CHAPTER 6

Business Performance in Young Latin American Firms

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Aggregate data on productivity growth provides only a partial view of the Latin American reality. Indeed, one of the most salient features of business structures in the region is the presence of a high degree of heterogeneity across firms. As far as productivity is concerned, a large base of micro and small firms with low levels of productivity coexists alongside a select group of

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large firms, including subsidiaries of transnational companies characterized by very high levels of productivity (Pagés 2010). As mentioned in Chap. 1, it is very important to understand the sources of this heterogeneity and to identify ways to reduce the productivity gap. One interesting dimension that deserves attention is firm age, in particular, the extent to which young firms can act as vehicles to reduce productivity gaps, since they are often considered a potential source of economic innovation, rejuvenation, and renewal. This expectation has motivated different studies in Europe and worldwide (Pellegrino et al. 2012; Schneider and Veugelers 2010; Ayyagari et al. 2011).

In Latin America, the study of young firms remains a nascent issue. Prior research has tried to understand the factors that affect the emergence of new dynamic firms by analyzing the entrepreneurial process and the characteristics of entrepreneurs (Kantis et al. 2002, 2005). Other studies used econometric methods to assess the influence of these characteristics on business growth (Federico et al. 2012; Capelleras and Kantis 2009). These studies mainly referred to the early phases of the business life cycle to demonstrate empirically the key role of entrepreneurial human capital (founders and their networks) in post-entry performance. However, they did not address the issues related to business performance that arise once firms outgrow the initial phase and move into the young firm stage.

In addition, the aforementioned studies were based on surveys conducted between 2001 and 2003. Since then, there have been many important changes in the region. For instance, most Latin American countries have experienced large economic growth periods leading to important changes not only at the economic level (e.g. new activities and new industries), but also at the social level (e.g. a larger middle class and access to education). In addition, following international trends, entrepreneurship and young growth-oriented firms have increasingly become part of the policy agenda in many Latin American countries (Kantis 2014; Kantis et al. 2012).

Interestingly, one of the unique cross-regional studies of the contribution of small and young firms to employment and job creation showed that, in Latin America, the contribution of young firms was below the median of the developing world (Ayyagari et al. 2011). Trying to shed some light on this result, a recent study affirmed that, in spite of what many people think, Latin America is characterized by a high level of entrepreneurship; however, these new firms tend to be smaller than in other regions and do not grow as much as similar firms in other regions (Lederman et al. 2014). Largely, this situation has been explained by the pre-eminence of informal micro-enterprises with low productivity levels and growth ambitions that characterize most countries in Latin America (CAF 2013).

Others argue that among the reasons young firms grow as slowly as they do is the lack of innovation. In fact, young firms in Latin America, defined as those that have been in business for ten years or less, tended to exhibit innovation rates slightly lower than mature firms (World Bank 2014). However, the same report remarked that there was an important degree of heterogeneity in terms of the innovative profiles of young firms. In fact, by grouping young firms according to their dynamism, these authors reported that such firms—defined as those selling to foreign markets, based on new products, or having created more employment than the median in their countries—exhibited significantly higher innovation rates than older firms and other young non-dynamic firms.

In this context, there is increasing consensus about the need to change the policy emphasis from supporting small firms to supporting start-ups and young firms because of their potential to innovate and close the productivity and growth gaps (Lederman et al. 2014; CAF 2013). However, fulfilling these expectations depends on how sustainable and profitable young firms' growth is in the long term. Therefore, there is a need to understand the main characteristics of young Latin American firms and their growth dynamics over time. This phase of organizational development is the least explored. It is the phase during which firms, having surpassed the startup hurdles, begin to face strategic and organizational challenges that can affect business performance (Garnsey 1998; Greiner 1972; Levie and Lichtenstein 2010).

