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Rana Hasan is Principal Economist in the India Resident Mission, Asian Development Bank (ADB); Karl Robert L. Jandoc is a graduate student at the University of Hawaii and a former consultant at ADB. This paper is an output of an ADB technical assistance project (RDTA 6520: Enterprise Development and the Challenge of Inclusive Growth).

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Contents

Abstract

We use establishment-level data from Indian manufacturing to describe the distribution of firm size in terms of employment, and discuss implications for public policy. A unique feature of our analysis is the use of nationally representative establishment-level data from both the registered (formal) and unregistered (informal) components of the Indian manufacturing sector. We also examine how the distribution of firm size varies across states coded by recent literature as having either flexible or inflexible labor regulations. We find little difference in the size distribution of firms between states believed to have flexible labor regulations versus those with inflexible labor regulations. However, restricting attention to labor-intensive industries, we find a greater prevalence of larger-sized firms in states with flexible labor regulations. This suggests that labor regulations may indeed be affecting firm size adversely. More generally, our paper serves to illustrate the point that establishment-level survey data represent a very rich source for work on public policy issues.

I. Introduction

There exists a large and growing literature that seeks to understand the policy determinants of industrial performance. In this paper, we use data from establishment-level surveys from India's manufacturing sector to contribute to this literature. The specific issue we examine is how the size of Indian manufacturing establishments in terms of employment is distributed. We also provide evidence on how one element of policy, namely, labor regulations, may be contributing to this size distribution.

Our interest in size distribution is driven by the close link between establishment[1] size and various dimensions of industrial performance, including average wages and labor productivity found internationally. Indeed, at least since Moore's (1911) study of daily wages of Italian working women in textile mills, the finding that wages are higher in larger enterprises has been confirmed repeatedly in different contexts. As noted by Oi and Idson (1999, 2,207) in their review of the relationship between firm size and wages in mostly industrialized countries, the facts Moore uncovered had not changed nearly a century later:

> A worker who holds a job in a large firm is paid a higher wage, receives more generous fringe benefits, gets more training, is provided with a cleaner, safer, and generally more pleasant work environment. She has access to newer technologies and superior equipment. She is, however, obliged to produce standardized as opposed to customized goods and services, and for the most part to perform the work in tandem with other members of a larger team. The cost of finding a job with a small firm is lower. The personal relation between employee and employer may be closer, but layoff and firm failure rates are higher, resulting in less job security.

To the extent that an important part of this correlation reflects a causal relationship running from size to productivity and wages, any factor that constrains firm size will have adverse implications for the growth of productivity and wages. In this way, an understanding of the size distribution of enterprises in India and the factors that explain it

[1] The terms enterprise (or firms) and establishment are often used interchangeably in this paper. Admittedly, these are distinct concepts. An establishment is a single physical location at which business is conducted or where services or industrial operations are performed. An enterprise or firm is a business organization consisting of one or more domestic establishments under common ownership or control. For companies with only one establishment, the enterprise and the establishment are the same.

can be key to an analysis of the potential constraints to enterprise growth and, ultimately, economic growth in a broader sense.

Accordingly, we begin by examining how employment is distributed across enterprises of different sizes in Indian manufacturing. As noted by the pioneering work of Dipak Mazumdar (see, for example, the works cited in Mazumdar 2003), the size distribution of Indian manufacturing enterprises is characterized by a "missing middle" whereby employment tends to be concentrated in small and large enterprises. After confirming that this pattern continues to hold even in data as recent as 2005, we turn our attention to an exploration of whether India's industrial labor regulations may be one of the drivers of the missing middle phenomenon.

In particular, we use a combination of graphical and simple econometric analysis to test whether states coded by recent literature as having relatively flexible or inflexible labor regulations differ in terms of how the enterprises are distributed across different size groups. Our findings are suggestive of labor regulations having some impact. The remainder of this paper is organized as follows. Section II describes our data on Indian manufacturing establishments. Section III uses this data to document the distribution of employment by enterprise size groups in Indian manufacturing. It also uses similar information from other countries in the region to highlight some policy issues. The main finding described here is that in India, as elsewhere, large firms are on average more productive and pay better than smaller firms; however, a unique feature of the Indian firm size distribution is the overwhelming importance of smaller enterprises in accounting for total manufacturing employment—an important phenomenon described in greater detail in Section IV. The implication is that a very large proportion of Indian workers are engaged in employment in low-productivity and low-wage enterprises. Section V describes some reasons why the Indian size distribution is what it is. One of these reasons has to do with labor regulations and the section discusses these in more detail. Section VI then turns to an empirical investigation of the links between labor regulations and the size distribution of Indian enterprises. Section VII concludes.

