A Behavioral Perspective of International New Ventures: Slack, Early Internationalization, and Performance

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ABSTRACT

Investigating behavioral explanations for early internationalization in international new ventures (INVs), we focus on the relationships between different forms of slack (i.e. absorbed, unabsorbed, and potential slack), internationalization speed, and firm performance. Using data from high-technology industries, the results showed that absorbed and unabsorbed slack generally had a positive effect on internationalization speed. Equally important, the results also suggested a positive early internationalization --- performance relationship. Additionally, firm age positively moderated the relationship between available slack and internationalization speed, and it negatively moderated the relationship between recoverable slack and internationalization speed. Finally, recoverable slack and potential slack positively moderated the relationship between internationalization speed and firm performance.

INTRODUCTION

Since the publication of Oviatt and McDougall’s ‘Toward a theory of international new ventures’ (1994), more and more evidence suggest the emergence of a new distinctive form of organization, the “international new ventures” (INVs), are growing at a fast pace worldwide (Burgel and Murray 2000; Rialp, Rialp et al. 2005; Zahra 2005; Dana 2006). Regarding the call for a paradigm in the IE field (Zahra 2005), our contention is that a theory of the INV phenomenon must consider the behavioral factors that motivate managers in INVs to pursue major organizational changes like early internationalization. To address the timing for early internationalization, one needs to understand the perspective of managers situated within INVs and what motivates them to initiate slack search that eventuate in early internationalization. Thus, we propose a behavioral explanation (Cyert and March 1963) on early internationalization in the setting of INVs.

We sought to make several primary contributions to research on IE. First, we considered the issue of early internationalization as a behavioral decision. We present a behavioral explanation for the timing of early internationalization, as determined by when INVs have abundant levels of slack. Second, we extended behavioral theory to the domain of INVs. We applied the fundamental arguments of the behavioral theory of the firm and related literature to INVs. Third, we contributed to IE literature by empirically testing the direct relationship between early internationalization and performance. Autio (2005) stated that traditional internationalization theory focuses on explaining the internationalization process of firms, whereas the IE literature focuses on explaining early internationalization itself. We provided a further move into the early internationalization---performance relationship. Finally, we examined the effects of age on the slack-early internationalization relationship, and the effects of slack on the early internationalization---performance relationship, thereby strengthening the contributions of this study to IE theory and practice.

THEORETICAL FRAMEWORK

Slack as a Base for Early Internationalization

Although IE research has paid considerable attention on early internationalization by extending theories from the resource-based view (Lee, Lee et al. 2001; Zahra, Matherne et al. 2003; Zucchella, Palamara et al. 2007), network
theory (Sharma and Blomstermo 2003; Coviello 2006; Freeman, Edwards et al. 2006; Loane and Bell 2006; Mort and Weerawardena 2006; Zhou, Wu et al. 2007), transactions costs economics (Oviatt and McDougall 1994) and etc., we consider the behavioral perspective whose importance has been recognized in strategic management research (Bromiley 1991; Daniel, Lohrkeb et al. 2004; George 2005). The behavioral theory of the firm provides a starting point for theorizing about organizational change (Cyert and March 1963). In the behavioral view, slack is a resource cushion that firms can adapt to pressures internally and externally (Bourgeois 1981). Specifically, slack is defined as “the difference between total resources and total necessary payments” (Cyert & March, 1963: 42). When an organization has excess resources, slack search is initiated. Slack increases managerial tolerance for risk and allows organizations to pursue new opportunities, which are likely to result in organizational change (Greve 2003; Greve 2003). Previous research based on the behavioral theory of the firm suggested that high levels of slack result such as innovation (Nohria and Gulati 1996; Greve 2003), risk-taking (Wiseman and Bromiley 1996), market niche (Greve 1998) and firm performance (Bromiley 1991; Daniel, Lohrkeb et al. 2004). In addition, the behavioral theory also suggests that slack could be applied to a wider range of strategic behaviors like new market entry (Thompson 1967; Bourgeois 1981).