This chapter offers new empirical evidence about the performance of young firms in Latin America by focusing on four research questions. The first three questions, which are addressed using statistical analysis, are (i) What are the main characteristics of young Latin American firms and their entrepreneurs? (ii) How well do these firms perform in terms of growth and productivity? (iii) How do young firms compare with mature companies? We seek to answer the fourth question—(iv) What are the principal characteristics associated with the performance of young firms?—by estimating different econometric models using a sub-sample of the firm population. Answering these questions should provide some inputs for policymakers interested in reducing the persistent Latin American productivity gap.

Conceptual Framework and Literature Review

Davidsson et al. (2006) argued that "firm growth is a complex phenomenon. It is not unidimensional and it is hard to predict and assess. Further, it can manifest itself in various ways, and consequently it can have differential

effects on several different levels." Firm growth has been well studied, but the results of these studies vary widely. For instance, a review of 19 studies found that high-growth firms tended to be young (Henrekson and Johansson 2010), while a US-based study found that high-growth firms tended to be more mature (Acs et al. 2008).[1] Consequently, there is no unified, generally accepted theory of firm growth. Instead, different theoretical perspectives are combined in several integrated or holistic models (e.g. Baum et al. 2001; Chrisman et al. 1998; Storey 1994). These integrated approaches provide a more comprehensive view of firm growth than does an individual analysis of each variable (or set of variables) in isolation. We follow this approach to develop an integrated model of firm growth, where the following theoretical perspectives are combined: (i) entrepreneurial capabilities and firm resources, (ii) firm strategic behavior, and (iii) business regulations.

The rationale to include the characteristics of entrepreneurs is that, compared with large companies, young small and medium enterprises (SMEs) are characterized by a strong emotional connection between the owner and the firm (Chan and Foster 2001). Thus, certain characteristics of the entrepreneur strongly influence not only the type of firm that will be created, but also the way it will be managed (Bridge et al. 1998). The human capital of entrepreneurs may be seen as a unique resource (Álvarez and Busenitz 2001) that is formed through education and previous entrepreneurial experience (Brüderl et al. 1992). Higher education provides superior technical knowledge and contributes positively to developing individual learning capabilities to process new information and, likewise, recognize business opportunities (Shane 2000; Ucbasaran et al. 2008). Additionally, more educated entrepreneurs have the necessary skills, discipline, motivation, information, and self-confidence to attain higher growth rates in their businesses (Cooper et al. 1994). Previous working or entrepreneurial experiences also prove to be fruitful, as they provide information, knowledge, and abilities that allow the entrepreneur to efficiently solve new problems. Moreover, such experiences may contribute to the development of better technical and managerial skills, wider business networks, and access to specific, tacit knowledge about markets and customer needs (Shane 2000). Therefore, we expect the experience of the founder to have a positive effect on firm growth (e.g. Stuart and Abetti 1990; Colombo and Grilli 2005). The capabilities and characteristics of employees may also be relevant to firm performance, especially for young, growing companies.

Firm resources are relevant during the startup and young phases when firms need to achieve a threshold of scale and overcome what Stinchcombe (1965) called the "liability of newness." According to the resource-based

view of a firm, resources are the primary driver of firm performance and greatly influence its strategy (Grant 1991). Although many resources may be identified as determinants of firm growth, one of the most studied and empirically examined has been financial capital (Cooper et al. 1994; Gilbert et al. 2006). A higher level of financial capital may allow entrepreneurs to use more aggressive growth strategies or more ambitious investment projects, which suggests there is a positive relationship between using external sources of financing (e.g. banks, governments, and venture capitalists) and business growth (Lee et al. 2001).