II. Data

The main source of information for this study is a combined data set that includes formal and informal firms in India. The Annual Survey of Industries conducted by the Central Statistical Organisation, Ministry of Statistics and Programme Implementation (ASI) gathers information on "registered", or formal sector firms that are covered by Sections 2m(i) and 2m(ii) of the 1948 Factories Act and firms registered in the 1966 Bidi and Cigar Workers Act—particularly (i) those firms that use electricity and hire more than 10 workers; and (ii) those that do not use electricity but nevertheless employ 20 or more workers. It also covers certain utility industries such as power, water supply, cold storage,

and the like. Units with 100 or more workers are categorized under the *census* sector and are completely enumerated[2], while the rest are categorized under the *sample* sector and are surveyed based on a predetermined sampling design.

The "unregistered" or informal sector firms not covered by the ASI are covered by the National Sample Survey Organisation (NSSO) Survey of Unorganised Manufacturing Enterprises. The surveys are follow-ups to the different Economic Censuses conducted by the NSSO. Informal firms engaged in manufacturing are classified belonging to either: (i) *own-account manufacturing enterprises* (OAME) if they operate without any hired worker employed on a fairly regular basis; (ii) *nondirectory manufacturing establishments* (NDME) if they employ less than six workers (household and hired workers taken together); and (iii) *directory manufacturing establishment* (DME) if they employ household members and hired workers of a total of six or more.

For this study, we combine ASI and NSSO data from 3 years: 1994/1995, 2000/2001, and 2004/2005 for the ASI; and 1994/1995, 2000/2001, and 2005/2006 for the NSSO. The first 2 years match up very well across the two data sources. This is less so for the last year of data but it is unavoidable given data availability. For expositional convenience, we refer to the years of the data as 1994, 2000, and 2005.

From this combined data, set we use four main variables: employment, output, capital, and value added. Employment includes all workers in the firm, including working proprietors. Output is the sum total of the value of manufactured products and by-products, the value of other services rendered, and the value of other incidental receipts of the firm. Capital is defined as the value of total assets minus the value of land and buildings. We use the net value (net of depreciation) for ASI while we use the gross market value for NSSO. Although admittedly our measure of capital is imperfect, we use it minimally and only for the purpose of determining labor-intensive industries.[3] Value added is computed by deducting from total output the value of total inputs (fuels, raw materials, etc.) of the firm. We deflate the current rupee values using wholesale price indices of manufacturing industries used by Gupta, Hasan, and Kumar (2009).

We carry out some steps to filter and clean the data used in this study. There are a couple of reasons for doing so. First, there are a substantial number of firms that failed to report output (or reported zero output) especially in the 2000 and 2005 rounds of the

[2] From 1997/1998 to 2003/2004, only units having 200 or more workers were covered in the census sector. Moreover, there is also complete coverage of firms in less industrially developed states and union territories (UTs). See India's Ministry of Statistics and Programme Implementation website http://mospi.nic.in/stat_act_t3.htm for more details.

[3] The capital intensity ranking of industries hardly changes when we use the market value of plant and machinery instead of our preferred measure. Likewise, results of our analysis are scarcely affected. The capital-intensive industries are Machinery, Electrical Machinery, Transport, Metals and Alloys, Rubber/Plastic/Petroleum/Coal, and Paper/Paper Products. The labor-intensive industries are Beverages and Tobacco, Textile Products, Wood/Wood Products, Leather/Leather Products, and Nonmetallic Products. The other industries we deem ambiguous to classify are Food Products, Textiles, Basic Chemicals, Metal Products, and Other Manufacturing.

ASI. Second, some variables have implausible values (e.g., one firm reports employing 4 million workers). The steps were the following: (i) we work with data from India's 15 major states (as per their pre-2000 boundaries) for which information is available on the nature of labor regulations and other state-level characteristics;[4] (ii) we exclude nonmanufacturing firms involved in industries such as recycling and agriculture; (iii) we only include firms in the ASI reported to be "open" during the survey period;[5] and (iv) we drop firms with implausible values for employment (that is, we dropped firms reporting employment greater than 50,000).

