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Equity-based Financial Slack and New Venture Performance: Evidence from matched single-founder ventures

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Abstract

This paper examines whether equity-based financial slack in the form of relatively high levels of founding equity will systematically hurt new venture performance. Drawing on data on 445 single-founder new ventures over the period 2004-2007, it uses the propensity score matching method to estimate the average effect of equity-based financial slack on new venture performance. It finds a negative and statistically significant average effect. This implies that single-founder new ventures that started out with relatively high levels of founding equity subsequently had a relatively low rate of profitability on average. The underlying mechanisms behind this empirical finding are explored, and the implications for the development of existing theory and practice are discussed.

JEL classification: G32, L26, M13

Key words: Financial slack; Founding equity; New venture; Propensity score matching.

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1. Introduction

Although financial slack in one form or another may matter for firm performance, its impact on the performance of new ventures is not fully understood. In the field of management, (positive) financial slack is commonly viewed as the excess financial resources that are at the disposal of managers when current working capital exceeds what is currently required to operate the business. Importantly, this working capital-based perspective provides insights into the mechanisms or channels through which excess financial resources may inhibit or foster growth in relatively established firms, or those that are approaching the maturity stage of entrepreneurship (Bradley, Wiklund and Shepherd, 2011; George, 2005; Greenley and Oktengil, 1998; Love and Nohria, 2005; Mishina, Polluck and Porac, 2004; Patzelt, Shepherd, Deeds and Bradley, 2008; Tang and Peng, 2003; Voss, Sirdeshmukh and Voss, 2008).

While generally useful, this working capital-based view of financial slack does not allow scholars to say much about the potential impact of excess financial resources on the performance of new ventures with little, if any, excess working capital. However, this paper argues that underutilized founding equity may constitute a potential form of financial slack in business startups. Specifically, a new venture with equity-based financial slack may be holding a relatively large share of founding equity in the form of precautionary savings. These savings may very well be in excess of what the new venture needs to grow on par with other new ventures at a similar stage of the entrepreneurial process. This leads to the following question that is not adequately addressed by the existing literature: do new ventures that start out with relatively high levels of founding equity

subsequently underperform relative to their counterparts that start out with relatively low levels of founding equity?

To answer this question, this paper uses the propensity score matching method to quantify the average effect of equity-based financial slack on the performance of single-founder new ventures. In general terms, it provides evidence which suggests that new ventures that started out with relatively high levels of founding equity subsequently had a relatively low rate of profitability on average. This article makes a number of contributions to the existing literature. First, since the existing literature has largely focused on the effect of working capital-based financial slack on relatively established entrepreneurial firms (Bradley et al., 2011), it makes original contributions by not only conceptualizing financial slack in terms of working capital and founding equity, but especially in terms of the new systematic evidence that it provides on the effect of equity-based financial slack on the performance of new ventures.

Finally, this paper particularly contributes to an emerging line of research that has begun to closely examine how equity-based financial slack may impact the performance of new ventures. Perhaps the most notable example of studies along this line is that of Cavarretta and Furr (2011). In their study, the authors suggest that means-based (as opposed to variance-based) statistical methods are unlikely to establish that equity-based financial slack has a statistically significant average effect on new venture performance. However, this paper has applied the propensity score matching method and finds a negative and statistically significant average effect. In doing so, it advances this research agenda.

The remainder of this article proceeds as follows. In the next section, I develop the theoretical framework and the main hypothesis. This is followed by a description of the data,

sample, measures and statistical methods. The results are then presented. The final section discusses the key findings and concludes.

2. Theoretical Framework

According to the equity-based characterization of financial slack described above, new ventures may have financial slack when precautionary savings constitute a significant share of the initial equity contributions of founders. In principle, the decision to hold precautionary savings may reflect prudence on the part of founders faced with risks in the form of potential losses on business transactions, or higher than expected business development costs, during the birth stage of the entrepreneurial process. By setting aside some personal savings, the founder may be able to absorb unexpected losses while keeping the new venture afloat.