Additionally, financial capital may help young firms overcome their initial disadvantages and "mistakes" (Chrisman et al. 1998). Although most of the funding of young firms comes from entrepreneurs' own savings or money borrowed from relatives and friends, the amount of cash needed to accelerate growth processes usually exceeds these personal sources. Many young, growing firms rely on external sources of financing to accelerate their growth perspectives. However, smaller and younger firms tend to be at a disadvantage in securing bank credit compared to larger and older firms (see Chap. 8). Moreover, extensive research demonstrates the evolution of different sources of entrepreneurial finance throughout the life cycle of the business, for instance from friends and family during gestation to angel investors during the early stage and to venture capital for further expansion (Mason 1998; Gompers and Lerner 2004). In Latin America, these latter sources of entrepreneurial financing have recently begun to emerge but remain weakly developed (Kantis et al. 2005; Kantis 2010, 2014).

Strategic behavior is another factor that affects firm performance because it reflects the way entrepreneurs organize and assign resources to achieve business objectives. Innovation is one strategic behavior of particular importance. Innovative activities like R&D aimed at developing new products and processes or new business models may contribute to the emergence of new firms, the establishment of a sound competitive position, and/or improvements to the levels of productivity (Acs and Audretsch 2005; Audretsch and Keilbach 2007; Quince and Whittaker 2002).

Finally, from a broad systemic perspective, the emergence of dynamic young firms also depends on the institutional setting (Kantis et al. 2005; Kantis 2014; Acs et al. 2014). Regulations form part of this setting that can directly influence the performance of young firms by either restricting or enabling growth. The institutional setting also indirectly influences performance through its effect on the business environment for young firms (i.e. access to financing, human capital, and the stock of entrepreneurs willing to start new companies).

Data and Research Methodology

We base this study on a sample of young firms extracted from the World Bank Enterprise Surveys (WBES). We use the latest round of surveys, which were conducted in 2010. Young firms, our target group, are defined as those between four and ten years old.[2] Our sample includes only those countries with information on at least 30 young firms and with no missing values in the performance indicators (sales, employment, and productivity). After applying these filters, we end up with a final sample of 1074 young firms from Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Panama, Paraguay, Peru, and Uruguay (see tables [6.8, 6.9, and 6.10] of independent variables and performance measures in the Appendix). To measure the business performance of young firms, we consider the following variables:

- **Average annual sales growth:** Using Haltiwanger's specification adopted by the World Bank, we compute sales growth as the average of the differences in sales between 2007 and 2009 divided by the average sales over that period (World Bank 2013).[3] We then divide this figure by the number of inter-annual periods (two) to obtain an average annual rate. The advantage of this specification is that, using average sales instead of initial sales controls for those cases where relative growth is large only because the initial base is too small, which could arguably be the case in many observations in the sample given our focus on young firms. The specific formula we use to calculate this variable is:

$$\text{Sales Growth} = \frac{\left(\frac{(\text{Sales2009} - \text{Sales2007})}{(\text{Sales2009} + \text{Sales2007}) / 2} \right)}{2}$$

- **Average annual employment growth:** Using the same specification adopted above, we compute employment growth as the average of the differences in the number of full-time permanent workers between 2007 and 2009 divided by the average number of such workers over the same period of time. We then divide this figure by the number of inter-annual periods (two) to obtain the average annual employment growth rate.
- **Labor productivity:** We estimate labor productivity using the ratio of sales to the number of full-time permanent workers in 2009.

To answer our last research question about the main factors associated with the performance of young firms, we estimate different econometric models for each of the aforementioned performance indicators. Independent variables refer to a set of dimensions associated with: (i) the capabilities of entrepreneurs and firms, (ii) the adoption of innovations, (iii) financial constraints, (iv) market strategy, (v) the regulatory framework, and (vi) firm characteristics. A complete description of these variables is provided in Table 6.7 in the Appendix. The unit of analysis is the firm and the model specification is the following:

$$y = \alpha + \beta 1 EXP + \beta 2 WKF + \beta 3 TRG + \beta 4 ASSIST + \beta 5 INNOV + \beta 6 FIN + \beta 7 DIV + \beta 8 REG + \gamma AGE + \gamma 1 AGE^2 + \theta INSIZE + \theta 1 INSIZE^2 + \lambda GEN + \phi LOC + \delta Sector + \delta 1 Country + \mu$$

