

BUSINESS CONSTRAINTS AND THE PERFORMANCE OF MICRO AND SMALL MANUFACTURING FIRMS IN INDIA

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ABSTRACT

We analyze data from two large surveys of Indian manufacturing firms, one from 2002 and the other from 2006, to examine how micro (up to 10 employees) and small (up to 50 employees) manufacturing businesses in India were affected by changes in regulatory policies, legal/ethical environment, access to capital, taxation, and infrastructure. Using capacity utilization as a measure of firm performance, we compare the performance of firms in 2002 and 2006. Contrary to initial expectations, we find the both micro and small manufacturing businesses performed somewhat worse in 2006 than in 2002. We identify potential explanations for our findings.

Keywords: SME, manufacturing strategy, capacity utilization, global operations management

Introduction

The manufacturing sector has been an important part of India's recent growth. Output in manufacturing grew by 5.7 percent per year in the period 1993-2005 (Reserve Bank of India, 2008). SMEs form the backbone of the Indian manufacturing sector and constitute an engine of economic growth in India. It is estimated that SMEs account for almost 90% of industrial units in India and 40% of value addition in the manufacturing sector (Raju, 2008).

The changes in India's business growth rate due to the macro-environmental reforms and their impact on different sectors of the economy have been widely studied. Researchers have examined the impact of India's policy changes on different aspects of the economy such as productivity, internationalization, innovation and entrepreneurship, and employment and welfare (see, for instance, Unel, 2003; Ahuja et al., 2006; and Das, 2008).

We attempt to answer three research questions in this paper:

1. How did the business constraints affect the performance of small manufacturing businesses in 2002 and 2006?
2. Did the policy reforms undertaken by the Indian government lead to the relaxation of business constraints for small manufacturing businesses from 2002 to 2006?
3. Did the performance of small manufacturing businesses improve from 2002 to 2006?

Small and medium enterprises in the Indian economy

Rather than examining small manufacturing businesses as a homogenous group of firms, we examine the effect of changes in the business environment on two kinds of small businesses – micro firms, those with 0-10 employees, and small firms – with more than 20 and less than 50 employees. We follow the definition of a micro firm used by Heshmati (2001) who derived it from Eurostat (1994). Aterido et al., (2009) use the same definition of micro firms, and present results that distinguish between micro (up to 10 employees) and small firms (10-49 employees).

Micro, Small & Medium Enterprises or MSMEs (as they are referred to in India) increased rapidly from 7.351 million units in 1992-93 to 28.516 million units in 2008-09 (MSMEa). The most recent census of the MSME sector, done in 2006-07, shows that 95.05% of the MSME sector consists of micro firms, with 4.74 percent being small firms. 29% of all MSMEs are manufacturing firms, and they employ 51% of the workforce. 94% of all the MSMEs are unregistered. Two-thirds of the registered MSMEs are manufacturing firms. 91.57 % of the registered firms are proprietary enterprises, and 4.08% are partnerships.

Institutional environment and business constraints

A firm is affected by its institutional environment characterized by policies and procedures for registration, getting permits to buy and build, hiring workers, availing of credit, enforcing contracts, and being assessed for and paying taxes. The more favorable the institutional environment, the less time and effort has to be spent by firms in figuring out, and meeting institutional demands, and it lowers the business constraints faced by firms. A developed capital market lowers the financial constraint by giving firms access to sources of funding, and investors better information about the activities of firms. A functioning regulatory system makes it possible for firms to compete fairly. A well-developed legal system enables enforcement of contracts. When the tax system is carefully designed and implemented, it treats all firms in an industry equally. The development of infrastructure such as transportation, telecommunications, and electricity, affects the core of business operations. Hulten, Bennathan, & Srinivasan (2006) find strong direct and indirect effects of infrastructure development on the functioning of the manufacturing sector. Finally, the broad ethical norms prevailing in a country such as the level of bribery and corruption affect the overall costs of operating a business.

Each of these elements of the institutional environment - high level of taxes (Bohata and Mladek, 1999; Hashi, 2001; Bartlett and Bukvic, 2001), regulations (Brunetti et al., 1998; Hashi 2001) and their implementation (Bartlett and Bukvic, 2001), corruption (Bohata and Mladek, 1999), financing or lack thereof (Pissarides et al., 2000; Hashi, 2001; Bartlett and Bukvic, 2001) - affects small businesses to an even greater extent than their larger counterparts.

In the specific case of India's small businesses, specific barriers for growth have been identified. Siggel & Agrawal (2009) point to infrastructure as the barrier to growth for small businesses.

Arnold et al. (2010) in their large-sample study highlight that transportation in particular, as part of infrastructure, has constrained the growth of manufacturing firms. Coad & Tamvada (2011) found size and age to be negatively related to the growth of micro- and small businesses of India.