Slack as a Multidimensional Concept

However, the multi-dimensional nature of slack resources might add twists to their impacts on early internationalization. Bourgeois (1981) identified three different types of slack: absorbed, unabsorbed, and potential. Although other scholars call them with different names (e.g. absorbed slack is also known as recoverable slack, or high-discretion slack; unabsorbed slack is also known as available slack, or low-discretion slack), they have maintained the distinctions among these three types (Bourgeois and Singh 1983; Bromiley 1991; Daniel, Lohrkeb et al. 2004). These studies have forwarded classifications of slack based on ease of recovery, employability, flexibility, or managerial discretion (Sharfman, Wolf et al. 1988). Unabsorbed slack, or excess liquidity of an organization, is comparatively high at employability, flexibility, or managerial discretion. Examples of unabsorbed slack are cash, receivables, and high flexible machine capacity. Absorbed slack, or overhead expenditures of a firm, refers to excess resources in specialized assets. Consistently, slack can be viewed from an internal and external perspective (Geiger and Cashen 2002). On the one hand, internal slack involves resources within the firm, such as unabsorbed and absorbed slack. On the other hand, external slack refers to resources that are not currently within the firm and are potentially available to the firm (i.e. debt financing). In this vein, potential slack means the borrowing capacity of a firm. Although slack has been treated from a uniformly theoretical standpoint, scholars operationalize slack as a multi-dimensional concept that different forms of slack could be employed together (Sharfman, Wolf et al. 1988; Geiger and Cashen 2002; George 2005). Following this reasoning, it is likely the multi-dimensional nature of slack may add twists to the impacts on behavioral decisions. For example, previous studies indicate that different forms of slack may interact differently with behavioral outcome, such as firm performance (Greenley and Oktemgil 1998; Daniel, Lohrkeb et al. 2004), and innovation (Nohria and Gulati 1996). In the following paragraphs, we will present the arguments that highlight the expected differences between different forms of slack and early internationalization.

Accordingly, slack exists as financial reserves (Daniel, Lohrkeb et al. 2004). Organization such as INVs could maintain slack by holding cash or financial instruments (i.e. unabsorbed slack). Unabsorbed slack captures the extent to which INVs with excess resources that are available. From a behavioral perspective, unabsorbed slack may directly affect decisions to engage in risk-taking activities such as early internationalization. This effect occurs since surplus financial resources lead to less strict performance monitoring of uncertain activities. Stricter performance monitoring could cause risk-taking activities such as early internationalization to be aborted before an INV has accumulated substantial capability to know whether it will eventually improve firm performance. Unabsorbed slack eases capital restrictions and improves strategic choices of managers for early internationalization since excess financial resources lead to less strict performance monitoring of uncertain activities. Therefore, early internationalization is more likely to happen when INVs have high levels of unabsorbed slack. Specifically:

**H1:** In international new ventures, unabsorbed slack and internationalization speed has a positive relationship.

Slack resources also exist as a form of excess administrative resources, or absorbed slack (Greve 2003; Daniel, Lohrkeb et al. 2004). Absorbed slack refers to excess resources that are embedded within the firm, but could be
recovered if firms encounter financial difficulty (Geiger and Cashen 2002). Therefore, this type of slack has also been referred to as absorbed slack (Singh 1986). Examples of excess administrative resources are unused capacity, and specialized staffs like R&D people. In reality, INVs may hire more employees than necessary to make the best use of the unused capacity. While this may increase operation expenses and decrease efficiency, it provides a buffer in outputs. The extra outputs could not only help INVs to sustain the threats but also could be used as opportunities, such as exporting. This is because INVs reflect the backgrounds of their managers (Madsen and Servais 1997; Mort and Weerawardena 2006), and most of their managers’ international experience are abundant either as prior students abroad, or as prior job rotations (McDougall, Shane et al. 1994; Madsen and Servais 1997; Autio, Sapienza et al. 2000; Harveston, Kedia et al. 2000; Andersson and Victor 2003; Sapienza, Autio et al. 2006). When INV managers seek organizational change, their prior international experience is particularly consequential for its subsequent behavior. It occurs naturally that managers would likely to export the unused capacity, based on prior international experience. Therefore, greater levels of absorbed slack are likely to contribute earlier internationalization.