We estimate all of these models first using ordinary least squares (OLS) methods with robust standard errors. We limit model estimations to manufacturing firms since only these firms were asked questions about innovation practices and human resource capabilities. In addition, we exclude Brazilian firms from our estimations since the survey did not include data about innovation or information on technical assistance and human resources.[4] The number of observations in the models declines to 444 firms as a result of these restrictions.[5]

We have a few caveats on the limitations of the data that could affect our estimation results. First, the sample includes only surviving firms. Survival and attrition bias is a question largely discussed in the literature on firm growth (e.g. Nightingale and Coad 2013). This bias principally affects the representativeness of our sample since it includes only a subset of young survivor firms. Hence, some caution should be taken when trying to generalize the results of this study for the whole population.[6] Also, our sample includes outliers and variables with a huge dispersion due to extreme values,[7] which is expected given the heterogeneous nature of the firm population under study. To deal with this, we report the median instead of the mean as a summary measure.

Young Latin American Firms and Their Entrepreneurs: A Portrait Based on Descriptive Statistics

Almost one in five Latin American firms is young, meaning it is between four and ten years old.[8] The majority of young firms in the region are between eight and ten years old. Young firms in Chile, Ecuador, and

Panama tend to be older than the rest of the sample, while those in Uruguay and Costa Rica tend to be younger. Interestingly, in several countries, especially Argentina, Chile, and Peru, young firms tend to have a larger presence in knowledge-based sectors (i.e. technology services and engineering-intensive manufacturing) than the more mature companies, demonstrating a trend toward the diversification of the regional industrial structure.[9] Most of the entrepreneurs are male, although 40% of the young firms are either managed by a woman or have a woman among their founders.[10]

Looking at prior experience, the entrepreneurs in young firms tended to work as employees before starting their companies (75%); only one-third held managerial positions prior to working at the current firm. This finding is more frequent in Argentina (44%), Chile (42%), Guatemala (40%), and Paraguay (47%).[11] The Argentinean, Chilean, and Colombian entrepreneurs have the most experience in a similar industry (at least 20 years). Previous industry experience may positively influence business growth by allowing the entrepreneur to exploit competitive advantages derived from tacit knowledge, mainly by knowing both *how* and *who*. Entrepreneurs who were previously unemployed or that started their own company because of a lack of better job opportunities represent a limited proportion of the sample (3%). Of note, informal enterprises, where necessity entrepreneurship tends to dominate, are not included in the WBES.

In terms of firm size, half of the young Latin American firms in the sample employ between 10 and 49 full-time workers.[12] In other words, firms tend to be small, with a median number of full-time workers of around 18; however, there is significant dispersion across firms, with manufacturing firms (20 full-time workers) tending to be larger than services firms (17). These figures hide an important heterogeneity among countries. In Peru (seven full-time workers) and Panama (eight), the median sizes of young firms tend to be smaller; whereas in Chile (35) and Costa Rica (47), firms tend to be larger, though still smaller than mature firms.[13]

In general, most young firms tend to focus their sales in domestic markets. At the regional level, 84% do not export (compared to 75% of mature companies) and direct exports account for less than 5% of sales. Only in Costa Rica, Argentina, and Peru is there a relevant group of young active exporters (i.e. exporting 20% or more of their sales).[14] Young international new ventures or "born globals," as referred to in the literature, are not a generalized phenomenon in the region.[15]

Data on innovation-related activities indicate that almost 43% of the young firms in Latin America performed R&D activities between 2007 and 2009, in line with mature firms. Moreover, most of the ones we study introduced new products and/or processes during this period.[16] On the one hand, Argentina, Paraguay, and Uruguay had more young firms introducing new products. On the other hand, process innovations were more frequent among young firms in Chile, Colombia, and Peru. These findings align with the study presented in Chap. 2, which found that most firms in the region are actively introducing product and/or process innovations. While both young and mature firms innovate at similar rates, new products introduced by young firms constitute a larger proportion of sales compared to mature firms. New products account for at least 25% of sales in young firms compared to roughly 33% of sales in mature firms.

