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Manufacturing Firm Survival and Growth in Vietnam: Explaining Vietnam's 'Missing' SMEs

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ABSTRACT

This article explores the reasons behind the pronounced rightward skew in the firm size distribution, or Vietnam's 'missing' SMEs, drawing on data on firm growth and survival. It examines if the factor allocation biases with respect to land and credit, barriers to entry into export markets and efficiency, among others, are important determinants of growth rates and survival probabilities of manufacturing firms. Further, it seeks to determine if there are systematic differences between small, medium and large sized firms with respect to determinants of firm growth and survival. Overall, findings on leverage, or credit, and trade do not support the view that these variables constitute binding constraints on SME growth or survival. Findings on economies of scale and firm ownership are generally consistent with the view that these variables do not account for Vietnam's 'missing SMEs'.

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INTRODUCTION

In Vietnam, there is a pronounced skew in the firm size distribution in favour of manufacturing enterprises with 500 or more employees (Shaffer and Le 2012a& b). Such firms account for almost 60% of total employment which is extremely large by comparative standards and far in excess of that found elsewhere in Asia (Mazumdar, 2003, Mazumdar and Sarkar, 2012). Further, it is unlikely that the predominance of large firms is due to their higher efficiency in production, as evidenced by large economies of scale for example, but due to factor allocation biases with respect to land and credit along with trade (Shaffer and Le 2012a&b).

A core objective of this paper is to tease out certain of the mechanisms generating the rightward skew in the firm size distribution by focusing on firm survival and growth. More specifically, the analysis seeks to determine if the same variables allegedly accounting for the preponderance of very large firms are also associated with lower survival probabilities or lower growth rates of SMEs. Such an analysis of firm dynamics can be framed in terms of two distinct research questions:

1. why do firms, and in particular SMEs, go out of business or survive (Survival)?;
2. why/how do firms, and in particular SMEs, increase in size (Growth)?;

To be clear, the first question is decidedly relevant to explaining Vietnam's 'missing SMEs' because smaller firms are less likely to survive (as discussed in Sections 4 and 5). The second question is equally relevant, because higher growth rates of SMEs relative to large firms would increase their share of total employment over time, and redress the rightward skew.

Analysis of the relationship between firm size, growth and survival has a long history. Since the time of Gibrat's (1931) seminal work, a large body of literature has emerged examining the relationship between firm size on the one hand, and firm growth or survival on the other. Theoretical models of firm dynamics have been developed to account for two commonly found empirical findings: i) firm size and growth are negatively related (Caves 1998) and ii) firm size and survival tend to be positively related (Van Biesebroeck, 2005). The explanatory frameworks are based on such factors as learning effects (Jovanic 1982), human capital formation (Pakes and Ericson, 1992) and so forth. Additional explanatory factors invoked to explain the relative absence of small and mid-sized firms include high entry costs, transaction costs related to inputs such as capital and land, credit constraints, lack of access of infrastructure,

the absence of an enabling environment of SMEs and policy biases in favour of large size firms (Mazumdar2003, Tybout 2000, Sleuwaegen and Goedhuys, 2002).

In the developing world, a number of relatively recent studies have appeared which examine the above relationships. Sleuwaegen and Goedhuys (2002) used panel data from 1995-96 in Cote d'Ivoire and found a negative relationship between firm size and growth, but also severe obstacles impeding the growth of small firms due to the lower levels of recognition within their industries which impede their ability to secure scarce resources such as credit and imports. Van Biesebrook (2005) analysed panel data from nine countries in sub-Saharan Africa and found severe impediments to transitions between size categories for small firms due to limited access to credit and quality labour.

In Vietnam, there have been a limited number of published econometric analyses of firm growth and survival. Drawing on the 1993 and 1998 Vietnam Household Living Standard Surveys (VHLSS), Vijverberg and Haughton estimated a logit model of firm survival, along with an OLS model of firm growth, the latter with and without the Heckman selectivity correction. They found that larger and older firms are more likely to survive though size had little effect on firm growth. A second analysis, (Hansen et al, 2009), drawing on SMEs surveys from 1990-2001[1], ran probit regressions of firm survival and OLS models of firm growth. Firm size was significant and negative in the former models, though not significant in the latter models. A third study by Nguyen (2011), constructed a panel from a random sample of the Vietnam Enterprise Census database for the period 2000-2005, to estimate the determinants of firm growth using OLS regressions, corrected for selectivity bias using the Heckman two-step procedure. The results confirm earlier findings that younger, smaller firms grow more rapidly than older, larger ones. A final study by Vu et al. (2012), constructed a panel from the above-mentioned ILSSA/SSE data set for 2005, 2007 and 2009, and estimated the relationship between export status and firm survival, using a proportional hazard model, and between export status and profit growth, relying on OLS and quantile regressions. Larger SMEs were found to have higher survival probabilities and growth than smaller ones (results on export status are discussed is Sections 5 and 6, below).

[1] A series of SME surveys have been undertaken since 1991 by the Institute of Labour Sciences and Social Affairs (ILSSA) and the Stockholm School of Economics (SSE) and more recently, the World Institute for Development Economics Research. Other results are found in Ronnås and Ramamurthy, 2001 and Kokko and Sjöholm, 2006.

The analysis in this paper adds three new elements to the existing literature:

1. It draws on newer data, 2007-11, than the other studies and captures the effects of recent policy initiatives, namely the first SME Support Program (2005-2010), along with the economic downturn in 2008[2]. After 2008, Vietnam began to experience the ripple effects of the global financial crisis. GDP growth fell from over 7% in the previous decade to around 5% while value-added growth in manufacturing fell from over 12% to 7% between 2000-2007 and 2008-2011 (World Bank, 2013).
2. Unlike previous analysis from the Enterprise Census (Shaffer and Le 2012a&b), it relies on panel data, which will purge results of time-invariant unobserved heterogeneity;
3. Unlike data from the VHLSS and SME surveys, it captures the full range of the firm size distribution, which will allow for comparative analysis of small, medium and large enterprises. Such a comparison is important to highlight differential effects of variables on firm size categories.

The format of the paper is as follows. Section 2 provides background information on the nature of, and explanations for, Vietnam's rightward skew. Section 3 outlines the methodology of the study. Section 4 presents descriptive statistics on the regressors, transition matrices for firm survival, exit and entry and transition matrices between firm size categories. The econometric analyses of firm survival and growth are presented in Sections 5 and 6, respectively. Concluding comments are presented in Section 7.

BACKGROUND

Vietnam's 'Missing SMEs' in Comparative Perspective

As discussed above, the firm size distribution in Vietnam is characterized by 'missing' small and medium sized firms. Otherwise stated, there is a rightward skew in the distribution. It must be recognized that the idea of 'missing' firms is not without controversy and raises the question 'missing relative to what?'. There are two ways of addressing this issue of the relevant referent when asserting the proposition that firms are 'missing'.

[2] It was not possible to distinguish pre-crisis and crisis periods because the first wave of the panel, 2007-2008, coincided with the beginning of the economic downturn. Since 2008, GDP and manufacturing growth has remained below trend rates of the early 2000s.

First, it is insightful to look at the comparative picture and examine the firm size distribution elsewhere in Asia. Table 1 presents data on the total industrial employment of the largest firm size category, namely firms with greater than 500 employees, drawing on a recent comparative analysis of Asian economies (Mazumdar and Sarkar, 2013). It is striking that the employment share of large firms in Vietnam exceeds that of all others by quite a wide margin, accounting for around 60% of total industrial employment. The next closest case is the Philippines at around 50%. While such data are only suggestive, they do provide prima facie evidence in support of the 'missing SMEs' thesis.

Table 1. Total employment shares of large firms (>500 workers)

Country	Employment Share
Hong Kong (1982)	16.5
India (2004-05)	20.3
Taiwan (1996)	24.7
Korea (1995)	25.8
China (2004)	38.5
Indonesia (2006)	40.8
Bangladesh (2001-2002)	42.8
Malaysia (1995)	45.0
Thailand (1996)	46.9
Philippines (1988)	49.5
Vietnam (2005)	59.9

Source: Mazumdar and Sarkar (2013:16-17)

The second relevant referent is the counterfactual of the firm size distribution in the absence of distortions favoring, for example, large size firms or in the presence of effective public policies addressing market failure and related phenomena. Here, attention is directed to acts or omissions in the policy framework which may account for the rightward skew. Evidence on these issues is presented in the following section.

