of the new economic environment? This paper attempts to address this research question.

Extant organizational research has shown that when firms undertake any resource change in general, including changing knowledge that is a critical firm resource, the success of their change is influenced by several factors. One, historical conditions in terms of a firm's founding environment and their impact on the firm at the time of founding influence a firm's attempts to change or adapt in the future (Boeker, 1989b). Two, 'how' a firm undertakes change also influences its success. Here, research has emphasized the particular importance of the search processes that firms might use to change their resources (Cyert and March, 1963; Rosenkopf and Nerkar, 2001). Motivated by this research, we focus on two sets of

theoretical factors that potentially influence transition economy firms' success in changing their knowledge sets: the level of socialist imprinting on the firm's extant knowledge sets and the firm's search process to acquire new knowledge to undertake change. Socialist imprinting refers to the impact of the institutional and market environment characterizing the socialist economy at the time of the firm's founding on its knowledge sets, and the search process reflects where the firm looked for new knowledge (e.g., local vs. distant sources) to undertake change in the post-shock period.

Our analyses show that, indeed, both factors have a significant influence on the extent to which firms successfully change their knowledge sets. Though high levels of socialist market imprinting adversely impact firms' abilities to change their knowledge sets successfully, acquiring new knowledge from distant sources located in non-socialist countries positively affects the success of change. We also observe some interesting interdependent effects between these factors. Distant search actually mitigates the adverse impact of socialist market imprinting on firms' abilities to successfully change their knowledge; but that is not the case for the joint effect of distant search and socialist institutional imprinting. This implies that distant search for knowledge can help firms partially address some of the imprinting constraints that hamper their ability to change.

Our research makes contributions to research as well as practice in several ways. First, we contribute to the growing stream of research on transition economies that highlights the evolving nature of the post-shock, economic environment in transition economies and the issues and challenges that firms need to consider in adapting to it. Extant research on this subject has focused on many important issues such as privatization (Frydman *et al.*, 1999; Dharwadkar, George, and Brandes, 2000; Spicer, McDermott, and Kogut, 2000), market entry choices by foreign firms (Luo and Peng, 1999; Meyer, 2001), and domestic firm adjustments to a market economy (Linz and Krueger, 1998; Chikan and Demeter, 1995). Our paper contributes to the research stream in the last category by developing and testing a framework that links firms' socialist legacies to their adaptation challenges. We thus respond to Peng and Heath's call for research on firms in transition economies: 'As formerly planned economies have

undertaken fundamental transitions toward market-based economies, improving knowledge about firm behavior in these countries has become more important both for theory and practice' (Peng and Heath, 1996: 493).

Our theory and empirical findings provide insights into some of the constraints on firms to change the knowledge underlying some of their key processes and systems following large environmental shocks, as well as into some of the factors that positively impact firms' success to undertake such change. Although the imprinting of the socialist economy may impede the change process in transition economy firms, our study shows that firms are able to change their relevant knowledge sets by acquiring new knowledge from a mix of internal and external sources. Overall, the results show that transition economy firms were able to successfully acquire and utilize new knowledge from sources located in developed economies to meet the demands of their new market-oriented economy. This is important because in the immediate early years of transition several people had doubted this possibility, but our results seem to alleviate this concern (Stark, 1996; Stark and Bruszt, 1998). Finally, from an empirical standpoint, the research indicates that survey-level data collection is possible in transitional economies, albeit with some limitations. Nevertheless such a research approach enables getting insights into privately held firms, which otherwise do not divulge financial or other data to the general public.

We extend research on organizational change and imprinting by providing a slightly novel theoretical perspective that underscores how the founding environment of firms may have a differential imprinting influence on its different parts (i.e., in this case its different knowledge sets). This is in contrast to prior research that usually assumes imprinting to occur uniformly across different parts of a firm. We also conceptualize two different dimensions of the economic environment that exert imprinting effects on firms. Finally, in contrast to research which has not linked imprinting to organizational change, our results indicate that imprinting from a firm's economic environment can be a constraint to change if a firm starts to operate in a significantly altered economic system.

Our findings also provide some useful insights to managers and policy-makers who work with firms in transitional economies or other economies that may experience a strong change in their external

economic environment, such as inclusion in the EU or NAFTA. For managers, the results indicate that their processes and systems (and the knowledge underlying them), which are strongly influenced by the prevalent or prior economic systems in their country, can be effectively changed by obtaining new knowledge from firms operating in EU or NAFTA member countries. For policy-makers, both of domestic and international institutions, understanding the change process can help them form assistance programs or create transitional periods that incorporate the constraints and opportunities associated with a firm's existing knowledge sets. Since our results indicate that firms emerging out of erstwhile socialist systems appear better prepared to utilize knowledge from developed economies than previously suggested, policies should be formed to encourage ties to firms in other countries to acquire knowledge and skills from them (Stark, 1996; Kogut and Zander, 2000; Cohen and Levinthal, 1990).

The remainder of this paper is organized as follows. In the next section we review relevant literature on organizational imprinting, the knowledge-based view of the firm, and firm search, and we use these theoretical ideas to develop hypotheses about factors that influence firms' abilities to adapt and change successfully in transition economies. Then, we provide information on the data, the sample, and operationalization of the variables. Finally, we present the results and analysis followed by our discussion of the results and some limitations of this work. We end the paper with conclusions regarding the study.

THEORY AND HYPOTHESES

Socialist imprinting on transition economy firms

According to organizational imprinting theory, the founding conditions of a firm, mainly in terms of its environment or its founders, have a lasting influence on the structure, strategies, or operating practices it follows (Kimberly, 1979; Schein, 1983). These imprinting effects occur for several reasons. First, when firms are newly founded, they must follow strategies or practices that are rewarded or encouraged by their external environment in order to ensure their survival and growth. For example, during the 1950s and 1960s the U.S. Department of Defense was the largest

buyer of electronic items, such as semiconductors, from U.S. firms. It procured items from firms on a cost-plus basis to encourage them to experiment and innovate. As a result, firms founded during this period placed great emphasis on developing their R&D capabilities and know-how. In later years, however, the private commercial market became the main buyer for these items. This market stressed competitive pricing, leading firms founded during this period to place more emphasis on manufacturing efficiencies and cost control than they did on R&D (Boeker, 1988). Thus, founding capabilities and characteristics had a strong impact on whether firms founded in these two periods were able to survive and succeed in subsequent periods.

Second, environmental imprinting also occurs due to the nature of resources available in the environment at the time of founding (Zyglidopoulos, 1999; Carroll and Hannan, 2000). When firms newly start, they acquire several different resources (e.g., people, technology, information, capital) from their surrounding environment to conduct business, and these resources have a lasting influence on firms. For example, many Silicon Valley start-ups generally acquire technology/engineering-oriented employees, given their abundance in the surrounding environment. As a consequence, in later years when these firms grow they continue to stress the technology/engineering aspects of business, even though marketing or other administrative skills may be equally or more important. Finally, founders also have imprinting effects on their firms. First, these effects occur through the resources that founders acquire for the firm at the time of founding; resources that are acquired are a function not only of what is available in the environment at the time of founding, but also of what the founder 'acquires' based on his/her own preferences and experience. Second, the founder also imparts imprinting effects due to his/her values or philosophies since they determine the kind of practices, policies, and culture the firm decides to adopt (Carroll and Hannan, 2000). Overall, current research has documented the existence and impact of imprinting in a variety of different settings (Kimberly, 1975; Romanelli, 1989; Baron, Hannan, and Burton, 1999; Eisenhardt and Schoonhoven, 1990; Tucker, Singh, and Meinhard, 1990; Bamford, Dean, and McDougall, 1999; Yan and Gray, 1994).