The Growth of Young Latin American Firms

Young Latin American firms usually begin operations as micro-enterprises. More than 40% have no more than five employees during the initial startup phase.[17] Young firms in certain countries, like Chile and Argentina, tend to start bigger than those in other countries (their median size is twice that for the region of six employees). Once in the market, these young firms do not just survive, but grow enough to become part of the SME segment. In fact, the median size in 2007, when these firms were about five years old, was 15 full-time workers—three times the initial size.[18] However, this initial growth tends to slow down in subsequent years; the increase in median firm size between 2007 and 2009 was just 20%. Interestingly, this performance cannot be attributed, at least predominantly, to the international crisis since the effect in most Latin American countries was small (World Bank 2010).

In addition, young firms, on the whole, perform better than mature companies. For instance, young firms in 9 out of 12 Latin American countries saw their sales growth outperform that of mature firms (5 vs 1.3%, respectively, using median values).[19]

Even in a context of lower dynamism, 28% of young Latin American firms grew in size (employment) at an annual average rate of 20% during the period surveyed.[20] In other words, a large number of young firms in our sample could be identified as high growth performers, despite the general finding of low firm-level growth.[21]

To capture the heterogeneity of the growth profiles of young firms, we propose a taxonomy that takes into account the different growth rates of past years and the final scale achieved. For the different thresholds for firm growth, we adopt the definitions of the OECD and the Global Entrepreneurship Monitor for moderate (annual average growth of 10%) and high growth (20%). The scale is calculated using a widely recognized size threshold based on employment. We define a micro-enterprise as a firm that has fewer than ten employees, while an SME has ten or more. By combining both variables (growth and final scale), we arrive at a taxonomy based on five categories (see Table 6.1 and Fig. 6.1).

Table 6.1 Taxonomy of young firms

		Average sales growth rate (2007–2009)		
		Low growth (10% or below)	*Moderate growth (11% ≥ 19%)*	*High growth (20% or more)*
Size (Employees in 2009)	Micro (1–9 employees)	Low-growth micro-enterprises		Micro-enterprises in transition
	SME (10+ employees)	Low-growth SMEs	Moderate-growth SMEs	High-growth SMEs

Source: Authors' elaboration

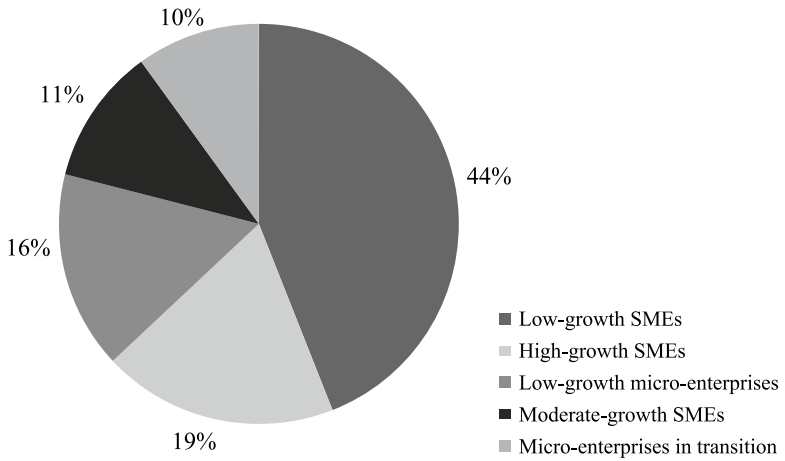

Fig. 6.1 Composition of the sample according to the taxonomy of the growth and scale of young firms