Explaining Vietnam's Rightward Skew[3]

Unlike certain contexts, such as India[4], public policy in Vietnam has not explicitly favored firms of different sizes. Nevertheless, de facto policies and practices have systematically

[3] Additional supporting evidence for the findings presented in this section is presented in Shaffer and Le (2012a&b).

disadvantaged small and medium sized firms. Specifically, four sets of issues have likely contributed to Vietnam's 'missing SMEs', namely: capital market segmentation, land access, trade, and firm ownership type.

There are three types of evidence in Vietnam of capital market segmentation between (large) SOEs[5] and privately owned firms and between firms of different sizes. First, private firms are more likely to borrow from family friends, money lenders and private joint stock banks while large SOEs relied much more extensively on State Owned Commercial Banks and investment funds (Tenev et al., 2003) Second, in enterprise surveys, lack of credit is often cited by firm managers and owners as one of the major obstacles facing small and mediums sized firms (Kokko and Sjöholm, 2006; Steer and Taussig, 2002) and/or credit constraints are inferred from questions about loan denials and desired levels of credit (Rand, 2007). Third, econometric evidence suggests that firm size is a significant correlate of measures of credit access (Tenev et al., 2003), though results of a multinomial logit model did not suggest significant differences between medium and large size firms, relative to small firms (Shaffer and Le (2012b).

Second, the historical legacy of a command economy has resulted in much greater land access for large SOEs in urban areas. Existing mechanisms of securing land access, direct allocation from government and transfer of Certificates of Land Use Rights, have proved limited at redressing this historical pattern. Evidence suggests that the effects are to limit credit access by restricting the use of land as collateral and to constrain firm growth.

Third, a range of evidence suggests that trade, in particular export orientation, has disproportionately benefitted large firms. First, large firms are much more likely than other firm size categories to engage in trade. Second, the secondary literature points to obstacles facing Vietnamese SMEs when attempting to integrate into global value chains or access export markets including the ability to source high-quality fabric domestically or abroad, to take on large orders and to supply a diverse range of products (Nadvi and Thoburn, 2004a; 2004b). Such obstacles have been overcome elsewhere in Asia, such as Korea, through the emergence of small scale traders and the development of domestic financial markets. Public policies, such as

[4] In India, labour regulations and industrial policy have explicitly favoured small firms, allegedly contributing to the 'missing middle' in the firm size distribution (Hasan and Jandoc, 2012; Mazumdar and Sarkar, 2013; Ramaswamy, 2013).

[5] SOES are larger on average and overrepresented among the largest firm size category. In 2008, 29 percent of SOEs has 500 or more employees, compared with 18 percent for FDI and 2 percent for private firms.

minimum SME share requirements in new bank credit, proved essential to these developments (Levy, 1991; Nugent, 1996).

Fourth, there is evidence that SOEs continue to benefit from either the historical legacy of past preferences, as say with regard to land access, or on-going (off-book) benefits in credit allocation. On the other hand, since 2000, there has been quite a dramatic reconfiguration at the upper end of the size distribution. The SOE share of total employment among large firms fell from around 50% to 15% and the total number of large SOEs almost halved between 2000 and 2008. Accordingly, it is likely that while the historical legacy of SOE bias lingers, the factor allocation bias increasingly relates to size *per se*.

It should be mentioned that the balance of evidence does not suggest that economies of scale in production account for the rightward skew. One reason is that manufacturing in large firms is not dominated by capital-intensive industries with high fixed costs, such as chemicals, but in labour-intensive industries such as garments. In addition, econometric results have not suggested that variables measuring economies of scale to be significant determinants of firm size (Shaffer and Le, 2012b).

The econometric analysis presented below revisits these issues by examining their relationship to the survival and growth of firms of different sizes. Of the specific variables discussed, all but land appear in the models presented below.

DATA AND METHODOLOGY

Source of Data

As mentioned above, the primary data source is the Vietnam Enterprise Census conducted annually since 2000 by the General Statistical Office of Vietnam. The definition of 'enterprise' used in the census is 'an economic unit that independently keeps a business account and acquires its own legal status' (GSO, 2008). Accordingly, it excludes registered enterprises which have not begun operations, enterprises which have been disbanded, economic units which do not keep business accounts such as branches and so on. Accordingly, the number of census-enumerated firms will differ from the official government registry which also includes firms which are not yet operational.

The present analysis draws on panel data from five rounds of census data, 2007-2011 (corresponding to published data from 2008-2012). In recent years, there has been an

improvement in firm-level identifiers in the database which have allowed for the construction of this panel dataset. The panel was established first, on the basis of these identifiers which are unique per province. Next, consistency checks were undertaken to verify the match of firms. Specifically, inclusion in the panel required alignment of firm-level identifiers along with variables on year of set-up, industry code and ownership type.

Variables

In the growth regressions, growth is expressed as the year-on-year log difference in real firm revenue for pooled data over the relevant time periods in the panel. Revenue was deflated using the CPI. Data constraints precluded constructing an indicator of value-added, given the lack of information on intermediate costs.

In terms of regressors[6], the basic model specification uses the following variables:

i. firm age, where possible (this variable was missing in many cases);
ii. average labour cost, a potential measure of labour productivity[7], assuming that wages approximate the marginal product of labour[8];
iii. leverage, defined as the ratio of total liabilities to total capital, which serves as a measure of credit access;
iv. firm size, measured by total employment (in the models including all firms), the log of total assets, and the log of total employment (in the separate models for small, medium and large firms);
v. the cost disadvantage ratio (CDR), defined as the share of fixed capital in total capital which, following Harrison et. al. (1994) and others (Nugent, 1996), is intended as a measure of economies of scale in production;
vi. the capital/labour (K/L) ratio, a measure of capital intensity;
vii. technology, as proxied by variables on whether or not the firms has a computer, internet access and a website;

[6] Additional information on the specification of these variables is available from the authors.
[7] We do not have a direct measure of labour productivity as we were unable to calculate value-added due to the lack of information on intermediate costs in the census questionnaire.
[8] There is a large literature which suggests that labour markets function quite well in Vietnam which broadly supports this assumption (Shaffer and Le (2012a) review some of this literature).

viii. import and export orientation, proxied by the ratio of firms with the same two-digit industry category engaged in importing or exporting, respectively.[9]

ix. dummy variables for major urban areas including Ho Chi Minh City, Hanoi, Da Nang, Haiphong and Can Tho;

x. dummy variables for ownership type, foreign direct investment (FDI) and state owned enterprises (SOE) relative to domestic non-state (DNS) (see Appendix Table 1 for the number of manufacturing firms by Ownership and Size category);

xi. dummy variables of the five largest categories of manufacturing in terms of employment (Food, Beverages, Cigarettes; Textiles; Garments; Leather and Footwear; Manufacturing of Wood and Wood Products) relative to a 6th category regrouping all others[10] (see Appendix Table 2 for the number of firms by sub-category of manufacturing).

It must be emphasized that the choice of regressors was limited by the enterprise census questionnaire design and response. As mentioned above, firm age was missing in around 25% of cases which necessitated specifying separate models with and without this variable. In addition, recent rounds of the census did not include questions on trade which made it impossible to include it as a regressor.[11]

Estimation

Drawing loosely on Evans (1987) and Shanmugam and Bhaduri (2013), we specify the firm growth model in the following way:

$$[\ln Y_{it\prime} - \ln Y_{it}]/d = \beta \mathrm{X}_{it} + u_{it}$$

[9] These variables were constructed by mapping information from the Vietnam Standard Industrial Classification 2007 database onto the Enterprise Census 2011. It is obviously an approximation based on industry category averages and the assumption that the averages are stable overtime.

[10] This sixth category includes paper products, coal and chemicals, rubber and plastics, non-metal manufacturing, metal manufacturing, machinery and transport equipment.

