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On the contingent rent-generating potential of firm-specific managerial experience

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ABSTRACT

The resource-based theory suggests that profitable growth of the firm is bound by firm-specific managerial capability, which has to be internally developed via accumulation of firm-specific managerial experience over time. In this study, I investigate the contingency of rent-generating potential of firm-specific managerial experience by focusing on two particular organizational characteristics — slack and uncertainty. I propose that firm-specific managerial experience realizes its rent-generating potential in conjunction with organizational slack, and firm-specific managerial experience has greater rent-generating potential when organizational uncertainty is high. Empirical evidence based on large-scale longitudinal data from 921 U.S. manufacturing firms in almost 20 years corroborates the theory. Novel implications for the resource-based theory are discussed.

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1. Introduction

The resource-based theory maintains that economic rent is unequally distributed among firms due to the heterogeneity of resources accumulated by firms (Barney, 1986, 1991). As an early developer of resource-based theory, Penrose (1959) submitted that managerial capability, which evolves over time, is among the most heterogeneous resources across firms. Managerial capability is an important contributor to the entire bundle of firm resources that enable rent generation (Castanias & Helfat, 1991, 2001). The rent-generating potential of a firm's managerial capability is rooted in managers' firm-specific managerial knowledge for allocation of organizational resources to business tasks that are unique to the firm (Kor & Mahoney, 2000, 2004). The so-called *Penrose effect*, however, suggests that the scarcity of firm-specific managerial knowledge inhibits the profitable growth of the firm, leading to firm heterogeneity in rent generation (Shen, 1970; Tan & Mahoney, 2005). Because firm-specific managerial knowledge must be developed internally within a firm through accumulation of firm-specific managerial experience over time, managerial capability is finite and inelastic at least in the short run (Penrose, 1959). For example, newly added managers are not possible to be quickly equipped with such tacit, experience-based knowledge specific to a firm's unique resources. New managers' lack of firm-specific managerial experience will hinder new and old managers to function well as a team in the firm, and as a result, to capture the profitable opportunities unique to the firm.

While the importance of firm-specific managerial experience in shaping R&D and marketing strategies have been studied (e.g., Kor, 2006; Kor

& Mahoney, 2005), it is unclear about how organizational resources, and the excessive resources in particular, affect the rent-generating potential of firm-specific managerial experience under different levels of uncertainty. I fill this gap in the literature on firm-specific managerial experience by explicitly theorizing and testing how firm-specific managerial experience, jointly with two particular organizational characteristics — slack and uncertainty, influences firm performance. As the resource-based theory generally holds that unused resources is the driver of firm growth (Penrose, 1959: 68), I focus on the role of organizational slack in firm-specific managerial experience realizing its rent-generating potential. This is aligned with the recent trend of research on how slack resources moderate the rent-generating potential of firm-specific technological knowledge (Wang, Choi, Wan, & Dong, 2016). On the other hand, since uncertainty is the fundamental problem of management and coping with uncertainty is the essence of the administrative process (Thompson, 1967: 159), I further explore how organizational uncertainty may play a role in firm-specific managerial experience realizing its rent-generating potential. The idea is analogous to the prior work documenting that dynamic capabilities are more valuable for rent generation when market turbulence is high (Teece, Pisano, & Shuen, 1997).

In this study, I propose that firm-specific managerial experience is likely to realize its rent-generating potential when a firm is equipped with rich slack resources. This is because managers with firm-specific managerial experience are able to understand the unused resources, enabling them to efficiently allocate the excessive resources to the tasks that are particularly suitable for the firm, and to avoid problems associated with deployment of slack resources such as loose discipline in resource allocation. Furthermore, organizational uncertainty results from insufficient information about the unique business tasks of a

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firm, whereas firm-specific managerial experience allows managers to accumulate rich information about a firm's unique resources and tasks, and to develop the coping strategies that are particularly suitable to deal with the uncertainty associated with the firm's business. Thus, I further propose that in firms with high uncertainty, firm-specific managerial experience can overcome the obstacles of profitable growth by mitigating the uncertainty in managers' strategic decisions for the firm, making it more valuable for rent generation. Using large-scale longitudinal data from 921 U.S. manufacturing firms in 1993 to 2011, I find empirical evidence showing that firm-specific managerial experience has positive interaction effects with organizational slack and uncertainty on firm performance.