The foregoing arguments suggest that new venture founders may not just be faced with a test of how fast they can grow their businesses, but also whether they can avoid “crashing and burning” in the process of doing so. This in turn implies that founders may be guided by some underlying risk management framework in the pursuit of sustainable growth. However, this perspective has not been emphasized in the burgeoning resource-growth literature that draws on Penrose’s (1959) theory of firm growth. This is perhaps because this theoretical perspective is essentially concerned about how, for a given managerial capacity, established firms may fuel growth by better utilizing idle liquid resources. But founders and managers in new ventures and established firms, respectively, seem to face a fundamentally different set of opportunities and constraints; alternatively, they seem to face a different set of growth challenges that are perhaps best addressed on their own terms.

The risk management perspective described above offers an alternative way to conceptualize how founders in particular may be trying to safely grow their new ventures. A central tenet is that

founders have incentive to hold part of the equity they invest in their own business in the form of precautionary savings. But if founders hold savings in reserve rather than use them to acquire strategic assets and new customers, or secure ideal business locations, among others; then the new venture may neither grow as fast as it can, nor generate the most value from the available founding equity. At the same time, the founder may be willing to accept a lower return on assets in exchange for a lower perceived risk of business failure.

Meanwhile, Cavarretta and Furr (2011) suggest that relatively high levels of founding equity in new ventures may actually distract founders; that is, they may not focus on the needs of potential customers. In addition, they may stubbornly embrace failing business models or ideas. Thus, new ventures with relatively high levels of founding equity may not be as nimble and responsive to changes in their business environment relative to their counterparts with relatively low levels of founding equity. If so, the former may not rapidly acquire new customers, and may even lose what may be a small share of its target market. This in turn may lead to relatively low profitability.

Altogether these arguments support the following hypothesis: *relatively high levels of founding equity will lead to relatively low rates of profitability among new ventures that survive the birth stage of the entrepreneurial process.*

3. Research Method

3.1. Data and Sample

To empirically evaluate the hypothesis above, this study draws on publicly available firm-level data on new ventures from the Kauffman Firm Survey (KFS). This survey has tracked 4,928 new businesses that started operations in the United States since 2004. The sample used in this study constitutes 445 single-founder new ventures that continuously operated over the period 2004-2007. Based on the descriptive statistics reported in Table 1 (i.e. column 2, mean), the average new

venture in this sample is a micro service-based business that operates either in the retail, transportation or the information sector. In addition, this new business is likely to have been founded by a Caucasian male with an associate degree, and almost 15 years of working experience in the industry in which the business primarily operates. Finally, the founder is likely to be based either in the Midwest region or the South region.

3.2.Measures

3.2.1. Dependent variable

The dependent variable is new venture performance, which is measured by return on assets (ROA). Although the use of sales growth is common in prior studies (Bradley et al., 2011), ROA was chosen in accordance with the theoretical framework developed above. Specifically, to the extent that the holding of relatively high levels of precautionary savings limit investment in strategic assets, or engender complacency among founders, the consequences are likely to be manifested in relatively low rates of profitability. Importantly, the data on the profits/(losses) and the assets of new ventures in the KFS survey are reported in the form of nine ordered value ranges (i.e. 1, \$500 or less; 2, \$501 to \$1,000; 3, \$1,001 to \$3,000; 4, \$3,001 to \$5,000; 5, \$5,001 to \$10,000; 6, \$10,001 to \$25,000; 7, \$25,001 to \$100,00; 8, \$100,001 to \$1,000,000; 9, \$1,000,001 or more). Using the reported values 1 to 9, the ROA was estimated for each new venture in the sample.

3.2.2. Equity-based financial slack

Central to the notion of equity-based financial slack is the idea that new venture founders may hold a fraction of founding equity in the form of precautionary savings. However, data limitations preclude a direct measure of the share of precautionary savings in founding equity. To approximate the proportion of precautionary savings in founding equity, the following approach was

adopted. Founding equity was normalized by the number of full-time employees to yield founding equity per full-time employee. It was then presumed that then when founding equity per full-time employee is above its median level, the share of precautionary savings in founding equity is also above its median level among comparable new ventures; that is, a positive correlation is expected between the relative level of founding equity and the relative level of precautionary savings across comparable new ventures. The degree of correlation is expected to increase as the degree of similarity among new ventures increase. The use of the propensity score matching method as described below has the potential to accomplish this; hence, new ventures are characterized by the binary variable *financial slack* with value 1 if founding equity per employee exceeds the median level, and 0 otherwise.