[11] Other analysis point to trade as a likely driver of the rightward skew in the size distribution (Shaffer and Le, 2013)

where Y is real firm revenue for firm i, measured at time t, where $t' > t$, $d = t' - t, \beta$ is a vector of regression coefficients, X is a vector of independent variables and u_{it} is a normally distributed error term.

Both fixed and random effects models have been estimated, the latter with and without the age variable. In all cases, the Hausman test rejects the null hypothesis of the absence of correlation between regressors and the firm-specific error term as evidenced by p values of 0.000 throughout. The result is consistent with our expectations, given the likely importance of unobserved characteristics such as entrepreneurship, along with the limited number of regressors in the database. Still, because the fixed effect (within) estimator generates higher standard errors, does not capture differences across panel firms[12], and because time invariant variables can be directly included as regressors in the random effects model, both specifications are presented. As it stands, the majority of variables have the same sign and level of statistical significance across both models though their coefficient values differ. Separate regressions have been run for small, medium and large firms, defined in terms of employment size,[13] to determine if systematic differences exist by firm size. In addition, separate models are run for 2007-2008 and 2009-2011, corresponding to periods of growth and crisis, respectively.

The survival analysis follows convention in the literature by estimating probit regressions. As above, separate regressions have been run for small, medium and large firms, defined in terms of employment size, and for the time periods 2007-2008 and 2009-2011. It should be noted that survival estimates for the latter period includes existing firms as well as new entrants in 2009.

In terms of model specification and related econometric issues, three points should be noted. First, in all models we present robust standard errors which are adjusted to account for potential heteroscedasticity. Second, our diagnostic tests do not suggest collinearity among regressors as the variance inflation factor (VIF) is smaller than 10 for every variable. Third, in the probit and logit models we present two statistics to assess goodness-of-fit, namely p values of the Wald Test of joint significance, which estimates the probability that at least one regressor's

[12] The intraclass correlation coefficient (*rho*) however, which ranges from 0.67 to 0.88, does suggest that most of the overall variance is accounted for by residuals from the within-panel estimation.

[13] The small, medium and large categories include firms with <100 employees, between 100-499 employees and 500 and over employees respectively.

coefficients does not equal zero, and McFadden's pseudo R-squared. In the Fixed Effect regression we present *p* values of the F test, that all coefficient values differ from zero, while the Random Effect models presents *p* values of the aforementioned Wald Test.

It should be recognised that there are a number of econometric and data-related limitations of this analysis. Data constraints related to the census questionnaire and the ensuing data have already been mentioned above. Econometrically, endogeneity due to reverse causation in the growth regressions is a potential cause for concern. We address this issue in part, by exploiting the temporal structure of the panel data, relying on initial panel wave firm characteristic as regressors. Likewise, the Fixed Effects estimation allows us to purge the time invariant portion of firm-specific unobserved or missing variables which could bias OLS results.

DESCRIPTIVE STATISTICS

In terms of regressors, Table 2 presents mean and standard deviation values for the two waves of the panel. There are a number of salient features of these data which are important to note. First, firms reported a fall in total revenue of close to 10% in real terms between 2007 and 2011, due, undoubtedly, to the slowdown in growth discussed in Section 1. Second, total reported manufacturing employment fell by around 25% over this period which apparently reflects a process of labour shedding among existing firms, rather than net firm closures, as the total number of firms continued to rise. Third, the fact that average wages increased over the period suggests, *prima facie*, that relatively lower paid workers were disproportionately affected by this process of labour shedding. Overall, 2007-2011 is a period of economic downturn, a fact further discussed in the interpretation of regression results.

TABLE 2 'REGRESSORS'

	2007		2008		2009		2010		2011	
Variable	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Firm size: revenue (billion VND)	40.88	272.27	34.87	249.62	34.35	350.12	39.04	376.33	37.75	530.82
Firm size: log asset	1.18	1.86	1.07	1.76	1.14	1.74	1.33	1.72	0.84	1.97
Firm size: total employment	119.22	583.23	102.94	563.16	92.69	523.98	94.08	543.03	88.48	577.59
Firm age	5.36	6.83	5.85	6.96	5.86	6.77	4.66	5.73	.	.
Average labour cost	2.01	1.68	2.06	4.64	2.51	2.78	2.73	17.50	2.35	5.39
Cost disadvantage ratio (fixed K/total K)	0.32	0.24	0.32	0.21	0.31	0.22	0.29	0.20	0.23	0.24
Capital/Labor ratio	0.28	1.20	0.34	12.74	0.35	5.99	0.38	1.77	0.37	2.00
Leverage Ratio of liabilities to capital)	0.39	0.29	0.44	0.26	0.45	0.26	0.50	0.25	0.39	0.32
Legal structure: FDI	0.12	0.33	0.11	0.31	0.10	0.30	0.10	0.30	0.10	0.29
Legal structure: DNS	0.86	0.35	0.87	0.33	0.88	0.32	0.88	0.32	0.89	0.31
Location: Hochiminh, Hanoi	0.43	0.50	0.49	0.50	0.48	0.50	0.51	0.50	0.46	0.50
Location: Danang, Haiphong, Cantho	0.07	0.26	0.06	0.24	0.06	0.23	0.06	0.24	0.06	0.23
Food, beverages and cigarette	0.17	0.38	0.16	0.37	0.16	0.36	0.14	0.35	0.14	0.35
Textiles	0.04	0.19	0.04	0.19	0.04	0.20	0.04	0.20	0.04	0.20
Garments	0.08	0.28	0.09	0.29	0.08	0.28	0.09	0.29	0.09	0.28
Leather and footwear	0.02	0.15	0.02	0.15	0.02	0.14	0.02	0.16	0.02	0.15
Manufacturing of wood and wood products	0.11	0.32	0.12	0.32	0.12	0.32	0.11	0.31	0.11	0.32
Firm has access to Internet	0.50	0.50	0.42	0.49	.	.	.	.	.	.
Firm has computer	0.67	0.47	0.52	0.50	.	.	.	.	.	.
Firm has website	0.08	0.27	0.08	0.27	.	.	.	.	.	.
Total observations	28,683		35,121		44,004		43,741		53,535	

Note: All monetary terms are expressed in 2007 prices and measured in billion VND (1USD ~ 16,200VND)
Source: GSO Enterprise Census, 2008-2012.

Table 3 presents data on firm survivors, exits and entries for the period 2007-2011. Of the 28683 firms in the initial 2007 wave of the panel, around 27% had exited by 2012. Exit rates are closely related to firm size. Over the 2007-2001 period, the percentage of exits relative to initial firms was 30%, 14% and 8% for small, medium and large firms respectively. In addition, for the initial panel wave of 2007-08, less than 10% of firms exited, whereas in the final year of the crisis period, 2010-11, the exit rate jumped to 20%. As discussed in Section 1, the high and accelerating exit rates among small and medium firms highlights the importance of firm survival as an explanation of the rightward skew in the firm size distribution in Vietnam.

Table 4 presents the transition matrix between firm size categories over the period 2007-2011. As expected, the vast majority of large firms, around 80%, stayed large between 2007 and 2011. Around 16% of firms graduated into the large firm size category while around 21% of large firms trended in the opposite direction. Over this same period, there was more movement in the middle of the distribution between small and medium sized firms. Around 25% of small firms (< 100 employees) graduated into the medium size category (100-499 employees) while around 44% trended in the opposite direction. The decreasing size of firms, reflected in the reported fall in total manufacturing employment discussed above, is a consequence of the economic downturn discussed above.

SURVIVAL

The question of firm survival is closely linked to the core research question about the persistence of the rightward skew in the firm size distribution in favour of large enterprises, discussed in Sections 1 and 2. Specifically, as shown in Table 3, in both absolute and percentage terms, small and medium sized firms have much higher rates of exits than large firms. In the words of a long-time analyst of industrial development in Vietnam: "the problem is not quantity but quality … [only] a small portion of SMEs can survive."[14] The presentation of results below places emphasis on those variables with relevance to debates about Vietnam's 'missing SMEs' discussed in Section 2 or the relationship between firm size and survival discussed in Section 1.