Moreover, prior study suggested that absorbed slack may enhance experimentation and help firms become more innovative (Nohria and Gulati 1996). INVs may hire more R&D people than needed, which may allow for more innovative projects by R&D personnel. In IE research, a wildly held premise of the reason for early internationalization is based on innovative products (Rennie 1993). Specifically, Madsen, Rasmussen & Servais (2000) studied 47 Danish INVs, and concluded that the secrets behind early internationalization are rooted in specialized products (Madsen, Rasmussen et al. 2000). Therefore, absorbed slack allows experimentation and risk-taking, which may have positive consequence on early internationalization. Specifically, $H_2$: In international new ventures, absorbed slack and internationalization speed has a positive relationship.

The last dimension, potential slack, means lending less than the INV could potentially lend (Daniel, Lohrkeb et al. 2004). Potential slack represent the ability to secure resources with the use of debt financing (Geiger and Cashen 2002). From the behavioral view, it is thus expected that at higher levels of potential slack, strategic choices like early internationalization are encouraged. This is because potential slack allows for less anxiety for risk-taking behaviors and as with unabsorbed and absorbed slack, higher level of potential slack would allow for less anxiety and leads to less strict performance monitoring of uncertain activities, which further increase the chance of early internationalization. In addition, it could also be expected that as potential slack rises, experimentation is encouraged. As noted, the IE literature argued that increased experimentation and innovation leads to early internationalization. Thus: $H_3$: In international new ventures, potential slack and internationalization speed has a positive relationship.

The Influence of Firm Age

Compared to established MNEs, INVs go international at younger age (Oviatt and McDougall 1997; McDougall, Oviatt et al. 2003). The behavioral theory of the firm argues that slacks tend to be time-dependent in its accumulation and deployment (Cyert and March 1963; Thompson 1967). Accordingly, firm age and slack resources are likely to be positively related. Therefore: $H_4$: In international new ventures, the impact of slack on internationalization speed will be more positive in older ventures then in younger ventures.

Early Internationalization---Performance Relationship

IE literature suggests that that early internationalization is beneficial for INVs, particularly on financial performance (Autio, Sapienza et al. 2000; Zahra 2005; Sapienza, Autio et al. 2006). Due to new ventures’ inherent advantage like flexibility, adaptability, and quick response time, INVs could achieve growth by using early internationalization as a strategy option, which provides opportunities to achieve economies of scale and scope. Early internationalization of INVs provides opportunities to get in touch with new resources and clients. Despite that fact that different geographic markets might bring new challenges, research on IE suggest that INVs have the “learning advantage of newness” (Autio, Sapienza et al. 2000; Zahra 2005). Learning advantage of newness suggests that INVs are more adept at learning over established firms during internationalizing stages, and it accumulates INVs’ knowledge base about foreign markets and adjusts internationalization strategies, risk preferences, and resource allocations. All of
which further affects INVs’ financial performance. With learning advantages of newness, early internationalization guarantees higher profitability in international market, which leads to higher performance. Therefore:

**H2**: In international new ventures, internationalization speed and firm performance has a positive relationship.

Yet this act could only achieve success with high-level of slacks. Slack could protect firms from the environmental pressures (Thompson 1967; Tan and Peng 2003), and it is particularly important for INVs since they often suffer from the liabilities of newness and foreignness (Knight and Cavusgil 2004; Zahra 2005; Mudambi and Zahra 2007). By being insulated from high-level of slack resources, INV managers could have more strategic moves to deal with liabilities that generated from early internationalization, and obtain higher performance. As discussed above, INVs with higher level of slack should be better able to organize strategies for early internationalization and deal with liabilities that might accompany with early internationalization, thus obtain higher performance. Alternatively, if INVs move into international markets at low level of slacks, they may not be able to provide the level of protection that could eliminate liabilities. In such cases they are more likely to have a lower performance. As slack rises, the positive relationship between internationalization speed and INV performance are likely to be reinforced. Thus:

**H6**: In international new ventures, the impact of internationalization speed on performance becomes more positive in ventures with higher level of slacks than in ventures with lower level of slacks.

**METHODS**

**Sample**

In this study, INVs were defined as new ventures headquartered in the United States, founded after 1980 (Knight and Cavusgil 2004), and issued initial public offerings while they were new ventures (Shrader, Oviatt et al. 2000; Shrader 2001). In addition, they must generated foreign sales in the first six years after inception, since it is a critical period for the survival of new ventures (Shrader, Oviatt et al. 2000; Zahra, Ireland et al. 2000; Shrader 2001). We collected data from multiple resources, namely, the Securities Data Corporation (SDC) Platinum and COMPUSTAT database.