3.2.3. Control variables

To mitigate a variety of conflating influences on the relationship between equity-based financial slack and new venture performance, a number of controls were incorporated in the statistical analyses that are described in detail below. These controls are at the level of the founder, firm, industry and sector, and the macro economy. I controlled for the following characteristics of the founder: race, gender, years of experience in the industry in which the new business operates and the level of education.

Controls for race are warranted because several studies on entrepreneurship in the U.S. have shown that Asians, and to a lesser extent whites, are more likely to start a new venture relative to blacks and Latinos (Bates, 1997; Fairlie, 2004; Fairlie and Meyer, 2000; Myrdal, 1944). In addition, the latter may not only face far more barriers in credit markets (Blanchard, Zhao and Yinger, 2008), but are also more likely to operate their businesses less profitably (Fairlie and Robb, 2007a, 2007b). Controls for gender are also warranted based on prior U.S.-based studies that find gender-based

differences in the propensity for entrepreneurship, startup capital, access to finance, and sales performance (Birley, 1989; Blanchard et al., 2008; Brush, 1992; Kim, 2006; Lee and Rendall, 2001). Finally, the importance of human capital for both the propensity for entrepreneurship and new venture performance justifies the use of controls for the industry experience and the education of the founder (Bates, 1995, 1997; Casson, 1995; Dunkelberg, Cooper, Woo and Denis, 1987; Evans and Leighton, 1989; Shane, 2003).

At the firm and industry-sector levels, I controlled for the following: firm size (i.e. number of full-time employees), access to bank credit and family loan, industry and sector characteristics. It is important to control for firm size because larger firms may have greater earning potential due to their better access to strategic resources and capabilities relative to their small counterparts. Meanwhile, to the extent that multiple-founder new ventures have greater human capital resources relative to single-founder new ventures, new venture performance may be affected by both equity-based financial slack and human capital slack (Cavarretta and Furr, 2011). To mitigate the conflating influence of the latter, only single-founder new ventures were included in the sample.

The use of controls for access to both bank credit and family loans is justified by the general view that financing constraints may force enterprising individuals to forego lucrative commercial opportunities. Controls for industry-sector characteristics are warranted because service-based new ventures may have better prospects for survival than their counterparts in the manufacturing sector. This so because the former are likely to face relatively low entry costs and minimum efficient scale requirements (Acs and Audretsch, 1989; Arauzo-Carod and Segarra-Blasco, 2005; Bhide, 2000).

Finally, I controlled for macro-level influences on new venture performance by explicitly taking into account the census regions in which the new venture founder is based (i.e. Northeast,

Midwest, South and West). This is justified considering the potential for differences in economic conditions and institutions across regions (Armington and Acs, 2002; Acs and Armington, 2004 and 2006; Reynolds, Storey and Westhead, 1994). Cross-regional differences along these lines may not only engender cross-regional differences in the rates of new business formation across regions, but also in terms of new venture performance.

3.2.4. Statistical Methods

In Table 1, summary statistics are provided for the dependent variable (i.e. ROA), explanatory variable (i.e. financial slack) and the control variables. To estimate the average effect of financial slack on ROA, two estimators were employed. As a starting point, the OLS estimator was applied. In a general sense, this estimator may be viewed as a type of matching estimator; that is, new ventures are matched on the basis of a vector of covariates. The OLS regression model served as the baseline model in this context. The statistical analysis was then taken beyond this baseline model with the introduction of the propensity score matching estimator (Heckman, Ichimura and Todd, 1998; Rosenbaum and Rubin, 1983). Unlike the OLS estimator that uses information from a set of multi-dimensional covariates to match new ventures, the propensity score matching estimator uses information from a single-dimensional scalar variable (i.e. propensity scores) to match new ventures. The latter is deemed to be superior because it circumvents the inherent problem of closely matching new ventures on the basis of multi-dimensional variables. Furthermore, the propensity score matching estimator may do a better job at mitigating sample selection bias or omitted variable bias.