[14] Personal correspondence with Professor Nguyen Manh Quan, National Economics University, June 19, 2012.

Table 3. 'Survivors, exits and entries'

All firms

		2007	2008	2009	2010	2011
	Survivors	28,683	25,944	23,810	22,339	21,066
2008	Exits		2,739	4,873	6,344	7,617
	Entries		12,400			
	Survivors		38,344	34,793	32,183	29,127
2009	Exits			3,551	6,161	9,217
	Entries			14,480		
	Survivors			49,273	45,025	40,252
2010	Exits				4,248	9,021
	Entries				9,317	
	Survivors				54,342	43,402
2011	Exits					10,940
	Entries					16,249

Small firms (< 100 employees)

		2007	2008	2009	2010	2011
	Survivors	23,202	20,719	18,760	17,432	16,258
2008	Exits		2,483	4,442	5,770	6,944
	Entries		11,784			
	Survivors		32,503	29,112	26,641	23,774
2009	Exits			3,391	5,862	8,729
	Entries			13,711		
	Survivors			42,823	38,800	34,249
2010	Exits				4,023	8,574
	Entries				8,802	
	Survivors				47,602	37,289
2011	Exits					10,313
	Entries					15,542

Medium firms (100-499 Employees)

		2007	2008	2009	2010	2011
	Survivors	4,099	3,886	3,741	3,628	3,537
2008	Exits		213	358	471	562
	Entries		516			
	Survivors		4,402	4,270	4,149	3,988
2009	Exits			132	253	414
	Entries			622		
	Survivors			4,892	4,715	4,528
2010	Exits				177	364
	Entries				459	
	Survivors				5,174	4,626
2011	Exits					548
	Entries					623

Large firms (>500 employees)

		2007	2008	2009	2010	2011
	Survivors	1,382	1,339	1,309	1,279	1,271
2008	Exits		43	73	103	111
	Entries		100			
	Survivors		1,439	1,411	1,393	1,365
2009	Exits			28	46	74
	Entries			147		
	Survivors			1,558	1,510	1,475
2010	Exits				48	83
	Entries				56	
	Survivors				1,566	1,487
2011	Exits					79
	Entries					84

Source: GSO Enterprise Census, 2008-2012

Table 4. Firm size transition matrix

	2011						
2007	<5	5-9	10-49	50-99	100-199	200-499	500 +
<5	40.68	32.95	21.84	2.42	1.06	0.68	0.39
5-9	19.34	41.52	35.27	2.45	0.97	0.32	0.13
10-49	5.65	14.41	66.29	9.96	2.92	0.66	0.10
50-99	1.03	1.64	33.83	41.82	16.96	4.11	0.61
100-199	0.96	0.73	10.22	23.76	44.89	18.26	1.18
200-499	0.32	0.26	2.62	5.17	22.85	55.52	13.27
500 +	0.08	0.08	0.48	0.81	2.26	17.37	78.92

Source: GSO Enterprise Census, 2008-2012

Table 5 presents results of the probit regressions of firm survival for all firms for 2007-2011, as well as for 2007-2008, 2007-2009 and 2009-2011. Given that results are very similar across all time periods, Table 6 presents results for 2007-2011 only, for small, medium and large firms. Two different specifications are presented, depending on whether or not the firm age variable was included (as discussed in Section 3.2, this information was missing from many questionnaires). Coefficient values are resented as marginal effects estimates at mean values of the variables. *P* values of the Wald test are extremely low (0.000) which suggests rejection of the nul hypothesis that coefficient values equal zero. A number of key findings emerge from the analysis.[15]

First, findings are broadly consistent with the major results in the literature about the positive relationship between firm size and survival, discussed in Section 1. In Table 5, the employment measure of size is strongly associated with survival for all time periods. Dummy variables were included for six size categories relative to a 7th in the middle of the size distribution (between 100-199 employees). All firm size categories below this level are negatively associated with survival while those above are positively associated. Most results, except those in the 200-499 size category, are statistically significant at either the 0.05 or 0.01 level, and coefficient values increase (decrease) monotonically with increasing (decreasing) size. The same statistically significant and positive relationship is found between a second size measure, log assets, and survival across all time periods except 2007-08. In Table 6, a third size

[15] We will not comment on the locational or manufacturing dummies which were included primarily for control purposes.

measure, the log of employment, is positive and statistically significant (at the 10% level) for both small and large firms, though not statistically significant for medium sized firms.

Second, according to Table 5, the relationship between leverage and survival tends to be statistically insignificant over most time periods and in fact slightly negative for the overall time period (2007-2011), though statistically significant at the 10% level only. The negative relationship between leverage and survival comes out more starkly in Table 6 for medium and large size firms, who generally have greater access to credit. Results are significant at the 10% and 5% level respectively. We interpret this somewhat surprising result in the context of the economic downturn whereby the inability to service or refinance debt may precipitate the demise of firms. Over this period, debt servicing was rendered more difficult by the rise in official lending rates, which increased from around 10% to 14% over the periods 2000-2007 and 2008-2011 (World Bank, 2013). Additional explanations are offered in the discussion of growth in Section 6.

Third, our measure of economies of scale, the cost disadvantage ratio (CDR) is positively associated with survival across all time periods, and statistically significant, in most cases at the 1% level as shown in Table 5. Results from Table 6 show that this statistically significant association holds across all size categories of firms. Interestingly, the capital/labour (K/L) ratio is not statistically significant in any models which implies that fixed capital, rather than capital-intensity per se, is related to survival. It is possible that the importance of fixed capital increased during the economic downturn, in which case the CDR may be directing attention to factors other than economies of scale.

Fourth, in terms of trade, Table 5 shows a consistently negative association between exporting firms and survival. For the entire time period, this finding is statistically significant at the 1% level. According to Table 6, this negative relationship between trade and survival holds across all firm size categories, though is only statistically significant at the 1% level for small firms. Interestingly, the opposite result generally holds for importing firms. The relationship is positive and statistically significant at the 5% across all time periods and for small firms. One interpretation of these surprising findings is that exporting firms were more adversely affected by the global economic slowdown, given sluggish demand for Vietnamese exports among trading

partners[16]. Another possibility is that the export and import variables, which have been mapped onto firms from two-digit industry categories, are not valid (see Section 3.2). For example, other studies have found that heterogeneity across exporting firms matters for survival prospects. Specifically, there is a positive and statistically significant relationship between continuous exporters and firm survival and a negative relationship between firm survival and export 'stoppers', or firms who discontinued export activities (Vu, 2012).

Fifth, in terms of ownership type dummy variables representing survival prospects of Foreign Direct Invested (FDI) and Domestic Non-State (DNS) firms relative to State Owned Enterprises are generally not statistically significant across time periods or firm size categories. The one exception is the most recent period, 2009-2011, whereby both FDI and DNS variables are positive and statistically significant at the 1% level. Such results are consistent with our earlier finding in Section 2.2, that present-day factor allocation biases do not systematically favour SOEs.

Sixth, the average labour cost is positively associated with survival, and statistically significant at the 1% level for all time periods in Table 5. The same result obtains across all firm size categories in Table 6. We interpret this finding as evidence of the importance of labour productivity to firm survival (though see discussion in Section 6).

Seventh, computer ownership is strongly associated with firm survival, and statistically significant at the 5% or 1% levels across all time periods in Table 5. The same result is found across all but the largest firm size category (which likely all have computers). The result points to the importance of technology access as a driver of firm survival.

[16] This negative relationship between exports and firm survival has been found elsewhere, possibly due to competitive pressures in international markets (Giovannetti et al., 2011; Lopez, 2006), while the positive relationship between imports and survival is well established in the empirical literature based primarily on the experience of OECD countries (Wagner, 2012).