Based on organizational imprinting theory discussed above (Stinchcombe, 1965), one might expect firms founded in transition economies to be strongly influenced by their own founding environment, not only at the time of founding but also in subsequent periods. Since a socialist economic environment prevailed in most transition economies until the late 1980s (Hoskisson *et al.*, 2000; Peng and Heath, 1996), transition economy firms experienced imprinting effects of this environment; we refer to it as socialist imprinting. The Soviet Growth Model (SGM), whose focal purpose was to maximize firm output, was one of the principal features of this environment. Under this model, most productive resources were state-owned, and fulfillment of the output plan and ensuring employee equality and security in their jobs were more important than all other considerations, such as improving quality or cost of products/services (Gregory and Stuart, 1990; Peng and Heath, 1996).

These aspects of the socialist system were reflected in the institutional and market environment in most transition economies until the late 1980s, and hence both these dimensions of the environment strongly influenced firms operating in these economies. As prior work argues, the institutional environment sets the 'rules of the game' in which firms operate (North, 1990; Peng, 2003). In socialist economies, this meant firms had to comply with extensive rules and regulations established by government institutions, and they had to meet the output goals set by the state. The collectivist mentality of socialist regimes gave primacy to institutions such as labor unions, and firms had to meet their demands for work equality, job security, etc. The market environment in socialist countries also was quite distinct. Firms in these countries could not determine what product or process introductions they should make (Filatotchev *et al.*, 2000); instead, that was determined by the state, which also set output quotas for them. Further, the state also guaranteed that the output of all firms was bought for further distribution among consumers. As a result, there was hardly any competition among firms, and improving product costs or quality was not a prime concern to them. Imprinting of the socialist institutional and market environment occurred because the Communist government is not only the creator of the Soviet-based economic environment that provides resources for firm creation, but also the founder of many of these firms.

The socialist imprint becomes permanent within a firm, since the Communist government also created the command economy that supported socialist policies and practices. It created the conditions through which particular behavior patterns were first learned and then reinforced (Child and Markoczy, 1993).

Hitt *et al.* (2000) have argued that in transition economy environments the knowledge sets that firms need and use depend on the political and economic environment within which they operate. This implies that Socialist imprinting effects referred to here might be observed not only across various firm attributes, but also, more important, on its know-how or knowledge sets. Knowledge sets of a firm refer to the know-how underlying a firm's ability to perform various activities across the value chain such as production, marketing, and human resource management. The knowledge-based view of the firm has argued that they are one of the most important resources that provide competitive advantage to a firm (Huber, 1991; Kogut and Zander, 1992; Grant, 1996; Argote, 1999). Thus in this paper we focus mainly on the imprinting effects on a firm's knowledge sets and the issues and challenges involved in successfully changing them in the transition period.

Imprinting research has generally assumed that environmental imprinting effects are mostly uniform for the firm in question (Boeker, 1989b; Mintzberg and Waters, 1982). But some recent studies find contrary evidence. For instance, Eisenhardt and Schoonhoven (1990) find that some founding environmental conditions have a strong imprinting effect on firms, while others do not. In contrast, some studies (Kogut and Zander, 2000) observe that firm attributes/activities (which are the target of imprinting) may experience differential imprinting effects of the same founding conditions. That is, some firm attributes will reflect strong imprinting influences whereas others will not. In their study, Kogut and Zander (2000) found that firms' surrounding environmental conditions strongly influenced how they addressed their market/customer needs. They observed that firms founded in socialist economic environments undertook these activities very differently than those firms founded/based in market-oriented economies. On the other hand, they saw that technological capabilities (and their development) of firms from these two different environments were similar and not influenced by differences in their

founding environment. Child and Markoczy (1993) also observed differences in the socialist impact on resources. In studying knowledge and learning, they observed what they called segmentation learning on the part of local managers. This term reflected managers changing their thinking and behavior in only certain areas and continuing to operate under the socialist mentality in others, indicating some parts of individual knowledge were more ingrained with socialist thinking than others. Taken together these studies suggest that it may not be surprising to expect and observe variations in socialist imprinting effects within a firm or across firms. Consequently, although all knowledge sets of a firm are likely to be influenced by the socialist environment in which the firm operates, we expect to see variation in the level of socialist imprinting across the knowledge sets.

Now let us consider how socialist imprinting might influence firms' attempts to change their knowledge sets in response to the economic shock in their operating environment.

Socialist imprinting and the success of change

In 1990, transition economies experienced a huge shock to their economic environment that essentially created the basis for their 'transition.' As we mentioned earlier, in a short period of time the political and economic environment changed dramatically from a Communist economic system based on the Soviet Growth Model to a free-market system. Countries that had decades of single-party Communist rule coupled with central planning were suddenly holding multi-party elections and encouraging free enterprise. Though other countries (and firms located in them) have experienced various kinds of shock to their economic environment (e.g., hyper-inflation in Latin America or currency collapse in Southeast Asia), the transitional economies of Central and Eastern Europe are unique in that multiple environmental and systemic changes *occurred at the same time*. Firms founded prior to 1988 faced a significantly different business environment and economic system than the one they were used to operating in. As a result, to a lesser or greater extent, the operations, systems, and knowledge built up over 50+ years of Communist rule were becoming less relevant and firms were under pressure to change that knowledge to one that was better suited to survive in

the new, evolving, market-oriented environment (Newman, 2000).

Research shows that transition economy firms, in their quest to change their operating knowledge in the post-shock period, often looked to external sources (i.e., other firms) to provide this new knowledge (Hitt *et al.*, 2000; Uhlenbruck and De Castro, 2000; Steensma *et al.*, 2005). But as the knowledge-based view of the firm suggests (Grant, 1996), the resultant knowledge they have actually will be a combination of their extant knowledge and the new knowledge they acquire. In that case, the nature of their existing knowledge may have a profound impact on their ability to successfully change their knowledge sets to meet the demands of the new, still evolving market-based environment. If a particular knowledge set of a firm has high levels of socialist imprinting (i.e., it reflects the principles and demands of the collectivist and output-oriented socialist environment), then the resultant knowledge arising from its combination with new knowledge acquired from outside still may not be sufficiently suited to meet the demands of the new environment. The resultant knowledge may continue to reflect some elements of the old socialist knowledge. For example, let us consider a Communist-era-founded firm that wants to change the ideas and knowledge underlying its incentive systems to make them work better in a free-market environment. If the practices of employees and management are still firmly embedded with socialist principles, then such knowledge will be harder to change than in a firm that has already experimented with quality-based bonus programs. In the former case, the firm has a greater gap to overcome to make its knowledge useful in a free-market environment. Similarly, a Communist-era-founded company that has always had its product prices centrally determined will have a harder time determining fair market prices than a firm that has been able to sell its excess production on the black market. On the other hand, if a particular knowledge set has relatively lower levels of socialist imprinting, then the resultant knowledge arising from its combination with new knowledge acquired from outside might be better suited to the new environment; i.e., the firm will be able to change its knowledge sets more successfully in the post-shock period. Thus, the level of socialist imprinting and the variation in imprinting levels across knowledge sets will have a big impact on

the eventual success of changing knowledge sets. Hence:

Hypothesis 1a: The greater the level of socialist institutional or market imprinting on a firm's extant knowledge set, the lower will be the success of change associated with that knowledge set.