This study makes two major contributions to the resource-based theory. First, it reminds that firm-specific managerial experience has rent-generating potential, which must be realized with the input of organizational resources. In particular, organizational slack provides free resources supporting managers' strategic decisions in capturing profitable opportunities unique to the firm. Second, this paper identifies the boundary condition under which firm-specific managerial experience realizes its rent-generating potential in terms of organizational uncertainty. Although the conventional resource-based theory has an internal focus, it is important to consider the organizational characteristics resulted from external environment when studying the rent-generating potential of firm-specific managerial knowledge.

The paper is organized as follows. In the next section, I develop the theory and hypotheses about how firm-specific managerial experience and organizational slack/uncertainty jointly influence firm performance. Then I describe the details of empirical methods and report the results. Finally, I discuss the implications from the findings and the limitations of this study.

2. Theory and hypotheses

2.1. Firm-specific managerial experience

The resource-based theory holds that firm performance results from the interactions of managers and resources (Mahoney & Pandian, 1992; Wernerfelt, 1984). In particular, the strategic choices and organizational outcomes are a function of managers' experience specific to the firm (Mahoney, 1995; Penrose, 1959). During their tenure in a firm, managers learned from administrative experience of allocating organizational resources and making suitable strategies for this firm under uncertain business environment (Finkelstein & Hambrick, 1996; Tushman & Nadler, 1978). Thus, firm-specific managerial experience is important for developing tacit knowledge of resource allocation and coping strategies for uncertainty avoidance that are particularly suitable for the firm (Kor, 2006). Such tacit knowledge enables top management team to be functional in allocating resources and dealing with uncertainty in a firm's business.

Only managers with long experience in a firm are able to develop valuable and immobile firm-specific managerial knowledge, which enables them to precisely assess the strengths and weaknesses of the firm's resources and make appropriate decisions for which opportunities emerging in uncertain business environment to pursue. On the other hand, managers new to a firm with little managerial experience in the firm are often lack of such tacit knowledge, which is impossible to be quickly learned due to its firm specificity and tacitness (Kor & Mahoney, 2005). Penrose (1959: 46) maintained that, "Existing managerial personnel provide services that cannot be provided by personnel newly hired from outside the firm, ...". Furthermore, she stated that "It is the heterogeneity, and not the homogeneity of the productive services available from its resources that gives each firm its unique character" (Penrose, 1959: 75). Since firm-specific managerial knowledge is not equally available to all firms, those firms that have firm-specifically experienced managers are more likely to accumulate firm-specific managerial knowledge which potentially generates economic rents when combining

with organizational resources that are available for usage (Kor & Mahoney, 2005). In conjunction with available resources, and unused resources in particular, firm-specific managerial experience realizes its rent-generating potential by efficiently deploying resources for the unique business opportunities of the firm (Kor & Mahoney, 2005). This is particularly true when the uncertainty of a firm's business is high, requesting managers to accumulate more information about the firms' unique resources and business tasks (Tushman & Nadler, 1978). Next, I develop the hypotheses for the joint effect of firm-specific managerial experience and organizational slack/uncertainty on firm performance.

2.2. Hypotheses development

Penrose (1959) suggested that excess resources are drivers of firm growth, because organizational slack can support expansion to achieve full utilization of resources. The growth of the firm involves utilization of existing resources and new added resources (Rubin, 1973; Wernerfelt, 1984). Such resource conversion process is induced by managers, as "the firm's managers recombine the firm's resources" (Kor & Mahoney, 2000: 114). Penrose explicitly argued for the facilitating role of slack resources in the introduction of new combinations of resources — innovation — within the firm. "Unused productive services are, for the enterprising firm, at the same time a challenge to innovate, an incentive to expand, and a source of competitive advantage" (Penrose, 1959: 223). However, it is not without evidence that organizational slack can also inhibit innovation. For example, Nohria and Gulati (1996) found that slack resources foster greater experimentation on the one hand and diminish the discipline of resource allocation over innovative projects and thereby hurt innovation on the other. Prior empirical studies have documented that the overall impact of organizational slack on firm performance is either positive or negative (see Daniel, Lohrke, Fornaciari, & Turner, 2004 for a literature review).

When a firm's managers are equipped with rich firm-specific managerial experience, organizational slack is more likely to be allocated in an economic value-increasing manner. This is because managers with firm-specific managerial experience are able to better understand the unused resources — their history, attributes, and recombinant potential — thereby efficiently allocating these excessive resources to the business tasks that are particularly suitable for the firm, rather than allowing loose discipline in resource allocation. In this case, organizational slack assists realizing the rent-generating potential of firm-specific managerial experience by supporting managers' decisions to capture business opportunities that are unique to the firm, leading to superior firm performance. Organizational slack therefore provides free resources for managers with firm-specific managerial experience to utilize for achieving profitable growth of the firm. Thus, I propose that firm-specific managerial experience in conjunction of organizational slack positively influences firm performance.