For some parts of our analysis, we need information on the industrial affiliation of the firm. However, a complication arises because the 1994 data use India's NIC-1987 industrial classification; the 2000 data use the NIC-1998 classification; 2005 data use NIC-2004 classification. To make the industries comparable over time, this paper employs a concordance that maps 3-digit NIC-98 and NIC-2004 codes into unique 2-digit NIC-87 codes. This gives us a total of 16 aggregated industries.

Table 1 reports the number of firms surveyed and their implied population statistics. There are around 26,000–47,000 firms surveyed in the different ASI rounds while there are roughly 72,000–196,000 enterprises surveyed in the NSSO in our dataset. Based on the population weights provided in the data, the sample firms represent around 11 to 16 million Indian firms for each year.

Table 1: Number of Firms in ASI and NSSO, 1994, 2000, and 2005

	1994		2000		2005	
Data Set	**Sample**	**Population**	**Sample**	**Population**	**Sample**	**Population**
ASI	47,121	97,846	26,611	106,205	33,838	110,873
NSSO	142,780	11,575,745	196,385	16,306,696	72,109	16,496,285
of which:						
OAME	110,899	9,908,945	129,921	14,163,075	48,049	14,182,576
NDME	19,010	1,112,885	42,384	1,556,979	15,311	1,669,454
DME	12,871	553,915	24,080	586,642	8,749	644,255

ASI = Annual Survey of Industries; NSSO = National Sample Survey Organisation Survey of Unorganised Manufacturing Enterprises; OAME = own-account manufacturing enterprises; NDME = nondirectory manufacturing enterprises; DME = directory of manufacturing enterprises.
Sources: Authors' computations based on ASI (various years) and NSSO (various years).

Table 2 provides some summary statistics for the main variables we use in this study. Apart from the mean, we provide the median, the 10th percentile, and the 90th percentile values of the variables to give us a picture of their distribution. As expected, firms in the formal sector have higher value added, output, employment, and capital per worker. What is surprising, however, is that a large number of these formal firms have less than 10 workers, as can be seen by the low 10th percentile value on number of workers.

[4] Andhra Pradesh, Assam, Bihar (including Jharkhand), Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh (including Chhattisgarh), Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh (including Uttarakhand), and West Bengal.

[5] Firms in the ASI are also classified based on their status, i.e., whether they are "open" or "closed" for the reference year, and "nonoperative" for at least 3 years prior to the reference year.

Table 2: Summary Statistics of Value Added, Output, Employment, and Capital per Worker

	Value Added (1993 Rupees)				Output (1993 Rupees)				Number of Workers				Capital per Worker (1993 Rupees)			
1994	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**
ASI	8,168,065	39,217	565,155	7,189,043	38,409,492	321,111	3,671,385	50,088,760	77	7	21	125	62,403	663	13,278	119,175
OAME	9,662	1,127	6,076	20,734	19,419	1,641	8,929	38,628	2	1	2	3	1,592	13	214	3,843
NDME	44,263	7,898	28,905	85,679	112,862	13,731	53,066	244,723	3	2	3	5	7,992	241	2,998	20,906
DME	143,171	10,419	77,801	291,665	496,339	25,283	136,602	1,022,397	9	1	7	14	9,917	143	2,604	25,231

	Value Added				Output				Number of Workers				Capital per Worker			
2000	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**
ASI	7,917,534	(2,325,510)	450,793	8,547,783	49,746,252	–	3,295,657	63,525,628	69	6	18	118	102,275	1,348	26,417	205,108
OAME	11,300	1,696	7,387	24,736	22,720	2,167	10,611	47,166	2	1	2	3	1,859	19	446	4,464
NDME	58,566	13,514	42,745	115,771	153,227	22,013	70,247	303,557	3	2	3	5	7,343	385	2,973	17,001
DME	209,586	30,161	138,215	410,736	1,095,842	54,700	273,326	1,697,947	10	6	8	16	12,148	357	3,726	27,120

	Value Added				Output				Number of Workers				Capital per Worker			
2005	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**	**Mean**	**p10**	**Median**	**p90**
ASI	11,516,142	(2,523,047)	532,167	10,662,030	73,166,208	–	4,171,864	83,088,752	70	7	19	126	111,863	1,313	28,712	223,019
OAME	11,254	1,588	6,493	25,241	21,478	1,837	8,482	45,194	2	1	1	3	1,846	14	333	4,337
NDME	72,193	16,170	50,553	129,818	216,831	24,929	84,763	369,254	3	2	3	5	8,120	425	3,205	19,020
DME	307,184	44,390	179,241	533,102	1,271,415	73,935	386,959	2,284,857	10	6	8	16	13,517	364	4,209	31,883

ASI = Annual Survey of Industries; OAME = own-account manufacturing enterprises; NDME = nondirectory manufacturing enterprises; DME = directory of manufacturing enterprises.