**Measures**

**Firm Performance.** sales growth is the most relevant proxy since new ventures go international in order to pursue growth opportunities (Oviatt and McDougall 1994; Oviatt and McDougall 1995), and it guarantees us to compare with other IE studies (Zahra, Ireland et al. 2000; Shrader 2001). The specific formula to calculate sales growth is as follows:

\[ sales\, growth_{year\,i} = \frac{(total\, sales_{year\,i} – total\, sales_{year\, i-1})}{total\, sales_{year\, i-1}}, \]  

where i= the year that each INV generate foreign sales. To take into account the lag effect, we included one-year data posterior to the first foreign sale.

**Internationalization speed.** Internationalization speed of each INV was measured by computing the difference between the year of each INV’s inception and the year it generated foreign sales (inversely rescaled in the regression analysis). (Pla-Barber and Escriba’´Esteve 2006; Weerawardena, Mort et al. 2007).

**Slack Resources.** Slack resources were classified into three types: absorbed, unabsorbed, and potential (Singh 1986; Greve 2003). Unabsorbed slack was measured by current ratio (i.e. current assets divided by current liabilities) (Bromiley 1991; Bethel and Liebeskind 1998; Daniel, Lohrkeb et al. 2004). Absorbed slack was measured by selling, general and administrative expenses divided by sales (SG&A/sales) (Bromiley 1991; Bethel and Liebeskind 1998; Daniel, Lohrkeb et al. 2004). Following prior studies, we used two measures for potential slack: debt-to-sales ratio (Bergh and Lawless 1998) and interest coverage (Bromiley 1991). Debt-to-sales ratio catches the ability to raise loan capital in the future investment. The lower the ratio means higher the potential to generate loan capital for future flexibility. Thus, the results of debt-to-sales ratios should be explained inversely. Interest coverage, by definition, is the ratio of interest expense plus pretax income to interest expenses (Bromiley 1991).

As previous studies suggest, firm size could influence INV performance (Zahra, Ireland et al. 2000), and internationalization speed (Oviatt and McDougall 1997). Firm size was measured as the natural logarithmic transformation of its number of employees. In addition, this study also controls the effect of firm age (Bausch and Krist 2007; Elango and Sethi 2007). Firm age was measured as the difference between the year founded and the year 2007.
Finally, firm-level growth was also added since firms with higher growth rates tend to perform lower in the short-term (Elango and Sethi 2007). Since IE literature argues that early internationalization is supported from innovative products (Rennie 1993), we controlled R&D intensity by computing the ratio of R&D expenditures to total sales (Shrader 2001; Luo, Zhao et al. 2006). Data were collected from COMPUSTAT at the year that each INV generated foreign sales.

New ventures from the hi-tech industries benefited from the clustering effect by locating in the same location agglomeration such as Silicon Valley, the most important clustering site for high-technology firms in the United States (Luo, Zhao et al. 2006). To measure location agglomeration, we used a dummy variable with 1= INVs located in Silicon Valley and 0=otherwise. It was identified from the state code and county code in COMPUSTAT. Since the sample came from various high-technology industries, we need to control, to some extent, the different industry conditions under which INVs operated. In order to control for industry effects, we used four-digit Standard Industrial Classification (SIC) codes to classify the sample into three groups: Industry 1: High-technology manufacturing, Industry 2: Communication services, and Industry 3: Software and computer-related services. The classification was based on the online information posted by the AeA (American electronics Association).