Source: Authors' elaboration based on WBES data

Using this taxonomy, Fig. 6.1 shows that low-growth SMEs make up the largest group (44%) within the subset of young firms. These are the firms that grew enough to become an SME, but stagnated in subsequent years. High-growth SMEs are the second largest group (19%), followed by moderate-growth SMEs (11%). Two distinct groups arise from the micro-enterprises: the first comprises micro-firms with low to negative growth rates (16% of firms), and the second those micro-enterprises experiencing high enough growth to be transitioning into the world of SMEs (10%). Overall, if we only consider those firms that experienced moderate to high growth rates during the 2007–2009 period (i.e. micro-enterprises in transition, moderate-growth SMEs, and high-growth SMEs), we see that growing firms represent 40% of the total sample of young firms.

One interesting feature of the high-growth SME segment is its important contribution to the sophistication of the regional business structure. For instance, these firms (29%) tend to be more concentrated in knowledge-intensive sectors, such as engineering-intensive manufacturing or technological services, than the rest of the young firms (21%) or the mature firms (21%).[22] To a lesser extent, the same is the case for micro-enterprises in transition (27% are in knowledge-intensive sectors), supporting the idea that they have potential to enlarge the base of growing and innovative SMEs.

The Productivity of Young Latin American Firms

In terms of labor productivity, the results of our sample show that young firms' productivity levels are lower than those of mature firms. To calculate the productivity gap, we estimate the labor productivity for each firm using the logarithm of sales per employee in the previous fiscal year, with sales expressed in constant 2009 US dollars. Then, we compute the medians for these values and compare young and mature firms. We use the median instead of the mean because this measure is less sensitive to outliers and extreme values. At the regional level and considering all the sectors, the productivity gap between young and mature firms in 2009 was about 21% (Table 6.2). Three years earlier this difference was 27%, thus the gap was shrinking. By sector, the results are mixed. For services and manufacturing firms, the gap narrowed, while for commercial firms, the gap widened.

Overall, the progress made in reducing the productivity gap can be attributed to improving productivity in young firms, especially in the services

Table 6.2 Productivity gap between young and mature firms by sector (*median values*)

	Productivity gap (mature firms = 100)	
Sector	*2007*	*2009*
Manufacturing	73.7	79.4
Commerce	84.4	73.9
Services	70.3	81.1
Total	**72.8**	**79.2**

Source: Authors' elaboration based on WBES data

Table 6.3 Productivity growth between 2007 and 2009 by age and sector (median values)

Sector	*Productivity growth: young firms (%)*	*Productivity growth: mature firms (%)*
Manufacturing	1.4	–2.3
Commerce	–7.7	–1.1
Services	4.9	–2.3
Total	**2.1**	**–2.1**

Source: Authors' elaboration based on WBES data

sector. At the same time, mature firms experienced some setbacks in their productivity levels, which contributed to closing the gap (Table 6.3).

However, as mentioned, young firms are not a homogeneous group and comparing productivity levels according to the taxonomy of young firms reveals interesting results. For example, the levels of productivity among growing SMEs (moderate and high growth) are similar to those observed among mature firms. This situation is chiefly driven by the manufacturing sector, where young growing SMEs outperform mature firms. In addition, high-growth SMEs and micro-enterprises in transition show the biggest increases in productivity. Trends among moderate-growth SMEs are mixed: positive in commerce and services but negative in manufacturing (Table 6.4).

In sum, there is widespread heterogeneity among young firms. Between 2007 and 2009, their initial growth slowed. Despite this, the taxonomy proposed in this chapter shows that an important segment of young SMEs has continued growing and contributed to closing the productivity gap with mature firms. At the same time, a promising segment of rapidly growing micro-enterprises has been identified. The next section explores in depth the main factors associated with young manufacturing firms' growth and productivity.