H1. Firm-specific managerial experience and organizational slack have a positive interaction effect on firm performance.

Organizational uncertainty is a key challenge in managerial decision-making (Thompson, 1967). Although organizational uncertainty is bad for a firm to achieve profitable growth due to high volatility in its business, uncertainty plays an interesting role in shaping the value of firm capabilities, including managerial capability. For instance, it has been found that dynamic capabilities — a firm's ability to constantly innovate — are more valuable to generate competitive advantage when facing high market turbulence (Drnevich & Kriauciunas, 2011). Translating this logic to my research context, organizational uncertainty is likely to enhance the rent-generating potential of firm-specific managerial experience.

Organizational uncertainty results from insufficient information about the business tasks of a firm (Tushman & Nadler, 1978). Firm-specific managerial experience allows managers to accumulate rich information about a firm's unique resources and tasks, and to develop

the coping strategies that are particularly suitable to deal with the uncertainty associated with the firm's business. For a firm with high uncertainty, firm-specific managerial experience can overcome the obstacles of profitable growth by mitigating the uncertainty in managers' strategic decisions for the firm. On the other hand, firm-specific managerial experience is less useful for mitigating uncertainty in managerial decision-making if a firm has low uncertainty. Thus, in firms with higher organizational uncertainty, we should observe a stronger link between firm-specific managerial experience and firm performance, which indicates a positive interaction effect of organizational uncertainty and firm-specific managerial experience on firm performance.

H2. Firm-specific managerial experience and organizational uncertainty have a positive interaction effect on firm performance.

3. Methods

3.1. Data

I test the hypotheses based on U.S. public firms from manufacturing industries (SIC 2000–3999) for three reasons. First, focusing on manufacturing sector is consistent with what Penrose (1959) typically referred to, indicating a fit between theoretical foundation and empirical setting. Second, manufacturing and service sectors are largely different, and including service sector could induce unobservable industry heterogeneity that may bias my results. Finally, most of Fortune 500 companies are public manufacturing firms, making the sample significant in terms of economic importance.

The data used in this study were collected from the Standard and Poor's Compustat database. I sampled all U.S. public firms with SIC codes from 2000 to 3999, in a period of 1990 to 2012. I collected the financial data from *Fundamental Annual* series and manager tenure data from *Execucomp* series. In all analysis, I forwardly lagged one year for my dependent variable to avoid reverse causality. Moreover, my calculation of organizational uncertainty requires a three-year rolling window to capture prior sales volatility, leading to an unbalanced panel from 1993 to 2011. After removing the observations with missing data, it resulted in a final sample of 921 unique firms with 7,857 firm-year observations. Table 1 provides a description of sample distribution across industries.

Table 1
Sample description.

SIC code	Industry	Observations	Percentage (%)
20	Food & kindred products	463	5.89
21	Tobacco products	28	0.36
22	Textile mill products	102	1.30
23	Apparel & other textile products	194	2.47
24	Lumber & wood products	52	0.66
25	Furniture & fixtures	124	1.58
26	Paper & allied products	206	2.62
27	Printing & publishing	247	3.14
28	Chemical & allied products	1453	18.49
29	Petroleum & coal products	104	1.32
30	Rubber & miscellaneous plastics products	120	1.53
31	Leather & leather products	78	0.99
32	Stone, clay & glass products	88	1.12
33	Primary metal industries	298	3.79
34	Fabricated metal products	233	2.97
35	Industrial machinery & equipment	1000	12.73
36	Electronic & other electric equipment	1510	19.22
37	Transportation equipment	447	5.69
38	Instruments & related products	943	12.00
39	Miscellaneous manufacturing	167	2.13
	Total	7857	100.00

3.2. Measures

3.2.1. Firm performance

I measure firm performance by the return on assets (ROA), which is one of the most widely used performance indicators (Chen & Miller, 2007; Gentry & Shen, 2013; Greve, 2010). I calculated ROA as operating income before depreciation over total assets. While there are alternative market performance indicators such as Tobin's q , I choose ROA as market performance measures do not necessarily capture the economic rent generated by managers' decisions in the short run. One-year lagged future performance is used as the dependent variable.