– means data not available.

Note: Values are adjusted to 1993 prices using wholesale price indices for different industries. See Gupta, Hasan, and Kumar (2009) for details.

Source: Authors' calculations using ASI and NSSO for various years.

Table 3: Total Value Added, Output, and Employment by Year and Data Set

Data Set	1994			2000			2005		
	Employment	Value Added (1993 Rupees)	Output (1993 Rupees)	Employment	Value Added (1993 Rupees)	Output (1993 Rupees)	Employment	Value Added (1993 Rupees)	Output (1993 Rupees)
ASI	7,521,848	798,755,087,412	4,233,992,869,155	7,299,814	840,557,091,871	7,935,004,589,673	7,695,902	1,276,495,286,504	14,493,533,527,395
NSSO	28,236,052	224,242,849,204	675,055,649,068	35,179,396	374,183,416,101	1,709,697,638,239	35,024,241	474,982,123,260	2,504,754,108,183
of which:									
OAME	20,041,158	95,727,644,971	221,684,320,309	24,207,965	160,045,544,669	486,465,956,210	23,039,357	157,210,893,467	526,598,614,750
NDME	3,463,408	49,210,424,630	142,331,218,758	5,031,113	91,186,198,287	344,375,130,771	5,407,288	120,052,681,834	603,285,630,957
DME	4,731,486	79,304,779,603	311,040,110,001	5,940,318	122,951,673,145	878,856,551,258	6,577,596	197,718,547,959	1,374,869,862,476

ASI = Annual Survey of Industries; NSSO = National Sample Survey Organisation Survey of Unorganised Manufacturing Enterprises; OAME = own-account manufacturing enterprises; NDME = non-directory manufacturing enterprises; DME = directory of manufacturing enterprises.

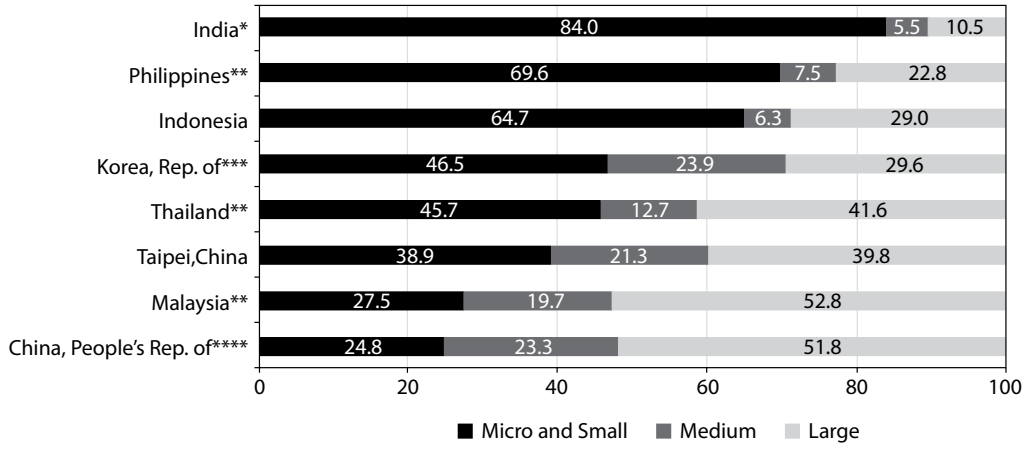
Source: Authors' computations based on ASI (various years) and NSSO (various years).

While formal firms tend to have higher number of workers per firm, it is in informal firms where the vast majority of workers are employed. Table 3 shows that around 80% of workers are employed in the informal sector and out of these informal sector workers, around 70% belong to the OAME, working on their own account. Although employing fewer workers in all, the formal sector disproportionately produces more value added and output than the informal sector.

III. Indian Manufacturing and the "Good Jobs" Problem

As the foregoing numbers suggest, a very large share of workers in India's manufacturing sector are employed in enterprises with less than 50 workers. This can be clearly seen from Figure 1, which shows the distribution of employment by three size groups. Almost 85% (or 37.5 million out of 44.6 million) were employed in such enterprises in 2005.[6] This share is considerably higher than that in many comparator countries in the Asia and Pacific region.