We mentioned before that both the socialist institutional environment and socialist market environment would have an imprinting effect on transition economy firms. It is also possible, however, that these two imprinting effects will have a differential impact on firms' abilities to change their knowledge sets in the post-transition business environment. In the post-transition environment, both institutional and market conditions will gradually start changing so as to become more similar to market-oriented economies (Peng, 2003). But as prior research argues, the socialist institutional conditions may perhaps change more slowly than market conditions (Cepl, 1997; Peng and Heath, 1996; Allmendinger and Hackman, 1996). In the post-shock period, many transition economies opened their markets to entry and operations by foreign firms. Consequently, there was a significant increase in competition in the market to sell products/services (Svejnar, 2002). Consumers, too, were exposed to better-quality and/or lower-priced products or services of foreign firms. In such an environment it became critical for firms to respond to competition and market pressures that called for improvement in product/service quality, reduction in product costs/prices, etc. Thus, transition economy firms that had higher levels of socialist market imprinting would find it more difficult to change their knowledge sets quickly to meet the demands of the fast-changing market environment. On the other hand, because the institutional environment in transition economies changed more slowly, firms would be less penalized for not being able to change their knowledge sets to respond quickly to the demands of their new environment. Overall this might mean that socialist market imprinting may have a relatively greater adverse impact than socialist institutional imprinting on firms' abilities to change their knowledge sets. In comparing the two types of socialist imprinting, we suggest that:

Hypothesis 1b: Socialist market imprinting will have a greater adverse impact than socialist institutional imprinting on the success of change associated with firms' knowledge sets.

The location of search for new knowledge

As part of any change process, firms might first formulate the problem they are facing, and only then undertake a search to identify a solution or obtain information for that specific problem (Lyles and Mitroff, 1980; Smith, 1989; Nutt, 1998). In other words, what solution firms identify or where they look for information to address the problem might be influenced by how or what they first define as their problem. The problem definition phase involves a series of steps including problem identification, problem definition, and problem structuring (Smith, 1989) and these steps are further dependent on various factors such as how firms process information, the attributes or background of their managers, the influence of various stakeholders, etc. (Hambrick, 1982; Papadakis, Lioukas, and Chambers, 1998; Vassilis, Spyros, and Chambers, 1998). Based on variation across these aspects, firms might define their problems differently and hence differ in terms of what solutions they seek. For the purposes of this paper, however, we take the problem as already formulated and instead focus mainly on how firms solve their problems and their impact on their subsequent success. Hence in this paper we assume that firms in transition economies realize that their economic environment is gradually evolving from a socialist-oriented environment to a market-oriented environment, and that they face a potential problem of not having relevant knowledge to meet some of the demands of the new environment—their solution is to search for this knowledge and we investigate where they might look for this knowledge and how it impacts their ability to change.

Firms can search for new operating knowledge in various ways. Current organizational search literature distinguishes between local and distant search based on firms conducting search by crossing several types of boundaries (Kauffman, Lobo, and Macready, 2000; Katila and Ahuja, 2002). The distinction between local and distant search based on organizational boundaries is straightforward. When a firm searches for new knowledge within its own boundaries, it is a 'local' search; and when it seeks knowledge from external entities

outsides its boundaries, it is 'distant' search. In recent years, a distinction between local and distant search also has been made based on knowledge-related boundaries. If a firm seeks new knowledge from sources whose knowledge is quite close, or related to its extant knowledge, scholars view it as 'local search' (Rosenkopf and Nerkar, 2001). On the other hand, if a firm searches for knowledge from sources whose knowledge is quite distinct or unrelated to its extant knowledge, scholars view it as 'distant search' (Stuart and Podolny, 1996; Rosenkopf and Nerkar, 2001).

A transition economy firm could seek new knowledge using either of these search approaches. Given its old ties and geographic proximity, a firm might seek new knowledge from firms in neighboring, erstwhile socialist countries. This could be seen as a 'local search' because the operating knowledge possessed by such sources may often be quite similar to that of the focal firm, given that both of them were located in economies that had previously experienced a socialist type of environment. In that case, however, the resultant knowledge arising from the combination of the focal firm's extant socialist knowledge and new knowledge may still have many socialist-oriented aspects to it; i.e., this knowledge may not be sufficiently suitable to compete in the new market-oriented economy facing the focal firm. The institutional upheaval that firms experienced eliminated the competitive advantage previously provided by resources and capabilities identified through local search (Newman, 2000). In addition, the 40+ years of socialism destroyed many of the competencies that firms and cultural organizations needed to deal with the environmental changes that took place in the 1990s (Kogut and Zander, 2000; Allmendinger and Hackman, 1996).

The focal firm also could acquire new knowledge from sources that possess market-oriented knowledge that is quite distinct from its extant socialist-imprinted knowledge. Usually these firms/sources would be located in economies that had a capitalist or market-oriented economic environment. This type of search could be viewed as distant search, since the focal firm is trying to acquire knowledge that is quite different from its extant knowledge. We feel that such distant search will have a positive impact on the focal firm's success in changing its knowledge sets. Child and Markoczy (1993) observed that in transitional economies local managers needed to alter

their past behaviors and adopt radically new business practices and approaches. Lyles and Salk (1996) suggest that joint ventures in transitional economies can especially enhance their competitive advantage when leveraging knowledge from a foreign parent located in a competitive environment. The positive result occurs because when the focal firm acquires new operating knowledge from sources that possess more market-oriented knowledge, the focal firm's resultant knowledge is likely to be better suited to meet the demands of the evolving market-oriented environment in its own country. Thus:

Hypothesis 2: In transitional economies, distant search for new knowledge has a greater positive impact on the success of change than local search.

Joint effects of socialist imprinting and search location

Hypotheses 1 and 2 state that success in changing a firm's knowledge sets is independently influenced by the search location and the level of socialist imprinting. In particular, Hypothesis 1 considers the negative impact of high socialist imprinting on the success of change, and Hypothesis 2 considers the usefulness of new knowledge acquired through distant search in impacting the success of change. We feel, however, that both these factors also will have a joint effect on firms' success of change.

Socialist imprinting is expected to have a negative impact on the success of change because when highly socialist imprinted knowledge is combined with the new knowledge a firm acquires, the resultant knowledge may not be sufficiently suited to meet the demands of the new, more market-oriented environment. But this direct relationship does not take into account the nature of the new knowledge that is combined with a firm's existing socialist knowledge. The socialist-imprinted knowledge that firms inherited from the Communist environment did not provide firms with the management, manufacturing, and marketing capabilities needed to survive in a market-based economy (Lane, Salk, and Lyles, 2001). If the new knowledge that is combined with a transition economy firm's extant knowledge is acquired through distant search, then the resultant knowledge will be a combination of socialist and market-oriented knowledge; thus it might have some elements to

meet the demands of its new environment even though it may not be completely market-oriented knowledge. On the other hand, if the new knowledge is acquired through 'local search,' then we are essentially looking at a firm combining its own socialist knowledge with new knowledge acquired from another erstwhile socialist-oriented firm; the resultant knowledge in this latter case will be much less market-oriented than in the former case. In effect, the negative impact of high socialist imprinting may be moderated by where the firm searches for its new knowledge. If the new knowledge is acquired through distant search (therefore the knowledge is more market-oriented), then the negative impact of socialist imprinting on the success of change will be much lower than if it were to be acquired through local search. Thus:

Hypothesis 3: In transitional economies, the search location for new knowledge will moderate the negative impact of high socialist institutional and market imprinting on the success of change.