RESULTS

Table 1 presents the descriptive statistics and correlation matrix. No correlation is greater than .53 and only 21 of 55 correlations are significant (p<.05). The results indicate an absence of serious multicollinearity threats. Furthermore, all the independent variables are centered, except dummy variables and firm size. This is to avoid potential high variance inflation factors (VIFs) generated by squared terms and interaction terms (the highest VIF is well below the benchmark of 10).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>s.d.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Location agglomeration</td>
<td>0.31</td>
<td>0.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Firm age</td>
<td>14.16</td>
<td>6.93</td>
<td>-0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. Firm-level growth</td>
<td>0.87</td>
<td>1.31</td>
<td>0.10</td>
<td>-0.07</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>4. Firm size</td>
<td>5.87</td>
<td>1.19</td>
<td>0.06</td>
<td>-0.09</td>
<td>0.17</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. R&amp;D intensity</td>
<td>1.23</td>
<td>6.18</td>
<td>0.11*</td>
<td>-0.08</td>
<td>-0.05</td>
<td>-0.19**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Current ratio</td>
<td>3.54</td>
<td>3.71</td>
<td>0.13*</td>
<td>0.02</td>
<td>-0.03</td>
<td>-0.20**</td>
<td>0.39**</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7. SG&amp;A/sales</td>
<td>0.76</td>
<td>1.60</td>
<td>0.12*</td>
<td>-0.26**</td>
<td>-0.06</td>
<td>-0.10</td>
<td>0.10</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Debt/sales</td>
<td>0.30</td>
<td>1.03</td>
<td>-0.05</td>
<td>-0.11</td>
<td>-0.08</td>
<td>0.14*</td>
<td>0.12*</td>
<td>0.01</td>
<td>0.18**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Interest coverage</td>
<td>-146.12</td>
<td>1116.70</td>
<td>0.05</td>
<td>0.13*</td>
<td>0.07</td>
<td>0.08</td>
<td>-0.21**</td>
<td>-0.15*</td>
<td>-0.06</td>
<td>0.02*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Internationalization speed</td>
<td>3.51</td>
<td>1.85</td>
<td>-0.01</td>
<td>-0.24**</td>
<td>0.15</td>
<td>0.04</td>
<td>0.09</td>
<td>-0.07</td>
<td>0.15**</td>
<td>0.12</td>
<td>-0.03</td>
<td></td>
</tr>
<tr>
<td>11. Firm Performance</td>
<td>1.83</td>
<td>6.08</td>
<td>0.05</td>
<td>-0.08</td>
<td>0.07</td>
<td>-0.13</td>
<td>0.38**</td>
<td>0.11*</td>
<td>0.53**</td>
<td>0.24**</td>
<td>-0.01</td>
<td>0.18**</td>
</tr>
</tbody>
</table>

Notes: N=335
* Correlation is significant at the 0.05 level 2-tailed. ** Correlation is significant at the 0.01 level 2-tailed.

Table 2 presents the regression results on internationalization speed. Model 1 is the base model, which includes control variables only. In Models 2, we add different forms of slacks to the equation. The inclusion of slack variables increases model fit and explanatory power significantly. Hypothesis 1 suggests a positive relationship between different forms of slack resources and internationalization speed. As shown in Table 2, the coefficient for available slack (i.e. current ratio) is positive and statistically significant (p<0.01). Thus, the results provide strong support for Hypothesis 1a. Hypothesis 1b states that there exists a positive relationship between recoverable slack (i.e. SG&A-to-sales ratio) and internationalization speed. As Table 2 shows, the coefficient for SG&A/sales is marginally statistically significant and positive (p< 0.1), providing some support for Hypothesis 1b. Likewise, Hypothesis 1c suggests a positive relationship between potential slack (i.e. debt-to-sales ratio and interest coverage ratio) and internationalization speed. As noted, the results of debt-to-sales ratios should be explained reversely since a firm with high debt-to-sales ratio actually means with little potential slack. The results shows that debt-to-sales has a negative relationship with internationalization speed, but not statistically significant. Also, the coefficient for interest coverage ratio indicates negative and insignificant relationship with internationalization speed. Thus, the results do not support Hypothesis 1c.
Table 2: Results of Regression Analysis for Internationalization Speed