Changes in the Indian business environment

In 1991, an aggressive policy of reforms began in India (Kumar & Sengupta, 2008). Before this time, only items listed explicitly on a “positive” list could be imported in the Open General License (OGL) category without a license to import. This changed to import restrictions being placed only on items on a “negative” list. The New Industrial Policy (NIP) of 1991 lifted constraints placed by the earlier competition law (Monopolies and Restrictive Trade Practices Act of 1969) and eased investment licensing and entry restrictions, reduced public sector monopoly, removed nearly all industrial licensing requirements except for those specified on health, safety, security, and environmental grounds. The level of foreign equity investment permitted (with the approval of the Reserve Bank of India) in almost all industries was raised to 51 percent. Import licensing was removed for almost all intermediate and capital goods. Tariff rates were rationalized and reduced. The number of products reserved for small businesses were reduced. The Indian currency, the rupee, was devalued by 22 percent to make Indian exports more competitive in the world. In this paper, we examine the effect of these measures on the business environment facing India’s small manufacturing businesses.

Research Method

Data for this study are drawn from the World Bank’s Enterprise Surveys (WBES) which have so far been administered to over 130,000 firms in 125 countries (<http://enterprisesurveys.org/>). Data for Indian firms are available from two time periods: 2002 (1827 firms) and 2006 (4234 firms). By retaining only small firms (up to 50 permanent employees) engaged in manufacturing, we were left with a usable sample of 1300 small manufacturing firms in the 2002 sample and 608 small manufacturing firms in the 2006. The smaller sample in 2006 is partly due to the fact that the World Bank’s data collection effort in 2006 was distributed over manufacturing and service firms; the 2002 survey focused only on manufacturing firms. The two waves of the survey, conducted by different units of the World Bank, share about a hundred items in common (out of a total of 540), and these common items constitute the subject of our analysis.

The following are the main characteristics of our sample of small manufacturing businesses in 2002 (1300 firms) and 2006 (608 firms). The firms in our samples come mainly from 10 industries – Auto and auto components, Chemical and pharmaceuticals, Electronics, Foods, Garments, Leather, Metals & Machinery, Paper, Plastics, and Wood & Furniture. The average years of operation of the firms was 14.25 in 2002 and 17.07 in 2006 (which implies the 2006 firms started around the same time as the 2002 firms). Both sets of firms had mainly male owners, used predominantly domestic inputs, and sold mostly within India. More than two-thirds

of the firms were members of associations. They had slightly over 15 permanent employees on the average, and about 3 temporary workers. Micro firms formed 77-78% of each of our 2002 and 2006 sample. Therefore, in nearly all respects, the 2002 and 2006 sample are comparable.

Besides the above items of information, the WBES survey asked respondents to assess the severity of 17 obstacles in the business environment – telecommunications, electricity, transport, access to land, tax rates, tax administration, customs and trade regulations, labor regulations, skills of available workers, licensing and operating permits, access to finance (e.g. collateral), cost of finance (e.g. interest rates), economic & regulatory policy uncertainty, macroeconomic instability (inflation, exchange rate), corruption, crime, theft, disorder and anti-competitive / informal practices. The severity of obstacles was assessed on a 5-point scale, with '0' indicating "not an obstacle" and '4' indicating "very severe obstacle". Information about the total capacity utilization of the firms was also collected in the survey.

We measure the performance of the firms in our study by their capacity utilization. Apart from its accounting significance as the base over which fixed costs are apportioned, capacity utilization is also a measure of how well the resources allocated to a business are being utilized. A low level of capacity utilization represents unused resources and, to that extent, opportunity cost foregone by the owner / investor. Porter (1985) lists capacity utilization as one of the ten major cost drivers of a firm. The positive link between capacity utilization and firm profitability has been empirically asserted by D'Aveni (1989), Hammesfahr et al. (1993) and Banker et al. (1993). At the macro-economic level, capacity utilization provides a window into business cycles and also impacts labor productivity and the level of employment (Greenwood et al., 1988).

To answer our first research question, we carried out a factor analysis of the business constraints. We then regressed firm performance, measured by the capacity utilization, on the business constraint factors and the age of the firm (control variable), for each type of firm for each of the two years, 2002 and 2006. For the second research question, we conducted independent sample t-tests to check for differences in the means of the business constraint factors between 2002 and 2006 for micro and small manufacturing firms. The third question was addressed with t-tests of capacity utilization of micro and small manufacturing firms in 2002 and 2006.

Results

To arrive at a parsimonious set of factors to describe the business environment, we undertook exploratory factor analysis of the 17 business obstacles measured in the WBES survey. Using the principal components extraction method and varimax orthogonal rotation, we arrived at a set of five factors (eigenvalues > 1) that account for 64.2% of the total variance: regulatory policies (permits, trade and labor regulations, macroeconomic stability/uncertainty), legal/ethical environment (law & order, informal practices, and corruption), access to capital (access to and cost of finance and land), taxation (rates and administration), and infrastructure (transport, electricity, and telecommunications).