We have previously argued that socialist market imprinting will have a greater adverse influence on success of change than socialist institutional imprinting. If distant search is likely to mitigate some of the adverse impact of socialist imprinting on the success of change, it is possible that its effect will be greater for socialist market imprinting than for socialist institutional imprinting. In the rest of the paper, we test our theoretical arguments and discuss the results and implications.

METHODS

Sample

To test our hypotheses we collected data from a sample of companies in Lithuania, which is historically similar to many other transition economies in Central and Eastern Europe. It was an independent country for over 500 years before 1940, making its past similar to other Central European nations. Later, however, Lithuania became part of the Soviet Union from 1940 to 1990 and experienced strong socialist and Communist pressures like other former Soviet republics. Thus, the findings from this study may be generalizable to transition economies in both Central Europe and the former Soviet Union.

We identified the target sample based on information compiled by the country's leading business newspaper; it prepared a list of the 300 largest firms in Lithuania in 1998 and of the 400 largest firms in 1999. In total, 470 firms appeared on at least one of the two lists, of which 195 were founded in 1986 or earlier.¹ We used this approach since it provided us with the most reliable and up-to-date information on a broad range of firms. Since the list also included small and medium-size enterprises, we believe the results are not just limited to large companies.²

For the purposes of this study, we collected survey data from these companies from November 2000 through May 2001. We sent a survey questionnaire to all 195 companies in the initial sample, and we received completed responses from 67 firms (response rate of 34.4%).³ The response rate compares favorably with the average response rates typically observed for survey-based studies in transitional economies (Hoskisson *et al.*, 2000). Using two-tailed tests, we found no significant differences between respondents and non-respondents regarding firm size and industry. Of the 67 firms in the sample, 10 were founded prior to 1940. Our research indicates that owing to the upheaval of World War II, firms' operations were usually suspended and then the firms were nationalized. As a result, we believe the firms were reimprinted by the new socialist system and are appropriate for inclusion in the sample (Kimberly, 1975).⁴

Data collection process

We used a survey instrument to collect data from all companies in the sample. Since we needed to collect information at the level of the knowledge sets associated with particular areas

of operation within firms, collecting data through surveys seemed most appropriate. We also collected information about firm size and the industry in which they operated from archival sources.

We sent the survey to the president or director of the firm. Since we were collecting information related to the knowledge sets associated with six different activities or areas of operation within every firm, we requested the president/director to identify the person(s) who would be the most appropriate respondent(s) to provide information pertaining to each area (Hoskisson *et al.*, 2000). On average, almost four respondents from each firm participated in completing each survey. The actual number of respondents per firm, across the entire sample of firms, ranged from one to six. More than 80 percent of the respondents completed sections related to their area of expertise/operation. This approach is consistent with prior research on working with single or a limited number of respondents to ensure a cross-section of qualified respondents (Zander and Kogut, 1995; May, Stewart, and Sweo, 2000; Capron, Dussauge, and Mitchell, 1998; Lyles and Baird, 1994).

Instrument

The survey contained six sections, each focused on collecting information on knowledge related to one specific area of operation that companies in Lithuania might need to change to be effective in a free market system, namely: quality assurance systems, training programs, wage systems, marketing programs, technology, and product or service lines. We relied on prior research (Chikan and Demeter, 1995; Ericson, 1998) to identify these six areas. Their selection was also confirmed during our interviews with company management in June 2000.

Each area of operation has a distinct knowledge set associated with it (Argote, 1999; Huber, 1991), and we asked a similar set of questions to collect information on knowledge sets associated with each of them. The respondent was asked whether during the first change to the particular knowledge set after 1990 his/her firm signed a contract with another entity to seek assistance or knowledge to undertake change. If no contract was signed, then the respondent marked that the change was undertaken using internal resources. If a contract was signed, we asked the respondent

¹ We use 1986 as the cut-off year since at that time there was no indication that the Soviet Union would move from the socialist economic system. Also, it allows for firms to operate for 4 years before the transition began, which we believe should be sufficient for imprinting to have occurred.

² The smallest firms in the sample had as few as 15 employees and \$4 million in annual revenue.

³ Twelve of the firms identified themselves as state-owned enterprises. A dummy variable used in the regression to identify state-owned vs. privatized firms was not statistically significant, so it was not considered further within the analysis.

⁴ We also repeated the analysis with a dummy variable for firms founded before 1940. The coefficient for this dummy variable was generally insignificant and did not change the significance of the main independent variables. Therefore, we are comfortable combining firms founded before and after 1940 in our analysis.

to indicate the home country of the company providing assistance. Signing of a contract was used to capture a firm's attempt to obtain assistance or knowledge for several reasons. First, interviews indicated that firms did not obtain outside assistance without a contract, so if outside assistance was obtained there would be a paper trail. Child and Markoczy (1993) confirm that firms in Central Europe had a heavy emphasis on formal applications and preparation of forms. Second, a contract was deemed a clear, measurable indicator of assistance allowing us to ignore instances of informal assistance such as phone calls to colleagues. Third, having a document trail reduced concerns related to recollection problems or bias regarding the source of assistance and also may reduce bias regarding the motivation and success of the change. Fourth, comparisons of employment and revenue levels reported in the survey were very consistent with archival data. The high degree of consistency in data we could confirm through outside sources also reduced concerns regarding use of a retrospective approach (Yan and Gray, 1994).

An English version of the survey instrument was first prepared, then translated and back-translated to ensure accuracy (Hitt *et al.*, 2000). We first pre-tested the Lithuanian survey with select Lithuanian companies in June 2000 and then ran a pilot test of the revised survey in October 2000. The quality and completeness of the responses indicated the survey was ready for use with a broader sample of firms.

Measures

Dependent variables

The dependent variable of interest in this study is 'success of knowledge set change.' It basically refers to the extent to which a firm is successful in changing a particular knowledge set such that the knowledge set (and the activities based on it) is better suited to meet the demands of the new, more market-oriented economic environment. In order to measure this variable, we first relied on fieldwork and prior research to identify a set of primary objectives that firms might typically have while competing in a market-oriented economy such as 'satisfying customer requirements,' 'building brand awareness,' and 'improving its competitive position' (May *et al.*, 2000; Pearce,

1991; Filatotchev *et al.*, 2000; Carson, 1991).⁵ For the list of all five items please refer to the Appendix.

We then asked respondents to evaluate the extent to which their firm was successful in changing each particular knowledge set so as make it more suitable to achieve the goals identified in the five items. Respondents provided these evaluations of change success for each of the six knowledge sets being studied. Respondents used a 5-point Likert-type scale to provide their evaluations for each item in the scale where 1 = unsuccessful, 5 = successful, with 0 = not applicable.⁶ We determined success of knowledge set change by aggregating across the set of five items used to evaluate the progress in making the knowledge set suitable for the new free market economy. Reliability analysis indicated that all five items to measure 'success of knowledge set change' loaded onto a single factor with a Cronbach alpha measure of 0.828.