Table 6.4 Productivity levels and growth according to the taxonomy of young firms by sector

Taxonomy of young firms	*Productivity gap 2009 (mature firms=100)*				*Productivity growth 2007–2009*			
	Manufacturing	*Commerce*	*Services*	*Total*	*Manufacturing*	*Commerce*	*Services*	*Total*
Low-growth micro-enterprises	54.0	63.2	82.5	61.3	–8.1%	–35.2%	16.0%	–4.1%
Micro-enterprises in transition	62.9	91.0	76.0	67.8	69.1%	64.3%	21.6%	60.6%
Low-growth SMEs	73.6	87.8	84.6	77.2	–19.7%	–26.1%	–20.2%	–17.6%
Moderate-growth SMEs	110.3	105.0	76.9	102.9	–7.2%	3.5%	10.3%	–13.2%
High-growth SMEs	104.8	65.0	67.1	97.9	77.8%	84.8%	29.9%	76.8%
Total	**79.4**	**73.9**	**81.1**	**79.2**	**2.8%**	**–14.2%**	**10.2%**	**4.2%**

Source: Authors' elaboration based on WBES data

The Performance of Young Manufacturing Firms: Estimation Results[23]

In this section, we use OLS regression techniques to identify the main factors associated with the performance of young firms. We estimate four models using performance measures for labor productivity, sales growth, and employment growth as the dependent variables. We estimate additional models to check robustness.

Labor Productivity

Table 6.5 presents the OLS regression results for the two specifications using the logarithm of labor productivity levels as the dependent variable. Model 1 includes the main firm characteristics described earlier. Model 2 slightly adapts the first model by including a variable that captures the potential effect of firm dynamism on productivity levels by adding a dummy variable equal to one for high-growth firms and zero otherwise.[24]

Model 1 shows a positive and statistically significant association between workforce training and labor productivity for the sample of young manufacturing firms under study. There is a similar statistically significant relationship for hiring technical assistance (0.304). As we suggested earlier, these results propose that human capital variables (internal and external) can play an important role in boosting the productivity levels of young firms, which may help improve their competitive position in the market. In fact, as Model 2 shows, there is a positive and statistically significant relationship between the high growth status of young manufacturing firms and productivity levels. That is, productivity levels of high growth firms are, on average, 32 percentage points higher than their non-high growth counterparts.

Unsurprisingly, financial constraints are negatively associated with labor productivity in both models. The models show that young manufacturing firms that are either rationed or discouraged (financial constraint variable), on average, have labor productivity 25 percentage points lower, holding all else equal. However, the direction of causality could be the reverse, with less productive firms facing more difficulties accessing external resources.

Other variables, such as innovating and adopting diversification strategies, do not seem to be statistically associated with productivity. To some extent, this could be due to non-contemporaneous effects.[25] Finally, initial size has a slight positive effect on labor productivity, meaning firms that

Table 6.5 Regression outputs: labor productivity levels (in logs)

	Model 1	*Model 2*
Industry experience	0.0013	0.0009
	(0.0048)	(0.0047)
Workforce capabilities	0.0052*	0.0053*
	(0.0029)	(0.0029)
Workforce training	0.3302***	0.3223***
	(0.1039)	(0.1014)
Technical assistance	0.3037***	0.2734***
	(0.1036)	(0.103)
Innovation	0.105	0.103
	(0.1022)	(0.1019)
Financial constraint	–0.2480**	–0.2278**
	(0.0966)	(0.0974)
Diversification	–0.001	–0.0011
	(0.0017)	(0.0016)
Regulations	0.0237	0.0217
	(0.0511)	(0.0507)
Firm age	–0.0411	–0.0343
	(0.0324)	(0.0323)
Firm age squared	0.0074	0.0084
	(0.0126)	(0.0126)
Initial size	0.0027***	0.0031***
	(0.001)	(0.001)
Initial size squared	–0.0000**	–0.0000**
	(0.0000)	(0.0000)
Gender	–0.2367***	–0.2207**
	(0.0892)	(0.0884)
Location	0.0407	0.0418
	(0.1568)	(0.1562)
High growth (=1)	n.a.	0.3160**
		(0.1278)
Constant	10.1816***	10.1492***
	(0.267)	(0.267)
N	444	444
F-test	13.05***	12.36***
R^2	0.3349	0.3463