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location agglomeration</td>
<td>0.10</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Industry 1: Hi-tech manufacturing</td>
<td>0.03</td>
<td>-0.07</td>
<td>-0.03</td>
<td>-0.06</td>
<td>-0.07</td>
</tr>
<tr>
<td>Industry 2: Communication services</td>
<td>-0.14</td>
<td>-0.23*</td>
<td>-0.24*</td>
<td>-0.22*</td>
<td>-0.23*</td>
</tr>
<tr>
<td>Industry 3: Software and computers</td>
<td>-0.19</td>
<td>-0.31*</td>
<td>-0.26*</td>
<td>-0.30*</td>
<td>-0.30*</td>
</tr>
<tr>
<td>Firm age</td>
<td>-0.34*</td>
<td>-0.26*</td>
<td>-0.28**</td>
<td>-0.72**</td>
<td>-0.35*</td>
</tr>
<tr>
<td>Firm-level growth</td>
<td>0.25**</td>
<td>0.13</td>
<td>0.17</td>
<td>0.12</td>
<td>0.13</td>
</tr>
<tr>
<td>R&amp;D intensity</td>
<td>-0.11</td>
<td>-0.21</td>
<td>-0.21</td>
<td>-0.16</td>
<td>-0.20</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.09</td>
<td>0.23*</td>
<td>0.24**</td>
<td>0.23*</td>
<td>0.26*</td>
</tr>
<tr>
<td>Current Ratio</td>
<td>0.42***</td>
<td>0.36***</td>
<td>0.41***</td>
<td>0.42***</td>
<td></td>
</tr>
<tr>
<td>SG&amp;A/sales</td>
<td>0.38*</td>
<td>0.39*</td>
<td>-0.03</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>Debt/sales</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.30</td>
<td>-0.38</td>
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<tr>
<td>Interest Coverage</td>
<td>-0.05</td>
<td>-0.09</td>
<td>-0.03</td>
<td>-0.06</td>
<td></td>
</tr>
<tr>
<td>Firm age x current ratio</td>
<td>0.29***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm age x SG&amp;A/ sales</td>
<td>-0.64*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm age x debt/ sales</td>
<td>-0.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm age x interest coverage</td>
<td>0.01</td>
<td></td>
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</tr>
<tr>
<td>R2</td>
<td>0.18</td>
<td>0.38</td>
<td>0.46</td>
<td>0.42</td>
<td>0.39</td>
</tr>
<tr>
<td>F Value</td>
<td>1.69</td>
<td>2.86***</td>
<td>3.56***</td>
<td>3.04***</td>
<td>2.45***</td>
</tr>
</tbody>
</table>

Notes: N=335. Values are standardized estimates, with standard errors in parentheses
* p < 0.10     ** p < 0.05   *** p < 0.01

To test the interaction effects of Hypotheses 2, this study includes the product terms of firm age with the different forms of slack resources. Hypothesis 2 states that firm age positively moderates and different forms of slack interact to have a positive effect on internationalization speed. The moderating effect of firm age on the slack-performance relationship (Hypothesis 2) is supported in available slack (Model 3), but not in recoverable slack and potential slack measures (Model 4 and Model 5, separately). Thus, these results provide partial support for Hypothesis 2.

To examine the interaction effects further, we graph the results of the moderation effects in Figure 1. In Figure 1a and Figure 1b, we show the effects on internationalization speed for two levels of firm age, high (plus one standard deviation from the mean) and low (minus one standard deviation from the mean). Next, we plot internationalization speed regressed on available slack and recoverable slack, respectively. Figure 1a shows that the highest level of internationalization speed is achieved when both firm age and available slacks are high. On the contrary, Figure 1b indicates that the highest level of internationalization speed is achieved when both firm age and recoverable slack are low.

![Figure 1a: Effects on Internationalization Speed of the Interaction of Firm Age and Available Slack](image_url)
Figure 1b: Effects on Internationalization Speed of the Interaction of Firm Age and Recoverable Slack

Table 3 presents the regression results on firm performance. Model 1 presents the control variables and slack resources. The results show that both available and recoverable slack has a positive and significant impact on firm performance, while potential slack exhibit different results. As noted, the results of the debt-to-sales ratio should be interpreted inversely. Thus, the debt-to-sales ratio has a negative and significant impact on firm performance. Interest coverage, on the other hand, does not have significant impacts on firm performance. Additionally, Hypothesis 3 suggests that internationalization speed has a positive effect on firm performance. In model 2, we add internationalization speed as the independent variable. The coefficient is positive and significant (p<0.05), providing support for the hypothesis. Hypothesis 4a, 4b, and 4c propose positive moderating effects on the interaction terms of internationalization speed and different forms of slack resources. The results provide support for the interaction terms of recoverable slack and debt-to-sales ratio, but not for the available slack and interest coverage. The coefficient for the interaction of internationalization speed and recoverable slack, and the interaction of debt-to-sales ratio are statistically significant and meet our expectations. Alternatively, the coefficients for the interaction between internationalization speed and available slack, and the interaction between internationalization speed and interest coverage are not statistically significant.