Independent variables

This study uses three primary independent variables: the level of socialist institutional imprinting for each knowledge set that underwent change, the level of socialist market imprinting for each knowledge set that underwent change, and the search location for acquiring new knowledge.

It is important to note that our study posits that socialist imprinting will persist for up to 10 years after the economic environment began to change in Lithuania. We take this approach because the imprinting literature has investigated the resilience and longevity of imprinting and found support for it (Kimberly, 1975; Meyer and Brown, 1977; Boeker, 1989a; Marquis, 2003). According to these studies, imprinting effects lasted for up to several decades for several reasons, such as the existence of certain factors that had a very strong imprint on the firm prior to the environmental change

⁵ To address missing responses, we dropped the observation if no items were evaluated. Otherwise, we replaced the missing response with a '1' since follow-up interviews indicated that respondents skipped items when that particular item was not very important. This same approach was used for the imprinting measure as well.

⁶ Interviewees in Lithuania indicated that the term 'not applicable' for surveys has not been developed. The interviewees indicated that using a zero with instructions that it meant 'not applicable' would be the best approach. This same scaling approach was used for the imprinting measure as well.

(Boeker, 1989a; Marquis, 2003), or continued existence of imprinted resources in firms even subsequent to the environmental change (Kimberly, 1975; Meyer and Brown, 1977).

For instance, Boeker (1989a) shows that the length of the founder's tenure is strongly linked to the strength, and hence longevity, of the imprinting effect. This factor would be relevant in our case. The Communist government was the founder of many companies in transition economies and it played a leading role in firms' operations from their founding until the fall of the Communist government at the time of transition. Thus, even after the economic environment changed following transition, the imprinting effects of the founder (in this case, the Communist government) will last for a fairly long time (Boeker, 1989a; Marquis, 2003). Imprinting effects may also persist because some of the internal resources that are imprinted continue to remain an important element of firms even after the environmental change. Meyer and Brown (1977) found that organizations that did not completely reorganize internally and change their structure continued to reflect their founding conditions. This lack of internal restructuring and employee change would also be a factor in our study. For example, studies show that in Lithuania, even after the economic changes occurred, most employees and managers of the pre-transition Communist era remained with the same firms well into the transition period—i.e., the human resources that were imprinted by socialist norms and practices did not change. Consequently, the socialist imprint carried by these people also remained in place for a long time.

Level of socialist imprinting

Socialist imprinting reflects the impact of the socialist institutional and market environment on a firm's knowledge sets. Ideally we would have liked to obtain this information from all firms in our sample at their time of founding. But since this would be difficult for obvious reasons, we followed another approach to develop this measure. A large stream of literature on transition economies has found that the legacy of the socialist system continues to be ingrained in firm and managerial behavior through most of the transition period in the 1990s. Although governments in transition economies attempted to quickly abandon the Communist system, a new system based on democratic

institutions and free markets with corresponding norms and values was slow to develop (Newman, 2000). Steensma *et al.* (2005) also indicate that in the early phase of economic transition in these countries free market institutions and norms were weak and under-developed. Peng aptly summarizes the state of affairs in the early period of the transition process: 'The pace of dismantling the old (socialist) institutions did not necessarily coincide with the construction of new institutions, thus leaving a period of incremental evolution full of uncertainties' (Peng, 2003: 278).

In such an environment, it is possible that firms will continue to behave in ways that reflect the influence of the socialist environment; their behavior may reflect socialist-oriented actions partly due to pressures of the external environment that might still retain some features of the socialist era, and partly because socialist norms and values have simply become ingrained in their regular thought and practice by virtue of operating in such an environment for a long time during the pre-transition period. If this is true, then we can possibly measure socialist imprinting by studying why firms decide to undertake change in their knowledge sets in the transition period. If their decision to undertake change reflects strong socialist orientation, both in terms of institutional or market factors, it would imply high levels of socialist imprinting. If not, the opposite would be true.

As we discussed earlier, the socialist economic environment can be studied in terms of its institutional and market features. As North (1990) indicates, institutions can be further categorized into either formal institutions (such as laws and regulations) or informal institutions (such as norms and customs). Firms respond to these various types of institutional pressures by making different strategic choices including compliance (Peng, 2003). In our context, laws and regulations in most Communist countries that reflect an important aspect of their formal institutional environment were formulated on socialist principles that emphasized the central role of the State and the collective. At the same time, norms and customs also placed an emphasis on addressing worker demands with respect to salary equality, working conditions, worker rights, job security, etc. As Child and Markoczy (1993) observe in their study of Chinese and Hungarian firms, the socialist ideology emphasized everyone having the right to work; strong

worker unions usually represented the socialist ideology and demands mentioned here. Thus, if firms in transition economies decided to undertake any change in their operations primarily to meet any of the above socialist pressures or demands, it would reflect a strong influence and/or imprinting of various aspects of the socialist institutional environment described above, on firms. Therefore, to measure this type of imprinting, we asked firms the extent to which they undertook change to respond to different institutional pressures such as: 'to meet domestic legal requirements,' 'to reflect management structure,' 'to meet employee demands,' and 'to meet union demands.' As prior research suggests, these reasons typically represent pressures and demands of strong socialist institutional environments on firms in transitional economies (Child and Markoczy, 1993; Blanchflower and Freeman, 1997; Mueller and Clarke, 1998; Peng and Heath, 1996; Hitt *et al.*, 2000; Grayson and Bodily, 1998). Respondents provided their ratings on a 1–5 scale, where 1 = not an important reason and 5 = very important reason for change. The socialist institutional measure is an arithmetic average of the rating provided on these reasons. The market features of a typically socialist environment also are quite distinct from a free-market environment. Meyer (2001) notes that socialist regimes with centrally planned economies established quantitative output targets for firms with few incentives to provide quality or customer service. Firms in such a Soviet-type economy also were not concerned about reducing costs or improving productivity; in effect, they were not concerned about profitability because of assured government financial support (Gregory and Stuart, 1990; Peng and Heath, 1996). Overall, this created a market environment with little or no competition among firms to increase their output or market, improve product quality, reduce product costs, or enhance their productivity. Firms ignored free-market economy imperatives in the way they organized their activities or managed their operations. To measure the extent to which firms in our sample were imprinted by the socialist market environment we first asked managers in these firms to indicate the extent to which their decision to undertake change reflected the following reasons: 'to improve the quality of their products or services', 'to improve their productivity,' and 'to reduce costs.' Respondents provided their ratings on a 1–5 scale, where 1 = not an important reason, and 5 = very important reason

for change. As previous research shows (Meyer, 2001; Gregory and Stuart, 1990; Peng and Heath, 1996) these reasons reflect the typical pressures of a free-market economy on firms to undertake change; in contrast, in a socialist market environment these reasons will not play an important role in firms' decisions to undertake change. Hence, we then reverse coded the above scale to measure the extent to which firms will undertake change to meet the demands of a socialist market environment—high ratings on such a reverse coded scale will indicate a high level of socialist imprinting on the concerned firm. In other words, firms with high ratings are mainly following socialist market norms (that place little emphasis on improving quality, productivity, etc.) in undertaking change. To get an overall score of the level of socialist market imprinting on a firm, we took a simple arithmetic mean of the ratings on a reverse-coded scale for each of the three items mentioned above.