To the extent that the issue of multicollinearity arises, the key concern is whether financial slack is correlated with a control variable. It can be seen from Table 1 that there is a negative and statistically significant correlation between financial slack and firm size. However, given the

relatively small magnitude of the correlation coefficient and the size of sample used in this study, it is possible to untangle the average effect of financial slack on new venture performance. To mitigate the potential bias in the estimates due to violations of the classical linear regression assumptions (i.e. heteroskedasticity), robust standard errors were computed for the OLS estimator; and the bootstrapped standard errors were bias-corrected for the propensity score matching estimator. Finally, to mitigate endogeneity bias or concerns about reverse causality, financial slack and all control variables were measured in 2004, the birth year of the new ventures in the sample; and the dependent variable was measured in 2005, 2006 and 2007 to allow for the potentially lagged effects of financial slack on new venture performance. The OLS and propensity score matching models were estimated using Stata (Becker and Ichino, 2002).

[Insert Table 1 about here]

4. Results

The results for the OLS regression model are presented in Table 2. This model can explain 6 to 7 percent of the variation in ROA over the period 2005 to 2007. Perhaps the most robust results across these years are that firm size (i.e. number of full-time employees) has a negative and statistically significant effect on ROA, and serviced-based new ventures seem to have a higher ROA on average relative to their non-service-based counterparts. While financial slack has been found to have a negative effect on ROA, this effect has not been found to be statistically significant over the period of study. Thus, while the finding of a negative effect is consistent with the hypothesis stated in this paper, the evidence does not strongly support the hypothesis because the magnitude of this average effect has not been found to be statistically different from zero.

[Insert Table 2 about here]

The results for the propensity score matching model are presented in Table 3. In panel A, probit regression estimates were generated to compute the propensity scores that were used to match the new ventures. The probit model can explain 33.1 percent of the variation in financial slack. As can be seen, firm size and gender are the primary predictors of whether new ventures will have relatively high levels of founding equity. The effect is negative for firm size and positive for gender; that is, the probability that new ventures will have a relatively high level of founding equity is relatively high for small and male-owned business startups. The propensity score matching estimates of the average effect of financial slack on ROA are reported in panel B of Table 3. For all the years (i.e. 2005-2007) and matching methods (i.e. nearest neighbor, radius, kernel and stratification matching) considered, the average effect is not only found to be negative, but also statistically significant either at the 5 or 10 percent level of significance in 2006. The estimates of this average effect range from -16.8 to -25.4 percent over the period of study; hence, the average effect is significant in economic terms. Altogether, the results strongly support the hypothesis articulated by this study.

[Insert Table 3 about here]

5. Discussion and Conclusion

This study has examined the question of whether new ventures that start out with relatively high levels of founding equity subsequently have a relatively low rate of profitability on average. It primarily contributes to the existing literature on financial slack and firm performance by providing new systematic evidence that suggests that relatively high levels of founding equity may adversely impact the performance of new ventures during the birth stage of the entrepreneurial process. Specifically, it has been found that the average return on assets for new ventures with relatively high

levels of founding equity may be as much as 25 percent lower than that of comparable new ventures with relatively low levels of founding equity during the early years of operations.

The adverse effects of equity-based financial slack are attributed to the following two mechanisms. First, to the extent that relatively high levels of founding equity translates into relatively high levels of precautionary savings, the founder may be sacrificing higher risk-adjusted returns on a variety of commercial activities for a potentially sustainable growth rate. Second, the presence of precautionary savings may not only encourage founders to stick with ineffective business models, but may also draw their attention away from the potential customers that they ought to pursue (Cavarretta and Furr, 2011). These two mechanisms are not mutually exclusive, and may jointly contribute to relatively low rates of profitability.

By conceptualizing financial slack in terms of working capital and founding equity, this paper provides a basis for studying the effect of financial slack on the performance of both new ventures and relatively established entrepreneurial firms. Studies at the intersection of entrepreneurship and management that exclusively apply the working capital-based measure of financial slack are likely to ignore new ventures with little, if any, excess working capital. But the availability of this equity-based construct of financial slack provides a basis for the development of resource-growth theory that is specifically tailored to new ventures.