We carried out regression analyses to assess the relation between the business constraints and the performance of micro and small business firms. Table 1 presents the results of our analyses. The

regression models for small businesses in 2002 (Model 2) and for micro businesses in 2006 (Model 3) were statistically significant. In 2002, the tax-related business constraint hurt the performance of both micro and small businesses significantly while obstacles in the regulatory environment hurt the performance of only small businesses. In 2006, the relationships among business constraints and performance were not significant for micro or small firms. For micro firms, age turned out to have a significant negative effect on performance in the 2006 model.

TABLE 1: REGRESSION OF CAPACITY UTILIZATION ON BUSINESS CONSTRAINT FACTORS AND AGE

Variables	2002				2006			
	Model 1		Model 2		Model 3		Model 4	
	Micro		Small		Micro		Small	
	beta	s.e.	beta	s.e.	beta	s.e.	beta	s.e.
Policies	1.085	0.945	-2.176**	.797	1.589	1.303	.023	.090
Legal / ethical	0.376	0.930	-1.539*	.702	0.899	1.513	.079	.120
Capital	0.209	1.055	-.380	.799	-1.389	0.936	-.063	.092
Taxes	-2.103*	0.936	-4.420**	.744	1.392	1.137	.118	.089
Infrastructure	0.648	0.870	-.589	.724	-1.526	1.247	.060	.101
Age	0.133	0.081	-.017	.061	-0.296**	0.111	-.003	.008
F statistic	1.610		7.904**		2.644*		0.589	
Adjusted R ²	0.008		0.053		0.034		-0.008	
R ²	0.020		0.060		0.055		0.012	
N	473		744		281		302	

**p < 0.01, *p < 0.05

Table 2 below shows the statistical significance of the changes in business constraints between 2002 and 2006. Policies, and Legal/Ethical environment, were the only business constraints that improved from 2002 to 2006, while the (perceived) tax environment got significantly worse. Changes in capital and infrastructural business constraints were not statistically significant.

TABLE 2: t-TESTS OF BUSINESS CONSTRAINTS MEANS OF 2002 AND 2006

Business Constraints	t-value (df = 1906)
Factor 1-Policies	11.620**
Factor 2 – Legal/Ethical	13.541**
Factor 3 - Capital	-0.319
Factor 4 - Taxes	-3.482**
Factor 5 - Infrastructure	0.890

**p < 0.01, *p < 0.05

Table 3 below presents the results of the t-tests to evaluate the difference in performance of micro and small businesses from 2002 and 2006. We find that performance of both sets of firms declined in this period, with the capacity utilization of micro firms being higher in 2002 and falling more sharply in 2006. We discuss this finding in the next section.

TABLE 3: t-TESTS OF THE CHANGE IN PERFORMANCE OF MICRO AND SMALL BUSINESSES FROM 2002 AND 2006

Capacity utilization	2002	2006	t-value (df)
Micro firms	79.10	65.57	9.267**(783)
Small businesses	77.95	69.61	6.234**(1088)

**p < 0.01

Conclusions, Limitations, and Implications for Future Research

From 2002 to 2006, the performance of both micro and small businesses, as measured by capacity utilization, fell sharply. To test the robustness of our results, we used sales as a measure of performance and found exactly the same decline in performance. Though national reforms led to improvements in some business constraints from 2002 to 2006, the performance of our sample of firms went down significantly in this period.

What can be the reasons? A major benefit of India's reforms has been argued to be the opening up of the economy, which provides opportunities to exploit foreign markets and use foreign inputs. However, our sample of micro and small firms consisted of manufacturers who sold mainly in the domestic market (92-93%) and used predominantly domestic inputs (97-98%) in both 2002 and 2006. These firms did not venture abroad, thereby not deriving the benefits associated with the opening up of the Indian economy. Instead, they may have faced increased competition from foreign firms entering their industries and / or foreign products which negatively affected their performance.

The findings from this study have implications for research, business, and policy. Future research could examine data on a panel of small businesses over time to better understand the longitudinal impact of India's policy reforms on performance. Researchers can explore firm-level reasons to explain why some small businesses are able to adapt to business obstacles than others. Owners / managers of micro and small businesses in India need to be alert to the specific effects of policy reforms. For instance, with fewer products reserved for small businesses, and the lowering of import restrictions and tariffs, small business managers must consider internationalization strategies, such as exporting or contract work for foreign firms. Finally, policy makers can note that, despite the pursuit of reforms since 1991, the effects of these reforms have not always percolated to the small business sector of the economy.

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