The socialist institutional imprinting had a Cronbach alpha measure of 0.70, and the socialist market imprinting measure had a Cronbach alpha measure of 0.71. Both are at or above the accepted level of 0.70 (Nunnally, 1978; Bollen and Lennox, 1991; Diamantopoulos and Winklhofer, 2001). Please refer to the Appendix for the exact items and scales used for both socialist imprinting measures.

Location of search

We developed two categories of search: local search and distant search. Local search is defined as a search within formerly socialist countries (Lithuania, Russia, Poland), and distant search is defined as a search in traditionally free-market economies (Western Europe, Canada, United States). We used country of origin for the assisting firm to determine search location.⁷ Knowledge acquired from within the boundaries of the former Soviet Union and Eastern Europe may be more closely related to that existing within the firms in Lithuania, whereas knowledge coming from developed Western countries might be more distantly related. The move from local search to distant search is a move from socialist knowledge to free-market knowledge. In focusing on economic systems, we are able to reduce the concerns

⁷ If a firm did not utilize outside assistance but implemented the change using only internal knowledge, this was coded as local search.

that evolve from solely considering geographic distance (O'Grady and Lane, 1996). This variable is coded such that 0 = local search (within former socialist economies), 1 = distant search (historically free-market economies).

Control variables

This study uses four control variables.

Size

We measured size in terms of log of sales revenue in 1998.⁸ Size might be expected to have an impact on the success of change if large firms (given their greater resources) are seen as more likely to succeed in changing their knowledge sets.

Exports

We also control for exports as a percentage of revenue to non-former Soviet Union countries using export levels in 1999.⁹ Since export levels could reflect existence of other potential ties with free-market knowledge sources, they might have some impact on a firm's ultimate success in changing its erstwhile socialist knowledge sets.

Industry

The firms are grouped into five industry categories: processing and manufacturing (28 firms), food processing (14), sales and service (4), construction (10), and 'other' such as utilities, chemicals, energy, and transportation (11). These categories are similar to those used by Khanna and Rivkin (2001). Dummy variables were assigned for each industry category. Since we dropped the 'sales and service' category while assigning industry dummies, the coefficients for the other industry categories are to be compared against this category.

Knowledge set

The study considers imprinting and search for knowledge underlying six distinct activities or

areas of operation in firms. Hence, as we mentioned earlier, the survey instrument contained six sections each focused on collecting information on the relevant independent and dependent variables for knowledge underlying these six aspects, namely (1) quality assurance systems, (2) training programs, (3) wage systems, (4) marketing programs, (5) technology, and (6) product or service lines. In effect, we had information on change related to six different knowledge sets for each company in our sample. Since we had the same data on six different knowledge sets, in our analysis we used simple dummy variables to identify and distinguish between these different knowledge sets. Given that we had six knowledge sets, we used five dummy variables to identify and reflect them. The dummy variables reflect knowledge sets underlying quality assurance systems, training program, wage systems, marketing programs, and technology—the left-out category is 'product and service lines.' The coefficients for these variables can be used to assess the success of change associated with these knowledge sets in comparison to the knowledge set underlying the left-out category.

RESULTS AND ANALYSIS

Table 1 provides the correlation matrix and descriptive statistics for the focal variables used in our study. Search location is a binary variable and the rest are continuous variables.

The results of the tests of our hypotheses are presented in Table 2. As explained in the previous section, the survey asked respondents to evaluate knowledge routines on a 5-point Likert scale. We have up to six observations per firm since we examined the six different knowledge sets. As a result, to test the hypotheses we used a STATA OLS regression with clustering by firm. This allowed us to account for firm-level effects and the Likert-scale based dependent variable.

Model 1 reports the results for only the control variables. We see that larger firms were more successful in implementing change, and manufacturing firms also were more successful in implementing change.¹⁰ Changes in training

⁸ Using employee number to control for size did not significantly impact the results.

⁹ For a subset of firms in the sample, we were able to calculate the correlation of 1990 export levels and 1999 export levels. The correlation was 0.49, so if there is any influence of 1990 export levels it is approximated by 1999 export levels.

¹⁰ We undertook sensitivity analysis, not reported here, regarding the influence of size. We split the sample into two parts—one-half containing smaller firms and one-half containing larger

Table 1. Descriptive statistics and pair-wise correlation matrix ($N = 303$)

Variable	Mean	Standard deviation	Success	Socialist institutional imprinting	Socialist market imprinting	Search	Size	Exports
Success	16.145	6.220	1.000					
Socialist institutional imprinting	1.660	1.230	0.107*	1.00				
Socialist market imprinting	1.607	1.434	-0.411***	-0.459***	1.000			
Search	0.184	0.388	0.186***	0.064	-0.117**	1.000		
Size	16.185	1.083	0.180***	0.061	0.008	0.083	1.000	
Exports	0.221	0.298	0.125**	0.120**	-0.038	0.136**	0.246***	1.000

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$

Table 2. OLS regression results with clustering by firm dependent variable: success of change

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-10.720	-3.894	-10.785	-4.030	-4.477	-4.680
Socialist institutional imprinting		-0.236		-0.245	-0.240	-0.205
Socialist market imprinting		-1.819***		-1.797***	-1.810***	-1.758***
Search location			1.557**	0.939	1.226**	1.196*
Socialist institutional imprinting * Search location					-1.418*	
Socialist market imprinting* Search location						1.369**
Size	1.691***	1.450***	1.683***	1.449***	1.470***	1.468***
Exports	-0.702	-0.541	-0.872	-0.640	-0.459	-0.860
Food processing	0.050	0.916	-0.005	0.867	0.808	1.017
Manufacturing	4.309**	4.041**	4.203**	3.980**	3.874*	4.133**
Construction	0.431	0.901	0.253	0.790	0.661	0.752
Other industry	0.593	1.769	0.435	1.655	1.538	1.839
Knowledge—quality	0.099	-0.058	-0.125	-0.182	0.008	-0.058
Knowledge—training	-4.128***	-3.677***	-4.130***	-3.673***	-3.700***	-3.608***
Knowledge—wages	-7.036***	-6.938***	-6.689***	-6.718***	-6.646***	-6.584***
Knowledge—marketing	-0.635	0.183	-0.462	0.284	0.722	0.632
Knowledge—technology	-2.555***	-3.235***	-2.562***	-3.228***	-3.068***	-3.198***
R^2	0.306	0.451	0.314	0.454	0.466	0.467
F -value	13.11***	21.29***	12.40***	19.81***	20.35***	20.40***

$N = 303$

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$ using two-tailed tests

The interaction variable was calculated after centering the scores of the main variables.