TABLE 5 PROBIT REGRESSION OF FIRM SURVIVAL BY TIME PERIOD

Variable	Survived during 2007-2011		Survived during 2007-2008		Survived during 2007-2009		Survived during 2009-2011	
Location: HCM, HN	0.091***	0.074***	0.004	-0.002	0.074***	0.061***	0.031***	0.029***
	(0.006)	(0.007)	(0.005)	(0.005)	(0.005)	(0.006)	(0.004)	(0.005)
Location: DN, HP, CT	0.027***	0.028**	0.022**	0.029***	0.024***	0.033***	-0.002	-0.001
	(0.010)	(0.011)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.007)
Firm age		0.002***		0.001***		0.001**		0.001***
		(0.001)		(0.000)		(0.000)		(0.000)
Legal structure: FDI	-0.017	0.002	0.036*	0.042**	0.007	0.018	0.171***	0.036**
	(0.024)	(0.022)	(0.019)	(0.017)	(0.021)	(0.018)	(0.016)	(0.015)
Legal structure: DNS	-0.023	0.003	-0.042**	-0.020	-0.013	0.007	0.144***	0.046***
	(0.024)	(0.021)	(0.018)	(0.016)	(0.020)	(0.018)	(0.015)	(0.015)
Employment size: <5	-0.132***	-0.108***	-0.074***	-0.055***	-0.093***	-0.062***	-0.201***	-0.092***
	(0.017)	(0.019)	(0.013)	(0.014)	(0.014)	(0.015)	(0.012)	(0.012)
Employment size: 5-9	-0.110***	-0.055***	-0.064***	-0.029***	-0.081***	-0.042***	-0.201***	-0.053***
	(0.014)	(0.014)	(0.011)	(0.011)	(0.012)	(0.012)	(0.011)	(0.010)
Employment size: 10-49	-0.053***	-0.033***	-0.037***	-0.024***	-0.043***	-0.027***	-0.090***	-0.024***
	(0.012)	(0.011)	(0.010)	(0.009)	(0.011)	(0.009)	(0.010)	(0.008)
Employment size: 50-99	-0.031**	-0.022*	-0.030***	-0.022**	-0.025**	-0.017*	-0.006	0.002
	(0.014)	(0.012)	(0.011)	(0.009)	(0.012)	(0.010)	(0.012)	(0.009)
Employment size: 200-499	0.027*	0.018	0.011	0.007	0.024*	0.016	0.048***	0.037***
	(0.016)	(0.014)	(0.013)	(0.011)	(0.014)	(0.012)	(0.015)	(0.011)
Employment size: 500 and over	0.087***	0.060***	0.060***	0.041***	0.063***	0.041***	0.065***	0.051***
	(0.020)	(0.018)	(0.016)	(0.014)	(0.017)	(0.015)	(0.017)	(0.014)
Food, beverages and cigarettes	0.001	0.012	0.008	0.008	0.007	0.009	-0.008	-0.003
	(0.009)	(0.010)	(0.007)	(0.008)	(0.008)	(0.009)	(0.006)	(0.007)
Textiles	-0.036**	-0.020	-0.035***	-0.020*	-0.027**	-0.016	-0.027***	-0.001
	(0.014)	(0.014)	(0.011)	(0.011)	(0.012)	(0.012)	(0.010)	(0.010)
Garments	-0.072***	-0.039***	-0.066***	-0.055***	-0.062***	-0.043***	-0.028***	-0.002
	(0.013)	(0.014)	(0.010)	(0.010)	(0.011)	(0.011)	(0.009)	(0.010)
Leather and Footwear	-0.060***	-0.028	-0.045***	-0.029*	-0.042**	-0.018	-0.009	0.001

	(0.020)	(0.020)	(0.016)	(0.016)	(0.017)	(0.017)	(0.014)	(0.014)
Manufacturing of wood and wood products	-0.042***	-0.033***	-0.051***	-0.040***	-0.040***	-0.035***	-0.019***	-0.008
	(0.009)	(0.009)	(0.007)	(0.007)	(0.008)	(0.008)	(0.006)	(0.006)
Firm size: log asset	0.020***	0.025***	-0.003	0.002	0.008***	0.012***	0.011***	0.016***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Log average labour cost	0.031***	0.033***	0.014***	0.014***	0.018***	0.020***	0.025***	0.021***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
Cost disadvantage ratio (fixed K/total K)	0.062***	0.051***	0.022**	0.010	0.042***	0.030***	0.025***	0.018**
	(0.012)	(0.012)	(0.010)	(0.009)	(0.010)	(0.010)	(0.009)	(0.008)
Capital per labor	0.000	-0.001	-0.000	-0.001	0.002	0.000	-0.000	-0.000
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.000)	(0.000)
Leverage (liabilities/capital)	-0.000	-0.018*	0.015*	-0.004	0.011	0.003	0.000	-0.004
	(0.011)	(0.011)	(0.009)	(0.008)	(0.009)	(0.009)	(0.008)	(0.007)
Ratio of firms exporting in the industry	-0.287***	-0.330***	-0.031	-0.026	-0.105	-0.111	-0.346***	-0.242***
	(0.080)	(0.088)	(0.064)	(0.069)	(0.068)	(0.073)	(0.053)	(0.059)
Ratio of firms importing in the industry	0.163**	0.154**	-0.057	-0.019	0.047	0.033	0.183***	0.135***
	(0.067)	(0.069)	(0.052)	(0.054)	(0.057)	(0.058)	(0.046)	(0.049)
Firm has access to Internet	0.029***	0.025***	0.005	0.005	0.009	0.006		
	(0.008)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)		
Firm has computer	0.088***	0.037***	0.069***	0.019**	0.076***	0.031***		
	(0.008)	(0.009)	(0.007)	(0.007)	(0.007)	(0.008)		
Firm has website	-0.002	-0.006	-0.009	-0.011	0.006	0.002		
	(0.012)	(0.011)	(0.010)	(0.008)	(0.011)	(0.009)		
Observations	28,455	21,536	28,455	21,536	28,455	21,536	43,773	24,236
Wald test joint significance	0	0	0	0	0	0	0	0
Pseudo R2	.082	.064	.048	.03	.065	.049	.071	.07

*Note: Marginal effects evaluated at means. Robust standard errors in parentheses. *, **, *** indicate significance at a 10 per cent, 5 per cent and 1 per cent level, respectively.*
Source: GSO Enterprise Census, 2008-2012

TABLE 6 PROBIT REGRESSION OF FIRM SURVIVAL BY FIRM SIZE, 2007 - 2011

Variable	Small firms		Medium firms		Large firms	
Location: Hochiminh, Hanoi	0.109***	0.091***	0.039***	0.035***	0.011	0.012
	(0.007)	(0.008)	(0.013)	(0.013)	(0.014)	(0.014)
Location: Danang, Haiphong, Cantho	0.026**	0.031**	0.051**	0.045*	-0.003	-0.002
	(0.012)	(0.013)	(0.024)	(0.024)	(0.025)	(0.026)
Firm age		0.002**		0.002***		-0.001
		(0.001)		(0.001)		(0.001)
Legal structure: FDI	0.029	0.042	-0.012	0.006	-0.033	-0.041*
	(0.051)	(0.047)	(0.023)	(0.024)	(0.021)	(0.023)
Legal structure: DNS	0.018	0.046	-0.009	0.004	-0.035*	-0.040*
	(0.050)	(0.045)	(0.022)	(0.023)	(0.021)	(0.021)
Food, beverages and cigarettes	0.000	0.014	0.004	0.002	0.081***	0.082***
	(0.011)	(0.012)	(0.020)	(0.020)	(0.028)	(0.028)
Textiles	-0.034**	-0.014	-0.020	-0.020	-0.055**	-0.053**
	(0.017)	(0.017)	(0.024)	(0.024)	(0.025)	(0.025)
Garments	-0.096***	-0.062***	-0.009	-0.010	-0.014	-0.012
	(0.016)	(0.018)	(0.023)	(0.023)	(0.025)	(0.025)
Leather and Footwear	-0.088***	-0.053*	0.009	0.009	-0.014	-0.012
	(0.027)	(0.028)	(0.032)	(0.032)	(0.029)	(0.029)
Manufacturing of wood	-0.051***	-0.043***	0.006	0.004	-0.031	-0.032
	(0.011)	(0.011)	(0.020)	(0.020)	(0.036)	(0.036)
Firm size: log asset	0.009**	0.020***	0.026***	0.026***	0.010	0.010
	(0.004)	(0.004)	(0.005)	(0.005)	(0.008)	(0.008)
Log average labour cost	0.034***	0.038***	0.024***	0.023***	0.018**	0.018**
	(0.005)	(0.005)	(0.009)	(0.009)	(0.009)	(0.009)
Cost disadvantage ratio (fixed K/total K)	0.057***	0.043***	0.055**	0.057**	0.167***	0.165***
	(0.014)	(0.014)	(0.025)	(0.025)	(0.033)	(0.033)
Capital per labor	0.006*	0.001	-0.005	-0.005	-0.020	-0.021
	(0.003)	(0.002)	(0.005)	(0.006)	(0.013)	(0.013)
Leverage (liabilities/capital)	0.012	-0.013	-0.036*	-0.036*	-0.057**	-0.057**
	(0.013)	(0.013)	(0.021)	(0.021)	(0.025)	(0.026)