3.2.2. Firm-specific managerial experience

I measure firm-specific managerial experience as the average number of years that managers in a firm's top management team had worked for this specific firm (Kor, 2006; Kor & Mahoney, 2005; Michel & Hambrick, 1992). I define top management team broadly as all inside top-level executives, including president, vice president (VP), chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), and chief information officer (CIO), etc. Accordingly, all inside executives listed in the *Execucomp* series were taken into account.

3.2.3. Organizational slack

I adopt a general indicator of organizational slack as the current ratio, which has been widely used in the literature (Cheng & Kesner, 1997; Mishina, Pollock, & Porac, 2004). Current ratio was calculated by current assets divided by current liabilities. The higher this ratio, the more organizational resources excess beyond operating necessity.

3.2.4. Organizational uncertainty

I follow prior studies to measure organizational uncertainty as the firm-level sales volatility (Comin & Mulani, 2009; Comin & Philippon, 2006). Specifically, I calculated the standard deviation of a firm's sales in prior three-year period. The greater this standard deviation, the more uncertain a firm's business was.

3.2.5. Control variables

I control a set of variables that may influence firm performance. First, I include a firm's *prior performance* as concurrent ROA to control for endogeneity caused by unobservable factors and to avoid autoregressive issue. Second, I control *capital intensity* (i.e., total assets over total sales) as a general indicator of a firm's total resources. Third, I include *financial leverage* (i.e., long-term debts over total assets) in the analysis, as an indicator of a firm's potential slack – the greater this ratio the more difficult or costly for a firm to gain external financing (Bromiley, 1991). Fourth, *firm size* is controlled by the natural logarithm of total sales. Finally, I control industry and time fixed effects by including a number of SIC two-digit industry dummies and year dummies in the analysis. Table 2 reports the descriptive statistics and correlations.

4. Results

Random effects model is preferable to analyze panel data, because the alternative specification with fixed effects is costly in terms of degrees of freedom lost (Green, 2000: 576). This is particularly true in my case due to a number of industry and year dummies in the model, which exacerbate the degree of freedom lost. I found a poor fit of fixed effects model, leading me to proceed with random effects model by using generalized least squares (GLS) regression. I standardized firm-specific managerial experience, organizational slack and organizational uncertainty, and then created the interaction terms to test the hypotheses. Table 3 reports the regression results for hypotheses testing.

Column (1) shows the results for control model only. Consistent with prior literature, prior performance, capital intensity and firm size have positive effects on future performance, while financial leverage has a negative effect on future performance. In columns (2) and (3), I

Table 2
Descriptive statistics and correlations.

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Future performance	0.02	0.42							
(2) Prior performance	0.02	0.30	0.24						
(3) Firm-specific managerial experience	11.77	9.85	0.06	0.10					
(4) Organizational slack	2.89	2.67	−0.03	0.01	−0.06				
(5) Organizational uncertainty	414.88	1781.52	0.03	0.03	0.15	−0.10			
(6) Capital intensity	1.68	8.41	−0.02	−0.16	−0.05	0.09	−0.02		
(7) Financial leverage	0.51	0.38	−0.21	−0.55	−0.01	−0.33	0.03	−0.01	
(8) Firm size	7.07	1.71	0.15	0.28	0.28	−0.44	0.36	−0.26	0.14

add firm-specific managerial experience, organizational slack and uncertainty respectively, and their interaction term to the control model.

In column (2), I test **H1** by examining the interaction term between firm-specific managerial experience and organizational slack, while controlling the main effect of organizational uncertainty. I found a statistically significant and positive interaction effect of firm-specific managerial experience and organizational slack on future performance ($\beta = 0.017, p < 0.05$). Thus, **H1** was supported.

In column (3), I test **H2** by examining the interaction term between firm-specific experience and organizational uncertainty, while controlling the main effect of organizational slack. I found a statistically significant and positive interaction effect of firm-specific managerial experience and organizational uncertainty on future performance ($\beta = 0.011, p < 0.05$). Thus, **H2** was also supported. Column (4) reports the results for full model, which provides similar results supporting both **H1** and **H2** (**H1**: $\beta = 0.018, p < 0.05$; **H2**: $\beta = 0.012, p < 0.05$).