Table 3: Results of Regression Analysis for Firm Performance

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location agglomeration</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.04</td>
<td>0.01</td>
</tr>
<tr>
<td>Industry 1: Hi-tech manufacturing</td>
<td>-0.09</td>
<td>-0.10</td>
<td>-0.09</td>
<td>-0.10*</td>
<td>-0.08</td>
</tr>
<tr>
<td>Industry 2: Communication services</td>
<td>-0.08</td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.08*</td>
<td>-0.08</td>
</tr>
<tr>
<td>Industry 3: Software and computers</td>
<td>-0.12**</td>
<td>-0.13**</td>
<td>-0.13**</td>
<td>-0.11*</td>
<td>-0.11*</td>
</tr>
<tr>
<td>Firm size</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>Firm age</td>
<td>0.02</td>
<td>0.05</td>
<td>0.04</td>
<td>0.00</td>
<td>0.05</td>
</tr>
<tr>
<td>Firm-level growth</td>
<td>0.03</td>
<td>0.02</td>
<td>0.02</td>
<td>0.00</td>
<td>0.03</td>
</tr>
<tr>
<td>Current ratio</td>
<td>0.11**</td>
<td>0.12**</td>
<td>0.11**</td>
<td>0.13**</td>
<td>0.12**</td>
</tr>
<tr>
<td>SG&amp;A/sales</td>
<td>0.48***</td>
<td>0.47***</td>
<td>0.47***</td>
<td>0.09***</td>
<td>0.48***</td>
</tr>
<tr>
<td>Debt/sales</td>
<td>0.14***</td>
<td>0.12**</td>
<td>0.12**</td>
<td>0.08**</td>
<td>0.29***</td>
</tr>
<tr>
<td>Interest coverage</td>
<td>0.02</td>
<td>0.02</td>
<td>0.03</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Internationalization speed</td>
<td>0.12**</td>
<td>0.12**</td>
<td>0.18***</td>
<td>0.10***</td>
<td></td>
</tr>
<tr>
<td>Internationalization speed x Current ratio</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationalization speed x SG&amp;A/sales</td>
<td>0.47***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationalization speed x Debt/sales</td>
<td>-0.20***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationalization speed x Interest coverage</td>
<td>-0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>0.28</td>
<td>0.29</td>
<td>0.29</td>
<td>0.36</td>
<td>0.30</td>
</tr>
<tr>
<td>F Value</td>
<td>11.55***</td>
<td>11.22***</td>
<td>10.49***</td>
<td>14.56***</td>
<td>10.27***</td>
</tr>
</tbody>
</table>

Notes: N=335. Values are standardized estimates, with standard errors in parentheses
* p < 0.10  ** p < 0.05  *** p < 0.01
To examine the moderating effect of slack resources on the relationship between internationalization speed and firm performance, we graph the relationship in Figure 2a and 2b, respectively. As shown in Figure 2a, the highest level of performance is achieved when internationalization speed and recoverable slack are high. The results in Figure 2b exhibit contrary results. As noted, a firm with high debt-to-sales ratio actually means with little potential slack. Thus, the results of Figure 2b should be explained reversely. Figure 2a and 2b also suggests the importance of recoverable slack for firm performance. Both of the figures exhibit a major difference in performance when internationalization speed is high but recoverable slack and potential are low, respectively. If INVs has a low level of recoverable slack or potential slack, it will perform better if it remains in domestic markets. Therefore, accelerated internationalization speed is important to make the best use of strong recoverable slack and potential slack.

**Figure 2a:** Effects on Performance of the Interaction of Recoverable Slack and Internationalization Speed

**Figure 2b:** Effects on Performance of the Interaction of Potential Slack and Internationalization Speed

*Note:* As noted, a firm with high debt-to-sales ratio actually means with little potential slack. Thus, the results of this chart should be explained reversely.