Finally, the finding that relatively high levels of founding equity may hurt new venture performance suggests that it can no longer be taken for granted that ‘more capital is better than less’ as it relates to new ventures. Thus, it is worthwhile for scholars to further explore in future studies how new ventures may make better use of apparently limited internal capital without compromising their capacity to absorb unexpected losses that may materialize over the course of business development and growth.

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Table 1

Means, standard deviations and correlations in the year of birth, 2004

	Mean	SD	1.	2.	3.	4.	5.	6.
1. Financial slack ^a	0.479	0.500	1.000					
2. Firm size ^b	2.914	3.776	-0.414***	1.000				
3. Service-based ^c	0.881	0.324	0.061	0.012	1.000			
4. Bank credit ^d	0.229	0.421	-0.041	0.124***	-0.064	1.000		
5. Family loan ^d	0.121	0.327	0.057	-0.066	-0.033	-0.006	1.000	
6. High-tech industry ^c	0.139	0.347	0.043	-0.061	0.008	0.028	-0.030	1.000
7. Census region ^e	2.616	1.026	0.043	0.002	-0.063	0.017	-0.049	0.170***
8. Industry experience of founder (years)	14.142	10.863	-0.092*	0.077	0.155***	-0.141**	-0.162***	0.052
9. Caucasian ^f	0.863	0.344	-0.011	0.033	0.035	0.031	-0.112*	-0.010
10. Education ^f	6.445	2.126	0.003	0.011	0.002	0.002	-0.091 ⁺	0.133**
11. Gender ^f	0.768	0.422	0.014	0.055	0.045	-0.005	-0.041	0.036
12. Sector ^c	49.784	15.140	0.040	-0.073	0.176	-0.041	-0.033	-0.132**
			7.	8.	9.	10.	11.	12.
7. Census region ^e			1.000					
8. Industry experience of founder (years)			-0.062	1.000				
9. Caucasian ^f			-0.118**	0.082 ⁺	1.000			
10. Education ^f			0.071	0.113*	-0.033	1.000		
11. Gender ^f			-0.050	0.237***	0.137**	-0.033	1.000	
12. Sector ^c			-0.066	-0.049	-0.070	0.112*	-0.072	1.000

⁺ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; $n = 445$.

^a financial slack status has value 1 if founding equity per employee exceeds the median level, 0 otherwise.

^b firm size = number of full-time employees.

^c service-based = 1 if new venture provides a service, 0 otherwise; high-tech industry = 1 if new venture operates in a high-tech industry, 0 otherwise; sector refers to the 20 broad NAICS sectors.

^d bank credit = 1 if founder has a bank loan, 0 otherwise; family loan = 1 if founder has a family loan, 0 otherwise.

^e census region (location of founder): 1, Northeast; 2 – Midwest; 3 – South, and 4 – West.

^f caucasian = 1 if the founder is white, 0 otherwise; education (of founder) : 1 - less than 9th grade, 2 – some high school, but no diploma, 3 – high school graduate (diploma or GED), 4 – technical, trade or vocational degree, 5 – some college, but no degree, 6 – associate's degree, 7 – bachelor's degree, 8 – some graduate school but no degree, 9 – master's degree, and 10 – professional school or doctorate.

gender (of founder) = 1 if the male, 0 otherwise.

Table 2

OLS estimates of the effect of financial slack on return on assets.

	2005		2006		2007	
	Estimates	Robust SE	Estimates	Robust SE	Estimates	Robust SE
Financial slack ^a	-12.412	11.251	-11.363	8.516	-13.395	9.982
Firm size ^b	-4.872 ^{***}	1.167	-2.987 [*]	1.518	-3.958 ^{**}	1.447
Service-based ^c	23.505 ⁺	13.066	25.055 [*]	11.942	33.912 ⁺	18.109
Bank credit ^d	-3.835	10.083	11.980	8.882	9.748	10.947
Family loan ^d	-18.169	18.396	-16.401	14.807	-17.536	16.298
High-tech industry ^c	-18.445	21.629	-26.879 [*]	13.121	-13.684	13.061
Industry experience of founder (years)	0.297	0.526	0.307	0.395	0.668	0.441
Caucasian ^f	35.807	22.648	10.479	13.660	6.550	16.818
Education ^f	1.137	2.272	1.554	1.783	3.190	2.515
Gender ^f	4.132	12.881	24.222 [*]	10.413	22.474 [*]	11.436
Sector controls ^c	Yes		Yes		Yes	
Regional controls ^e	Yes		Yes		Yes	
Constant	-46.211	32.842	-43.126	27.790	-52.283	42.935
R ²	0.060		0.070		0.065	
Observations	445		445		445	

⁺ $p < .10$; ^{*} $p < .05$; ^{**} $p < .01$; ^{***} $p < .001$.