For industries, the omitted variable is 'sales and service.' For knowledge sets, the omitted variable is 'product or service lines.'

programs, wage systems, and technology were less successful in meeting the demands of the

firms—and tested Hypotheses 1 through 3 for each subsample. Size remained significant for each subsample. For the subsample of smaller firms, the independent variables were no longer statistically significant, but they remained statistically significant for the larger firms.

free market environment. These relationships are consistent throughout the rest of the models. Model 2 includes the relationship between socialist institutional and market imprinting and success of change. The coefficients for both imprinting measures are negative as predicted; however, only the socialist market imprinting effect is statistically

significant. This provides partial support for Hypothesis 1. Model 3 examines the relationship between the Search Location variable and success of change. We find that increased search distance, i.e., distant search, is associated with higher change success, as predicted in Hypothesis 2. This positive and significant relationship is observed in all models. Model 4 examines the direct effects of all the main explanatory variables simultaneously. Both socialist imprinting variables have a negative relationship with success of change, though once again only the coefficient for socialist market imprinting is significant. Search location is positively and marginally significantly related to success (p -value = 0.120). Model 5 includes the interaction term between socialist institutional imprinting and search location, and Model 6 includes the interaction between socialist market imprinting and search location.¹¹ The effects of the main variables in both these models are the same as before. As far as the interaction terms are concerned, quite surprisingly the first interaction term (in Model 5) is negative and significant, whereas the second interaction term (in Model 6) is positive as expected. Overall, the results indicate support for Hypotheses 1 and 2 and mixed support for Hypothesis 3. Higher socialist imprinting leads to lower success of change and distant search is associated with higher success of change. The joint effect of these two factors with search varies across the two types of imprinting effects. The following section discusses the results and limitations of the study.

DISCUSSION

In this study, we sought to examine the independent and joint effects of socialist imprinting and search location on the success of knowledge set change. As predicted in Hypothesis 1a, increases in socialist imprinting are associated with lower success of change. In all the models, the significance level for socialist market imprinting is $p = 0.001$ or better. The coefficient for socialist institutional imprinting is negative, but not significant. These results underscore the difficulty that transition economy firms might face in changing knowledge sets to make them sufficiently suited to meet the demands of their new economic environment in the

post-shock period. This suggests the knowledge set change process is constrained by founding conditions, i.e., socialist market imprinting. Thus, the founding conditions do appear to hinder how successfully firms can undertake change at future points in time.

In Hypothesis 1b, we predicted that socialist market imprinting would have a greater impact on the success of change than socialist institutional imprinting. This prediction was supported, indicating that firms changing knowledge sets with higher socialist market imprinting will experience more difficulty than when changing knowledge sets with low socialist institutional imprinting. However, not only did socialist institutional imprinting have a weaker effect, but also the coefficient was statistically non-significant in all the models. We believe this result can be understood by considering what firms are reacting to. In transitional economies, firms are constrained by their socialist institutional legacy and socialist market legacy. However, since the environment has changed quickly to a free market, it is the socialist market legacy (or imprinting) that will constrain firms the most in achieving change. Although the markets have shifted to becoming free markets rather than socialist, the institutions and the imprinting they support will continue to have a socialist legacy for a longer period. These results are similar to the work of Danis and Parkhe (2002), who found that in Hungarian–Western partnerships in the 1990s managers believed that following socialist norms, though not preferred, might be rational for a temporary period of time. However, no manager believed they could ignore free-market requirements.

As predicted in Hypothesis 2, we also see that for firms that undergo a big change in their external business environment new knowledge required to work more effectively in that new environment is available in distant locations and from distant sources. New knowledge from local sources that may still bear many traces of the earlier, socialist environment is much less useful in helping them change their knowledge sets. We also did some *post hoc* analyses by coding the search variable slightly differently. Instead of having just the binary variable for search (local vs. distant), we classified search into three different categories: search within the firm itself, search outside the firm from entities located within former socialist countries, and finally search outside the firm from

¹¹ The results for the interaction variable were calculated after centering the primary independent variables around the mean.

entities located outside former socialist economies (i.e., from entities located in mainly capitalist or market-oriented economies). We used two dummy variables to examine the effect of these different search categories where the left-out category was 'search within the firm itself.' We observed that the dummy variable for 'search outside the firm but from entities within former socialist economies' had a negative and almost significant ($p = 0.118$) relationship with the success of change; on the other hand, the dummy variable for 'search outside the firm from entities located in former non-socialist countries' continued to have a positive and significant relationship with the dependent variable, as before. These results suggest that for transition economy firms undergoing large environmental change search may better be served by either looking for new knowledge from within the firm itself or from distant entities (outside the firm) that are not located in former socialist countries.

In Hypothesis 3, we predicted that firms with higher levels of socialist imprinting that engaged in distant search as compared to local search would exhibit greater levels of success. The results provided mixed support for this relationship. Under conditions of high socialist market imprinting, firms that did not restrict themselves to local search to acquire knowledge that was more closely related to their existing knowledge set (given the relative ease of combining these knowledge sets due to their relatedness) but instead acquired more dissimilar knowledge from distant sources were more successful in implementing change in their knowledge sets (Model 6). In contrast, under conditions of high socialist institutional imprinting, firms that acquired dissimilar knowledge from distant sources were *less* successful in implementing change in their knowledge sets (Model 5).

Clearly, distant search can mitigate the constraints regarding change due to socialist market imprinting (Hypothesis 1). However, distant search did not mitigate the impact of socialist institutional imprinting, but rather made the impact more negative. We believe this result reflects the resilience of socialist institutional imprinting, as we described in developing Hypothesis 1b. Past work presented in developing Hypothesis 1b and reiterated by Peng and Heath (1996) indicates that the belief systems of workers and the institutions that support them will change much more

slowly in a transition economy than market systems. The implications are that free market-based knowledge, when combined with socialist market-imprinted knowledge, will mitigate the socialist imprinting when the market has shifted to support the application of free market-based knowledge. However, it is likely the case that the free market-based knowledge, when combined with socialist institutional-imprinted knowledge, failed in mitigating the socialist imprinting because the institutional environment had not yet shifted to support application of free market-based knowledge. We believe these results reflect the conclusions of Lane *et al.* (2001), which indicated that for knowledge to be assimilated from outside sources structural and cognitive conditions must exist at the recipient firm and its environment. We believe it likely that such conditions did exist for free-market knowledge to overcome the impact of socialist market imprinting, but not of socialist institutional imprinting.

We also observe some interesting results with respect to the success of change across different knowledge sets. We see that some of the dummy variables reflecting the different knowledge sets are significant—this implies that firms experience varying levels of success in changing knowledge sets underlying different activities or areas of operation in the company. In our study, we found that firms in transition economies are much less successful in changing knowledge related to training programs and wage systems as compared to the left-out category of knowledge underlying the development of product or service lines. This perhaps might happen because training programs and wage systems are more internal and people-oriented in terms of their attributes and/or relevance, and hence much more difficult or slow to change. It is also possible that even if companies do manage to partly change their knowledge related to these internal aspects, these changes are not directly or immediately reflected in terms of the success of change, which is measured more in terms of external aspects like increased brand awareness, greater customer satisfaction, etc. Given these interesting results, future research could investigate this issue in greater depth. As we mention later, managers also need to recognize this aspect when they plan for and implement steps to change their knowledge sets in the face of change in their external environment.

This research contributes to our understanding of firm change in two ways. One, we see that under certain conditions firms can change their existing knowledge sets by adding new knowledge that is significantly different from the existing knowledge. The implications are that if new knowledge reflects the new environment a firm is operating in, then such new knowledge can be successfully combined with the firm's existing knowledge sets to undertake change. Two, by developing the idea that imprinting varies across the knowledge sets of a firm and by measuring that difference and analyzing its impact, we can better understand how certain knowledge sets may respond to change processes differently (or better) than other knowledge sets. This is important since previous research that has suggested that imprinting may vary across parts of a firm has not formalized that possibility nor presented alternatives for measuring that variance. Our development of a finer-grained measure allows us to better understand the varied impact of the founding environment on firms. The fact that higher socialist imprinting seems to result in lower success of change suggests that managers and firms must be aware of the constraints to the change process that might result from imprinting. A cruder measure that only considers year or decade of founding would not have identified this issue.