Ratio of firms exporting in the industry	-0.284***	-0.372***	-0.309*	-0.249	-0.157	-0.204
	(0.092)	(0.106)	(0.180)	(0.181)	(0.246)	(0.241)
Ratio of firms importing in the industry	0.182**	0.197**	0.076	0.037	0.116	0.143
	(0.078)	(0.086)	(0.127)	(0.127)	(0.157)	(0.155)
Firm has access to Internet	0.028***	0.025***	0.015	0.016	0.045	0.046
	(0.009)	(0.008)	(0.017)	(0.017)	(0.040)	(0.041)
Firm has computer	0.094***	0.035***	0.073**	0.073**	-0.079	-0.080
	(0.009)	(0.011)	(0.031)	(0.031)	(0.080)	(0.080)
Firm has website	-0.016	-0.017	-0.009	-0.009	0.026*	0.027**
	(0.018)	(0.016)	(0.014)	(0.014)	(0.014)	(0.014)
Firm size: log employment	0.054***	0.035***	0.012	0.008	0.027**	0.028**
	(0.005)	(0.005)	(0.013)	(0.013)	(0.013)	(0.013)
Observations	23,163	16,244	4,099	4,099	1,381	1,381
Wald test joint significance	0	0	0	0	0	0
Pseudo R2	.062	.047	.052	.054	.115	.116

*Note: Marginal effects evaluated at means. Robust standard errors in parentheses. *, **, *** indicate significance at a 10 per cent, 5 per cent and 1 per cent level, respectively.*
Source: GSO Enterprise Census, 2008-2012

GROWTH

In addition to survival, growth is closely related to the underlying research question about Vietnam's 'missing SMEs'. The reason is that higher growth rates of SMEs relative to large firms would increase their share of total employment over time, and redress the rightward skew. The presentation of results below places emphasis on those variables with relevance to debates about Vietnam's 'missing SMEs' discussed in Section 2 or the relationship between firm size and growth outlined in Section 1. As detailed in Section 3.2, growth is expressed as the year-on-year log difference in real firm revenue for pooled data from the panel rounds.

Table 7 presents results of the regressions of firm growth for all firms for 2007-2011, and for 2007-2008 and 2009-2011. Because results are very similar across all time periods, Table 8 presents results for 2007-2011 only, for small, medium and large size firms. As discussed in Section 3.3, results of Fixed Effects (FE) and Random Effects (RE) models are presented, the latter with and without inclusion of a firm age variable. R-squared values for both fixed and random effect models appear in line with similar models in the literature, which tend to explain a relatively small share of the total variance (Vijverberg and Haughton, 2004). The *p* values of the F test, for the fixed effects model, and the Wald test, in the random effects model, suggest rejection of the nul hypothesis that coefficient values equal zero. As discussed in Section 3.3, *p* values of the Hausman test strongly rejects the nul hypothesis that there is no correlation between firm-specific regressors and errors, implying that fixed effects is the appropriate specification. There are a number of important findings which emerge from the analysis.[17]

First, the inverse size/growth relationship found in the literature generally holds though not across all employment size categories. In the Fixed Effects models in Table 7, when size is measured as log assets or log employment, coefficients are negative and statistically significant at the 1% level for all time periods. This same result obtains in Table 8 across small, medium and large firms. In the Random Effects models, when employment size is included results are more ambiguous with no clear pattern emerging for size categories relative to the base category of firms with 100-200 employees. Nevertheless, these results are generally supportive of an inverse relationship between firm size and growth. Similarly, firm age is negatively associated with growth and statistically significant at the 1% level though the effect is small. This result is consistent with the literature on the enterprise age/growth relationship discussed in Section 1.

[17] We will not comment on the locational or manufacturing dummies which included primarily for control purposes.

Second, in the Fixed and Random Effects models presented in Table 7, leverage is *negative* and statistically significant at the 1% level across most time periods. As shown in Table 8, this same finding holds for small firms but not for medium and large firms. This finding is surprising *prima facie*, given other data which suggests that lack of credit access is a major constraint on growth of firms in Vietnam, as discussed in Section 2.2. As discussed in Section 5, one explanation is that the increasing difficulty of servicing or refinancing debt in periods of economic downturn serves to dampen growth. The same result has, however, been found in Vietnam in an earlier period of relatively rapid growth, 2000-2005 (Nguyen, 2011). Possible explanations offered include the difficulty of raising external finance for highly leveraged firms, and the inefficient use of finance, raising the cost of capital. Whatever the explanation, this finding does suggest a more nuanced account of lack of credit access as a binding constraint on SME growth.

Third, our measure of economies of scale, the cost disadvantage ratio, is positive and statistically significant at the 1% across all time periods in the Fixed and Random Effects models in Table 7. In the Fixed Effects models by firm size in Table 8, such results only hold for small size firms. The latter finding is consistent with the results discussed in Section 2.2 that large firms in Vietnam do not enjoy large economies of scale in production. They do imply that economies of scale are important for growth over a limited range of the size distribution and/or that fixed capital affects growth in ways unrelated to economies of scale. Capital intensity (K/L), is positive and statistically significant at the 1% level for all time periods and all firm sizes in all model specifications.

Fourth, in terms of trade, results are decidedly mixed. According to Table 7, exports are negatively associated with growth and statistically significant at the 1% for the period 2007-2009. Similar results are found in Table 8 for large firms. Most of the results are not statistically significant. With respect to importers, positive and statistically significant results at the 5% level are found for 2007-2011 and 2007-2009 in Table 7 and for large firms in Table 8. As with the findings on survival, such results may be due to the time period under investigation which represented a period of economic slowdown[18]. In addition, there may be heterogeneity among firms which is not captured by the trade variables in question. For example, for the period 2005-

[18] Similarly, Park et al. (2010) found that during the Asian financial crisis, export growth of Chinese firms was slower for those shipping to destinations experiencing greater currency depreciation.

2009, Vu et al. (2012) found no general association between export participation and SME profit growth though a positive association for firms with profit growth above the median.

Fifth, in terms of ownership type, there is a positive and statistically significant association between Foreign Direct Invested (FDI) firms and growth across most time periods in Table 7 and for small and medium sized firms in Table 8. Such findings are consistent with evidence presented in the survival analysis and in Section 2.2 that factor allocation biases in favour of SOEs have waned over time.

Sixth, average labour cost, a potential proxy of labour productivity, is found to be *negative* and statistically significant at the 0.01 level in all models in Tables 7 and 8. This results contrasts starkly with the earlier findings on firm survival. As with leverage, it is possible that the negative effect is due to the particular period of economic downturn in Vietnam, which presumably served to heighten competitive pressures on firms and disadvantage those with higher (unit) labour costs. It may also be that this variable is not a valid proxy of labour productivity (but a measure of inefficiency).