^a financial slack status has value 1 if founding equity per employee exceeds the median level, 0 otherwise.

^b firm size = number of full-time employees.

^c service-based = 1 if new venture provides a service, 0 otherwise; high-tech industry = 1 if new venture operates in a high-tech industry, 0 otherwise; sector refers to the 20 broad NAICS sectors.

^d bank credit = 1 if founder has a bank loan, 0 otherwise; family loan = 1 if founder has a family loan, 0 otherwise.

^e census region (location of founder): 1, Northeast; 2 – Midwest; 3 – South, and 4 – West.

^f caucasian = 1 if the founder is white, 0 otherwise; education (of founder) : 1 - less than 9th grade, 2 – some high school, but no diploma, 3 – high school graduate (diploma or GED), 4 – technical, trade or vocational degree, 5 – some college, but no degree, 6 – associate's degree, 7 – bachelor's degree, 8 – some graduate school but no degree, 9 – master's degree, and 10 – professional school or doctorate.

gender (of founder) = 1 if the male, 0 otherwise.

Note: All regressors are measured in 2004, the year of the new ventures' birth.

Table 3

Panel A: Probit regression estimates for the computation of propensity scores.

	Estimates	SE
Firm size ^b	-0.792 ^{***}	0.090
Service-based ^c	0.147	0.235
Bank credit ^d	0.287	0.189
Family loan ^d	0.206	0.234
High-tech industry ^c	0.025	0.209
Industry experience of founder (years)	-0.009	0.007
Caucasian ^f	-0.146	0.216
Education ^f	0.016	0.035
Gender ^f	0.327 ⁺	0.173
Sectoral controls ^c	Yes	
Regional controls ^e	Yes	
Constant	1.182 [*]	0.518
Pseudo R ²	0.331	
Observations	445	

Panel B. Propensity score matching estimates of the average effect of financial slack^a on return on assets.

Matching method	2005		2006		2007	
	Estimates	Bootstrapped SE ^g	Estimates	Bootstrapped SE ^g	Estimates	Bootstrapped SE ^g
Nearest neighbor matching	-13.277	17.373	-25.385 [*]	10.743	-7.068	17.379
Radius matching	-19.699	14.586	-16.957 ⁺	10.095	-12.299	16.271
Kernel matching	-18.387	14.932	-16.813 ⁺	9.669	-13.661	14.822
Stratification matching	-20.322	12.685	-18.266 [*]	9.054	-16.900	12.984

⁺ $p < .10$; ^{*} $p < .05$; ^{**} $p < .01$; ^{***} $p < .001$.^a financial slack status has value 1 if founding equity per employee exceeds the median level, 0 otherwise.^b firm size = number of full-time employees.^c service-based = 1 if new venture provides a service, 0 otherwise; high-tech industry = 1 if new venture operates in a high-tech industry, 0 otherwise; sector refers to the 20 broad NAICS sectors.^d bank credit = 1 if founder has a bank loan, 0 otherwise; family loan = 1 if founder has a family loan, 0 otherwise.^e census region (location of founder): 1, Northeast; 2 – Midwest; 3 – South, and 4 – West.^f caucasian = 1 if the founder is white, 0 otherwise; education (of founder) : 1 - less than 9th grade, 2 – some high school, but no diploma, 3 – high school graduate (diploma or GED), 4 – technical, trade or vocational degree, 5 – some college, but no degree, 6 – associate's degree, 7 – bachelor's degree, 8 – some graduate school but no degree, 9 – master's degree, and 10 – professional school or doctorate.

gender (of founder) = 1 if the male, 0 otherwise.

^g bootstrapped standard errors are bias-corrected.

Note: All regressors are measured in 2004, the year of new ventures' birth.