Our research also contributes to the growing literature on firms in transitional economies. Much prior research on privatization, joint ventures, and organizational change in these settings revolves around the unique aspects of firms moving from the Communist to free-market systems. Our results about the value of distant search indicate that firms with a legacy of socialist knowledge can utilize knowledge acquired from free markets (through distant search) to make this change too. Second, the varying impact of socialist institutional imprinting vs. socialist market imprinting provides unique insights regarding the legacy of the Communist system. Firms that are constrained by socialist market imprinting will be more adversely affected than firms that are constrained by socialist institutional imprinting. Thus, we can expect that firms will seek knowledge and will attempt changes that allow them to more quickly overcome their socialist market legacy. These results provide an additional perspective to previous studies that considered the different types of knowledge that

firms seek to overcome their socialist legacy (Hitt *et al.*, 2000; Steensma *et al.*, 2005).

The findings of this research also provide some useful insights to both managers and policy-makers concerned with transition economies, as well as those who might be concerned with other countries undergoing substantive economic changes such as inclusion in the European Union or NAFTA. First, they need to understand that firms' knowledge underlying some of their activities or systems will respond differently to firms' attempts to change that knowledge due to differences in the imprinting impact of the founding environment on various types of knowledge. Second, they can learn that new knowledge obtained from abroad (through distant search) can be used more effectively to change firms' knowledge sets than normally or previously believed. As countries in Central Europe move through the transition phase toward full EU membership, firms in those countries need to understand these dynamics while making decisions about obtaining knowledge from current EU members or from others.

From a policy-maker's standpoint, the results indicate that firms in transitional economies are not immobile. Rather, they are able to change their knowledge sets quite successfully. Policy-makers should realize the firms are not only able to use both local and distant search to identify the knowledge required for change but that distant search may sometimes counterbalance the negative impact from socialist imprinting. Instead of shielding firms from environmental changes, policy-makers should encourage programs that allow firms to tap into knowledge sources that will allow faster and more successful change. That would entail programs that support exporting or other forms of interaction or partnerships with firms in the countries that already have the type of economic system or legal framework the country is seeking to emulate.

This research, like most other research, also suffers from some limitations that future research can address. One, besides using survey-based measures to assess the success of change, it would be useful to have some quantitative measures for this variable. Two challenges may need to be overcome, however, in order to do that. First, it is likely that many firms in transitional economies may not have yet developed consistent processes and measures to track such changes; second, even if they have

such measures, they may consider them proprietary and therefore not be willing to share them. Two, the socialist imprinting measure used here is limited in that it uses the importance of different reasons to change a knowledge set to assess the level of imprinting. Although we believe and have argued that the importance of the different items is linked to imprinting and does influence how knowledge sets are changed, it also would be useful to have a measure that is more directly linked to the imprinting on the knowledge sets and also measured closer to the time of founding. Three, the search measure focuses only on a contract mechanism to identify whether and where search has occurred. However, firms also may rely on other approaches such as alliances, joint ventures, or acquisitions to obtain new knowledge to change their existing knowledge sets (Kotabe and Swan, 1995; Inkpen and Beamish, 1997; Capron *et al.*, 1998; Shenkar and Li, 1999), and future research can investigate whether these alternative approaches to acquiring new knowledge differentially impact firms' abilities to successfully change their knowledge sets. Four, we have assumed that firms had already defined their problem in terms of not having relevant knowledge to compete in a market-oriented economy, which led them to search for knowledge from other firms that might be able to provide this knowledge. Perhaps such a starting point may have been partly appropriate, given the significant pressure that firms felt to implement change during the transition period. But because we assumed that firms defined their problem in this particular manner, we also ended up on focusing on certain specific alternatives that firms might have used to address them, and examined the relative efficacy on those particular alternatives on firms' abilities to change. But it is likely that had firms defined their problems differently their choices about what solutions they looked for and where they searched for them, could be quite different. Thus future research on such issues in transition economies may also need to account and control for the endogenous nature of problem definition.

Finally, it would be equally interesting not only to examine the knowledge sets of previously socialist firms and how they operate or change in the new market economy as we do in this study, but also to compare them with firms founded in the market-based economy prevalent after 1990. Such a contrast can potentially shed light on differences

in the level of socialist imprinting across the two groups and subsequently its link to knowledge set change and related change processes.

CONCLUSION

In this paper, we explore how transition economy firms change their knowledge sets in response to exogenous shocks in their business environment. Building on core ideas from the organizational imprinting literature we propose that founding conditions of the firm have an impact on the knowledge (knowledge sets) that underlies specific areas of operation; in the context of transition economies, it would mean that the socialist economic environment that existed in these countries up to 1990 imprinted the knowledge sets of firms founded in these countries before 1990. We argue, however, that the level of imprinting may vary across the knowledge sets underlying different areas of operation. We suggest that the level of imprinting and search location independently and jointly influence the success with which firms are able to change their knowledge sets.

We find support for the proposed direct effects of imprinting and search, but conflicting support for the combined interaction impact. We observe that higher levels of socialist market imprinting are associated with less successful change. The interaction results suggest that knowledge acquired from distant search needs to align with a firm's new environment. We also find that distant search for new knowledge is positively linked to the success of change. Overall, the results suggest that existing knowledge sets can be more successfully changed using new knowledge from distant sources than perhaps previously believed. The stereotype of socialist firms resisting change and having a lifetime liability from the socialist system must be reconsidered.

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APPENDIX 1: CONSTRUCTS AND VARIABLES

Success of change (dependent variable)

Please evaluate each of the following items in response to the question: ‘For each item, how successful was the firm when implementing change in (*area of operation*) to make the area meet market needs?’ Please use the scale 1 = unsuccessful to 5 = successful. If the item is not applicable, please mark ‘0’.

Item	Scale
to improve the competitive position	0 1 2 3 4 5
to satisfy customer requirements	0 1 2 3 4 5
to build brand awareness	0 1 2 3 4 5
to increase exports	0 1 2 3 4 5
to increase sales	0 1 2 3 4 5

Cronbach alpha = 0.828

Socialist institutional imprinting (independent variable)

Please evaluate each of the following items in response to the question: ‘For each item, how much pressure did it exert when deciding to undertake change in (*area of operation*)?’ Please use the scale 1 = unimportant to 5 = important. If the item is not applicable, please mark ‘0’.

Item	Scale
to meet employee needs	0 1 2 3 4 5
to meet union demands	0 1 2 3 4 5
to meet domestic legal requirements	0 1 2 3 4 5
to reflect management structure	0 1 2 3 4 5

Cronbach alpha for four items = 0.70

Socialist market imprinting (independent variable)

Please evaluate each of the following items in response to the question: ‘For each item, how much pressure did it exert when deciding to undertake change in (*area of operation*)?’ Please use the scale 1 = unimportant to 5 = important. If the item is not applicable, please mark ‘0’.

Item	Scale
to improve productivity	0 1 2 3 4 5
to improve product quality	0 1 2 3 4 5
to reduce costs	0 1 2 3 4 5

Cronbach alpha for three items = 0.71