TABLE 7 'FIXED EFFECT (FE) AND RANDOM EFFECT (RE) ESTIMATES OF GROWTH BY TIME PERIOD'

Variable	Growth during 2007-2011			Growth during 2007-2009			Growth during 2009-2011		
	FE	RE	RE	FE	RE	RE	FE	RE	RE
Location: Hochiminh, Hanoi		0.017*	0.079***		0.016	0.112***		0.028**	0.027**
		(0.009)	(0.010)		(0.013)	(0.014)		(0.011)	(0.011)
Location: Danang, Haiphong, Cantho		-0.013	-0.010		-0.024	-0.017		-0.030	-0.009
		(0.015)	(0.016)		(0.022)	(0.022)		(0.019)	(0.018)
Legal structure: FDI		0.128***	0.058**		0.103***	0.016		0.133***	0.088***
		(0.023)	(0.025)		(0.034)	(0.034)		(0.030)	(0.030)
Legal structure: DNS		-0.011	-0.071***		-0.063*	-0.116***		0.042	-0.003
		(0.023)	(0.024)		(0.034)	(0.033)		(0.029)	(0.030)
Employment size: <5		0.120***	0.375***		0.414***	0.838***		0.053*	0.081**
		(0.025)	(0.029)		(0.040)	(0.048)		(0.032)	(0.034)
Employment size: 5-9		-0.026	0.161***		0.133***	0.351***		0.035	0.018
		(0.019)	(0.020)		(0.030)	(0.031)		(0.024)	(0.024)
Employment size: 10-49		-0.021	0.030**		0.013	0.076***		-0.008	-0.021
		(0.015)	(0.014)		(0.022)	(0.021)		(0.018)	(0.018)
Employment size: 50-99		0.012	0.017		0.017	0.035*		0.004	0.001
		(0.015)	(0.014)		(0.023)	(0.021)		(0.019)	(0.018)
Employment size: 200-499		0.012	0.012		0.047*	0.036		-0.011	-0.008
		(0.017)	(0.016)		(0.025)	(0.023)		(0.021)	(0.020)
Employment size: 500 and over		0.019	0.017		0.076***	0.044		-0.000	0.007
		(0.019)	(0.019)		(0.029)	(0.027)		(0.024)	(0.024)
Food, beverages and cigarettes		-0.041***	0.004		-0.040*	0.034		-0.019	-0.003
		(0.014)	(0.015)		(0.020)	(0.021)		(0.017)	(0.018)
Textiles		-0.019	-0.022		-0.032	-0.042		-0.001	-0.002
		(0.019)	(0.020)		(0.029)	(0.028)		(0.024)	(0.024)
Garments		0.011	0.011		-0.012	0.035		0.004	-0.002
		(0.019)	(0.021)		(0.029)	(0.029)		(0.024)	(0.024)
Leather and Footwear		0.008	0.012		-0.015	0.030		0.001	-0.004
		(0.027)	(0.028)		(0.040)	(0.039)		(0.034)	(0.033)
Manufacturing of wood		0.001	-0.002		-0.019	-0.024		0.022	0.030*
		(0.014)	(0.015)		(0.021)	(0.021)		(0.017)	(0.017)
Firm size: log asset	-0.246***	-0.007*	0.003	-0.701***	-0.051***	-0.012**	-0.056***	0.008	0.010**

	(0.010)	(0.004)	(0.004)	(0.021)	(0.006)	(0.006)	(0.017)	(0.005)	(0.005)
Log average labor cost	-0.307***	-0.097***	-0.118***	-0.538***	-0.186***	-0.180***	-0.269***	-0.018*	-0.032***
	(0.011)	(0.007)	(0.007)	(0.019)	(0.010)	(0.009)	(0.020)	(0.009)	(0.009)
Cost disadvantage ratio (fixed K/total K)	0.137***	0.075***	0.079***	0.295***	0.076***	0.071***	0.172**	0.131***	0.147***
	(0.038)	(0.018)	(0.018)	(0.077)	(0.026)	(0.025)	(0.074)	(0.023)	(0.023)
Capital per labor	0.029***	0.026***	0.024***	0.068***	0.052***	0.041***	0.011**	0.009***	0.009***
	(0.003)	(0.003)	(0.002)	(0.007)	(0.005)	(0.004)	(0.005)	(0.003)	(0.003)
Leverage (liabilities/capital)	-0.355***	-0.110***	-0.062***	-0.917***	-0.205***	-0.075***	-0.031	0.044**	0.040**
	(0.030)	(0.015)	(0.015)	(0.060)	(0.022)	(0.022)	(0.058)	(0.019)	(0.019)
Ratio of firms exporting in the industry		-0.169	-0.196		-0.437**	-0.702***		0.254*	0.208
		(0.118)	(0.130)		(0.178)	(0.185)		(0.149)	(0.152)
Ratio of firms importing in the industry		0.218**	0.228**		0.471***	0.529***		-0.144	-0.045
		(0.093)	(0.100)		(0.140)	(0.142)		(0.118)	(0.118)
Firm has access to Internet				0.079***	0.081***	0.045***			
				(0.030)	(0.018)	(0.016)			
Firm has computer				0.366***	0.409***	0.038*			
				(0.035)	(0.021)	(0.023)			
Firm has website				0.104***	0.089***	0.062***			
				(0.037)	(0.019)	(0.017)			
Time trend	0.018***	-0.039***	-0.056***	-0.159***	-0.310***	-0.185***	-0.128***	-0.106***	-0.094***
	(0.004)	(0.003)	(0.003)	(0.012)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)
Firm size: log labor	-0.367***			-0.486***			-0.430***		
	(0.012)			(0.027)			(0.025)		
Firm age (years)			-0.006***			-0.009***			-0.004***
			(0.001)			(0.001)			(0.001)
Constant	0.746***	-0.298***	-0.331***	0.942***	-0.841***	-0.560***	0.988***	0.033	0.002
	(0.060)	(0.041)	(0.042)	(0.118)	(0.063)	(0.062)	(0.116)	(0.056)	(0.055)
Observations	60,124	59,795	52,650	30,158	29,992	25,654	29,966	29,803	26,996
R-squared	0.084	.014	.028	0.272	.081	.073	0.042	.009	.013
P value (F for Chi2 test)	0	0	0	0	0	0	0	0	0
Hausman test for model selection	0			0			0		

*Note: Robust standard errors are in parentheses. ***p < 0.01; **p < 0.05; *p < 0.1.*
Source: GSO Enterprise Census, 2008-2012

TABLE 8 'FIXED EFFECT (FE) AND RANDOM EFFECT (RE) ESTIMATES OF GROWTH BY FIRM SIZE', 2007 - 2011

	Small firms			Medium firms			Large firms		
Variable	FE	RE	RE	FE	RE	RE	FE	RE	RE
Location: Hochiminh, Hanoi		0.037***	0.121***		-0.002	0.005		-0.023	-0.021
		(0.012)	(0.013)		(0.013)	(0.013)		(0.017)	(0.017)
Location: Danang, Haiphong, Cantho		-0.005	-0.004		-0.043*	-0.033		-0.011	-0.009
		(0.020)	(0.022)		(0.022)	(0.022)		(0.029)	(0.029)
Legal structure: FDI		0.256***	0.162**		0.093***	0.059**		0.038	0.028
		(0.064)	(0.067)		(0.023)	(0.024)		(0.024)	(0.027)
Legal structure: DNS		0.012	-0.081		0.024	-0.001		0.011	0.005
		(0.063)	(0.065)		(0.022)	(0.023)		(0.024)	(0.026)
Food, beverages and cigarettes		-0.062***	-0.008		0.022	0.027		0.066**	0.066**
		(0.018)	(0.021)		(0.022)	(0.022)		(0.029)	(0.029)
Textiles		-0.022	-0.027		-0.007	-0.010		0.011	0.012
		(0.027)	(0.029)		(0.026)	(0.026)		(0.036)	(0.036)
Garments		-0.003	-0.019		0.069***	0.073***		0.073**	0.074**
		(0.029)	(0.033)		(0.027)	(0.026)		(0.031)	(0.031)
Leather and Footwear		0.042	0.032		0.061*	0.063*		0.027	0.028
		(0.046)	(0.051)		(0.036)	(0.035)		(0.036)	(0.036)
Manufacturing of wood		0.011	0.008		-0.033	-0.035		0.023	0.023
		(0.018)	(0.020)		(0.021)	(0.021)		(0.051)	(0.051)
Firm size: log asset	-0.236***	-0.022***	0.005	-0.282***	0.017***	0.017***	-0.361***	-0.010	-0.010
	(0.013)	(0.006)	(0.006)	(0.021)	(0.006)	(0.006)	(0.027)	(0.009)	(0.009)
Log average labor cost	-0.343***	-0.120***	-0.161***	-0.203***	-0.076***	-0.074***	-0.072***	-0.026**	-0.025*
	(0.014)	(0.009)	(0.009)	(0.016)	(0.010)	(0.010)	(0.019)	(0.013)	(0.013)
Cost disadvantage ratio (fixed K/total K)	0.158***	0.060**	0.077***	0.066	0.148***	0.141***	0.041	0.188***	0.187***
	(0.048)	(0.024)	(0.024)	(0.070)	(0.027)	(0.027)	(0.097)	(0.037)	(0.037)
Capital per labor	0.025***	0.041***	0.031***	0.017***	0.012***	0.011***	0.055***	0.011	0.010
	(0.007)	(0.004)	(0.004)	(0.003)	(0.002)	(0.002)	(0.012)	(0.009)	(0.009)
Leverage (liabilities/capital)	-0.448***	-0.117***	-0.047**	0.030	-0.005	-0.006	0.072	-0.020	-0.020
	(0.038)	(0.021)	(0.021)	(0.052)	(0.022)	(0.021)	(0.068)	(0.029)	(0.029)
Ratio of firms exporting in the industry		-0.115	0.035		-0.240	-0.360*		-0.605**	-0.628**