Source: Authors' elaboration based on WBES data

Notes: * Coefficient is statistically significant at the 10% level, ** at the 5% level, *** at the 1% level; no asterisk means the coefficient is not different from zero with statistical significance. Robust standard errors are reported in parenthesis. Industry and country dummies are included but they are not reported here for the sake of simplicity. n.a. = not applicable

started out larger had higher productivity levels, although the magnitude of the effect is quite small. This finding may be due to minimum economies of scales.

Sales and Employment Growth

Previous studies in Latin America generally found a positive relationship between firm performance and entrepreneurial capabilities (Kantis et al. 2005; Federico et al. 2012). However, as discussed below, our estimations cannot confirm these results.

In the first model, the dependent variable is sales growth. The results of the OLS estimation show that, on the one hand, entrepreneurs' industry-specific experience has a slight positive association with sales growth; however, it is only significant at the 10% level and the magnitude is quite small. On the other hand, hiring technical assistance for quality control and/or certification has a positive relationship with sales growth and is statistically significant at the 1% level. Technical assistance is associated with a 9 percentage point increase in sales growth, all else being equal. In addition, the perception that regulations are an obstacle (e.g. taxation, trade and labor norms, and licenses and permits) has a negative effect on sales growth at a 5% significance level, although no such effect was found for employment growth. This result shows the negative influence that the regulatory framework may have on sales growth, although we note that obstacles are based on the subjective opinions of survey respondents.[26] Finally, neither workforce capabilities nor training were significant in the sales growth model.

The second model looks at employment growth. Those variables associated with the capabilities of entrepreneurs and firms (i.e. entrepreneurs' industry experience, workforce capabilities, and training) are all positively related with growth, but none are statistically significant. In turn, the results show that employment growth is negatively associated with firms that are credit constrained or discouraged, which may suggest the importance of access to external financing to expand the workforce. Financially constrained young manufacturing firms are associated with a larger decrease in employment growth than non-financially constrained firms (of about 6 percentage points), all else being equal. Young firms may need additional sources of financing to expand employment. Finally,

we find a negative and highly statistically significant relationship between initial size and employment growth. This result, also observed in the sales growth model, suggests that young firms that begin operations with a smaller initial size tend to grow at a higher rate than those whose initial size was larger. In addition, we find evidence of a non-linear influence of initial size on growth. This could mean that smaller young firms need to grow at a greater rate in order to overcome their initial size disadvantages and to increase their chances of survival. However, the magnitude of these coefficients is small and they should be interpreted accordingly.

In sum, both the sales and employment growth models demonstrate low predictive power (R^2). However, a few significant findings emerge. One interesting result is that sales and employment growth are not affected by the same constraints.[27] This result is not necessarily obvious for policymakers who tend to associate firm growth with job creation. For example, while technical assistance is found to be statistically associated with sales growth, the same relationship is not found for employment growth; regulations are found to have a negative and statistically significant effect on sales growth, but not on employment growth. Instead, in the employment growth model, access to external financing is the obstacle that has a negative and statistically significant effect on employment growth. One commonality between the two models is the negative association between initial firm size and growth. However, the low explanatory power of both models suggests that there might be other important variables associated with growth of young firms that are not accounted for here. Some of these variables could include entrepreneurial team characteristics, strategy implementation, entrepreneurial orientation, or the role of networks, which could not be included due to data limitations (Table 6.6).

Robustness Checks

We perform several sensitivity tests to examine further the empirical robustness of our results. We conduct these checks to observe whether a change in the key variables produces measurably different results (i.e. due to measurement error).[28] In the first test, we substitute firm productivity growth for the dependent variable firm productivity level. Using firm productivity growth, the results are qualitatively similar to those in the above models. Simple regressions show a positive association of both techni-