**DISCUSSION AND CONCLUSIONS**

The finding suggests that specific forms of slack may have different impacts on internationalization speed. The divergent impacts on different forms of slacks suggest that prior theory, either the behavioral theory, or IE literature, may not be enough to explain the role of slack in INVs. In fact, the findings are collaborating with prior studies, in which Tan and Peng (2003) call for a contingency perspective to specify the nature of slacks. As expected, the results suggest a positive relationship between available slack and internationalization speed. Likewise, the results suggest a positive relationship between recoverable slack and internationalization speed. The two measures of potential slack exhibit different results. The debt-to-sales ratio relates negatively with internationalization speed, which indicates positive impacts of potential slack, but the result is not significant. Insignificantly, interest coverage has a positive relationship with internationalization speed. One of the possible reasons for the unexpected results in potential slack may generated from the measurement. Although using the debt-to-sales ratio and the interest coverage are conventions in prior slack studies, it may seem like not appropriate in the setting of INVs. Unlike previous studies that are mostly set in established firms, the ability of INVs to raise loan capital or generate interest expenses is comparatively low. In this sense, previous measurement in potential slack may not suit in INVs. The present results should be suggestive enough to persuade scholars to pay close attention to other measurements of potential slack, such as the debt-to-equity ratio.
(Bromiley 1991), the debt-to-assets ratio (Brush, Bromiley et al. 2000), and debt-to-total capital (Tallman and Li 1996). In sum, the results suggest the argument of the linear positive slack-internationalization speed relationships in all forms of slack is generally supported. But it may also need to do some modifications in the setting of INVs. Thus, this study calls for a contingency perspective to specify the nature of slack when discussing its impact on internationalization speed.

Our study is the first to test and find support for the impact of slack resources on internationalization speed, as well as the performance of INVs using empirical data sets. The finding that available and recoverable slack has a positive relationship with internationalization speed is meaningful and valuable for scholars, entrepreneurs, and managers of INVs. Also, prior studies have tested the implications of slack and financial performance in the setting of established firms, but not in the setting of INVs. By doing so, this study makes strong theoretical and empirical contributions by informing both the accelerated internationalization literature and strategic literature.

Interestingly, the stronger predictors of internationalization speed are available slack and recoverable slack. This study thus concludes that the most important resources for internationalization of the INVs are available slack and recoverable slack. Therefore, we show that an international strategy is needed based on valuable resources and that available slack and recoverable slack are important resources for the internationalization speed of INVs.

The present study also hypothesizes positive moderating effects of firm age and different forms of slack resources. The results show that firm age indeed has a positive moderating effect on the relationship between available slack and internationalization speed. Older INVs are likely to go international faster when they have more available slacks. In other words, the rapid internationalization speed is achieved when INVs are older accompanied by high available slacks. Being older mean that these INVs have better experiences, if they also have strong available slacks, it would definitely helps INVs to execute their internationalization strategies, regardless the environmental shocks. Interestingly, the results show that firm age has a negative moderating effect on the relationship between recoverable slack and internationalization speed. In that sense, older INVs are likely to go international slower when they have more recoverable slacks. As noted previously, the three types of slacks: available, recoverable, and potential, are differentiated by the extent to which slack is available (Bromiley 1991). Conceptually, firms cannot immediately employ recoverable slack to address external opportunities or threats (Bourgeois and Singh 1983). During the period that turning recoverable slack into available slack, a lack of slack may force INVs to operate in a conservative manner, particularly for INVs with older firm ages. The reason is probably that when these INVs gets older, they are also likely to getting lost of the entrepreneurship spirits in international expansion strategies. Firm age does not have a moderating effect on neither form of potential slack measures. Examination of the main effects of potential slack provides part of the answer for the absence of moderation.

As expected, internationalization speed has a positive relationship with performance. The result is collaborating with the IE literature that early internationalization is beneficial, even given the negative fact that most INVs are young and inexperienced (Acedo and Jones 2007; Weerawardena, Mort et al. 2007). The results could be explained as early internationalization is more useful in today’s environment given that more opportunities wait in the foreign market, and early trial and error may provide useful information for effective subsequent entries.

REFERENCES