5. Discussion and implications

In this study, I focus on the rent-generating potential of firm-specific managerial experience at varying levels of organizational slack and uncertainty. By investigating the joint effect of firm-specific managerial experience and organizational slack/uncertainty on firm performance, I deepen our understanding of the rent-generating potential of firm-specific managerial experience, which is intertwined with a firm's resources and business volatility. Using large-scale longitudinal data, I show that firm-specific managerial experience is associated with superior performance if it is combined with slack resources and if the firm faces high uncertainty.

This paper provides two major implications for the resource-based theory. First, it reminds that firm-specific managerial experience has rent-generating potential, which must be realized with the input of organizational resources. In particular, organizational slack provides

unused resources supporting managers' strategic decisions in capturing profitable opportunities unique to the firm. This study corroborates the resource-based theory suggesting that managers, especially their firm-specific managerial knowledge, are a critical source of sustainable competitive advantage (Penrose, 1959). Firm-specific managerial knowledge is valuable, rare, inimitable and non-substitutable to isolate the firm and to generate economic rent for the firm (Castanias & Helfat, 2001). It is "a special type of resource, specifically and organizationally embedded non-transferable firm-specific resource whose purpose is to improve the productivity of the other resources possessed by the firm" (Makadok, 2001: 389). The finding that firm-specific managerial experience has a positive interaction effect with slack resources on firm performance supports this view. In future research, simply examining the performance impacts of organizational resources and ignoring the role of managers in resource allocation may miss the holistic picture. It is the interplay of firm-specific managerial knowledge and organizational resources that generates sustainable competitive advantage.

Second, this paper identifies the boundary condition under which firm-specific managerial experience realizes its rent-generating potential in terms of uncertainty. Specifically, it transplants the contingency perspective on market turbulence shaping the value of dynamic capabilities (Teece, 2007; Teece et al., 1997) to a different research context of managerial capability. The paper broadens the resource-based theory with a focus on a firm's internal resources by taking into account the firm's organizational uncertainty resulted from the turbulence of its external environment. The finding of a positive interaction effect between firm-specific managerial experience and organizational uncertainty on firm performance suggests that, similar to dynamic capabilities, firm-specific managerial knowledge has greater rent-generating potential when uncertainty is high. Although the conventional resource-based theory has an internal focus, it is important for future study to consider the organizational characteristics resulted from external environment when studying the rent-generating potential of firm-specific

Table 3
Random effects GLS regression results.

	Role of test	(1)	(2)	(3)	(4)
Firm-specific managerial experience			0.003* (0.005)	0.002 (0.005)	0.002 (0.005)
Organizational slack			−0.007 (0.006)	−0.007 (0.006)	−0.007 (0.006)
Firm-specific managerial experience × organizational slack	H1 : +		0.017** (0.007)		0.018** (0.007)
Organizational uncertainty			−0.013** (0.006)	−0.037*** (0.013)	−0.040*** (0.013)
Firm-specific managerial experience × organizational uncertainty	H2 : +			0.011** (0.005)	0.012** (0.005)
Prior performance		0.113*** (0.021)	0.109*** (0.021)	0.106*** (0.021)	0.105*** (0.021)
Capital intensity		0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)
Financial leverage		−0.216*** (0.016)	−0.222*** (0.016)	−0.223*** (0.016)	−0.223*** (0.016)
Firm size		0.040*** (0.003)	0.041*** (0.004)	0.044*** (0.004)	0.045*** (0.004)
Industry dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Within R ²		0.008	0.008	0.008	0.008
Between R ²		0.506	0.520	0.510	0.521
Wald Chi-square		851.790***	865.380***	867.040***	871.570***

Note: $n = 7857$. Standard errors are in parentheses. Dependent variable is one-year lagged future performance.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

managerial knowledge or other resources. After all, industry organization plays a key role in the rent generation of firms besides resource competence.

This study has some limitations. First, a primary limitation of this study, as what is often seen in strategic management research using archival data, is that I am not able to directly observe firm-specific managerial knowledge. Instead, I infer its existence by examining firm-specific managerial experience. Future research may develop more fine-grained measure for firm-specific managerial knowledge based on survey methods. Second, this study only samples U.S. public firms from manufacturing industries. Since manufacturing sector is systematically different from service sector, it should be cautious when generalizing the findings to firms in service industries. Future research may collect data from private firms in service industries and other countries to test the findings. Last but not least, I focus on the roles of two particular organizational characteristics — slack and uncertainty — in shaping the rent-generating potential of firm-specific managerial experience in this study. I hope this paper will stimulate further research on the contingency of rent generation of firm-specific managerial experience due to other factors.

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