		(0.155)	(0.178)		(0.191)	(0.192)		(0.289)	(0.290)
Ratio of firms importing in the industry		0.197	0.075		0.200	0.279**		0.512***	0.526***
		(0.128)	(0.144)		(0.138)	(0.138)		(0.187)	(0.188)
Firm has access to Internet									
Firm has computer									
Firm has website									
Time trend	0.028***	-0.055***	-0.077***	0.006	-0.001	0.002	0.015**	0.021***	0.022***
	(0.005)	(0.005)	(0.004)	(0.005)	(0.004)	(0.004)	(0.006)	(0.006)	(0.006)
Firm size: log employment	-0.384***	-0.001	-0.098***	-0.246***	-0.012	-0.004	-0.238***	0.002	0.003
	(0.017)	(0.008)	(0.008)	(0.031)	(0.014)	(0.014)	(0.041)	(0.014)	(0.014)
Firm age (years)	0		-0.012***	0		-0.003***	0		-0.001
	0		(0.001)	0		(0.001)	0		(0.001)
Constant	0.130*	-0.394***	-0.107	1.477***	-0.374***	-0.348***	3.105***	-0.159*	-0.148
	(0.075)	(0.077)	(0.079)	(0.170)	(0.081)	(0.081)	(0.285)	(0.096)	(0.097)
Observations	42,674	42,674	35,530	12,723	12,723	12,722	4,727	4,727	4,727
R-squared	0.079	.018	.018	0.062	.014	.014	0.087	.019	.019
P value (F for Chi2 test)	0	0	0	0	0	0	0	0	0
Hausman test for model selection	0			0			0		

*Note: Robust standard errors are in parentheses. ***p < 0.01; **p < 0.05; *p < 0.1.*
Source: GSO Enterprise Census, 2008-2012

CONCLUSION

The primary objective of this analysis has been to explore potential explanations for the very pronounced rightward skew in the firm size distribution in Vietnam. Specifically, it has examined whether the same variables allegedly accounting for Vietnam's 'missing SMEs' are also associated with lower survival probabilities or lower growth rates of SMEs. Firm dynamics, then, serves as an entry point to investigate the mechanisms generating, or perpetuating, the rightward skew.

One preliminary finding from the analysis should be noted. The relationship between firm size, survival, and growth is generally consistent with findings in the broader empirical literature. Overall, the relationship between firm size and survival is positive, while that between firm size and growth is negative.

In terms of the above debate there are a number of interesting findings. First, on balance, the effects of leverage on both survival and growth appear to be *negative*. In terms of survival, the relationship is negative across all time periods, though statistically significant at the 10% level only, but significant at the 5% level for large size firms. With respect to growth, leverage is negative and statistically significant at the 1% level across most time periods and for small firms. It is possible that these results are due to the particular period of economic downturn under study, given increased difficulties of servicing or refinancing debt, though similar results have been found for periods of relatively rapid growth. Nevertheless, these findings do suggest caution about the widely held view in Vietnam that lack of credit is a binding constraint on SME growth (and a major contributor to the rightward skew).

Second, our measure of economies of scale, the cost disadvantage ratio (CDR), is positively associated with firm survival across all time periods and all firm sizes, and, in most cases, statistically significant at the 1% level. On the other hand, the CDR has a positive and statistically significant association with growth for small firms only. This latter finding consistent with the results discussed in Section 2.2 that large firms in Vietnam do not enjoy large economies of scale in production, and such factors cannot account for the rightward skew. It is likely that the positive relationship between the CDR and firm survival is due to the fact that the importance of fixed capital to survival was heightened during the period of economic downturn in ways unrelated to economies of scale.

Third, in terms of trade, there is a consistently negative association between exporting firms and survival, which is statistically significant at the 1% level for the period 2007-2011 for small firms only. The opposite result generally holds for importing firms. In terms of growth, this same negative relationship holds across most time periods and firm size categories though is only statistically significant for large firms. As above, the relationship between growth and importing is generally positive. One potential explanation for these surprising results concerns the period of global economic slowdown which limited export growth. Similar results have been found, however, for earlier periods in Vietnam (Vu et al., 2012). Another possibility concerns the construct validity of the export and import variables and their inability to capture heterogeneity among exporting and importing firms. In any event, this finding suggests caution with respect to the view that barriers to entry in export markets are a binding constraint on SME growth or survival, accounting for the rightward skew in the firm size distribution.

Fourth, in terms of ownership type, there are not statistically significant differences in survival prospects of Foreign Direct Invested (FDI) and Domestic Non-State (DNS) firms relative to State Owned Enterprises. In terms of growth, there is a positive and statistically significant association between FDI firms and growth across most time periods for small and medium sized firms. Such results are generally consistent with our earlier finding in Section 2.2, that present-day factor allocation biases do not systematically favour SOEs.

In summary, the focus on firm level dynamics raises a range of questions with respect to the rightward skew in the firm size distribution. Overall, findings on leverage, or credit, and trade do *not* support the view that these variables constitute binding constraints on SME growth or survival. Findings on economies of scale and firm ownership are generally consistent with the view that these variables do not account for Vietnam's 'missing SMEs'. Additional research is required to pronounce more definitively on these questions.

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Appendix Tables

Appendix Table 1: Manufacturing Firms by Ownership and Size

	2007			2008			2009			2010			2011		
Size group	SOE	FDI	DNS	SOE	FDI	DNS	SOE	FDI	DNS	SOE	FDI	DNS	SOE	FDI	DNS
<5	0	67	2642	0	66	3390	1	82	4802	0	80	5856	3	129	10101
5-9	3	94	6736	4	145	8915	2	146	12918	2	150	10987	5	210	11683
10-49	36	871	9730	31	973	12737	62	1140	14638	47	1102	14974	76	1320	17716
50-99	72	516	2253	67	615	2377	93	717	2810	77	724	2998	80	806	3621
100-199	126	622	1488	108	676	1570	140	750	1752	115	773	1935	149	866	2177
200-499	212	647	998	198	677	1012	243	752	1182	194	796	1230	172	878	1398
500 and over	223	630	529	185	696	545	227	733	593	167	780	608	182	902	649

Source: GSO Enterprise Census, 2008-2012

Appendix Table 2: Firms by Manufacturing Category

Manufacturing sub-industry	2007	2008	2009	2010	2011
Food, beverages and cigarette	4,945	5,724	6,849	6,264	7,618
Textiles	1,131	1,313	1,827	1,825	2,220
Garments	2,423	3,203	3,629	3,925	4,676
Leather and footwear	658	811	942	1,088	1,267
Manufacturing of wood and wood products	3,287	4,087	5,226	4,796	6,061
Other manufacturing	16,239	19,983	25,531	25,843	31,693

Source: GSO Enterprise Census, 2008-2012

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