Figure 1: Share of Manufacturing Employment by Enterprise Size Groups (percent)

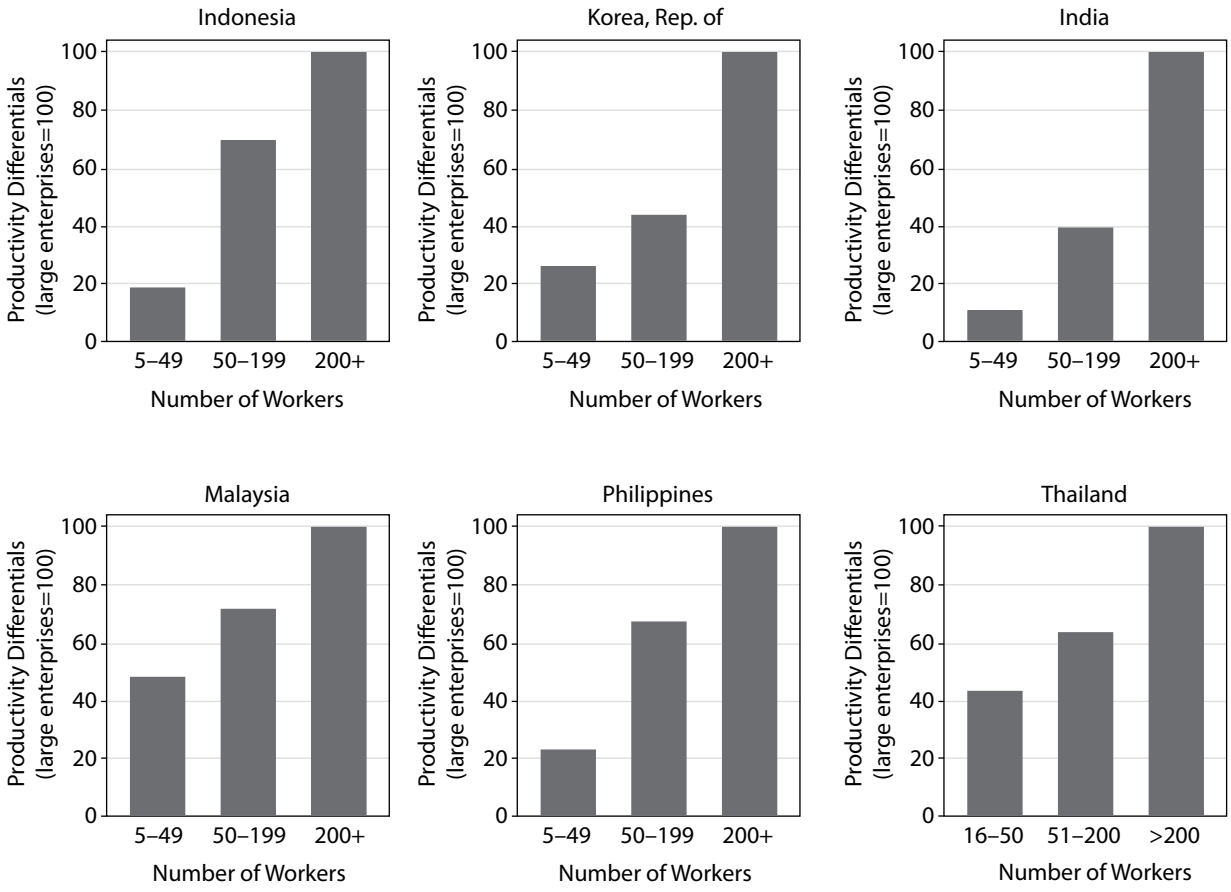


*India's manufacturing employment includes workers in own-account manufacturing enterprises.
**Includes imputation for the self-employed based on differentials between labor force survey and enteprise survey/census data.
***Data on Korean microenterprises are not available.
**** Adds 5.9 million self-employed (see ADB 2009 for more details).
Note: Micro and small: 1–49 workers in all economies except Thailand (1–50 workers); medium: 50–199 in all economies except Thailand (51–200 workers); large: 200 or more workers in all economies except Thailand (more than 200 workers).
Source: ADB (2009).

6 See Box 3.1 in ADB (2009, 23) for details on data sources and methodology underlying Figure 1.

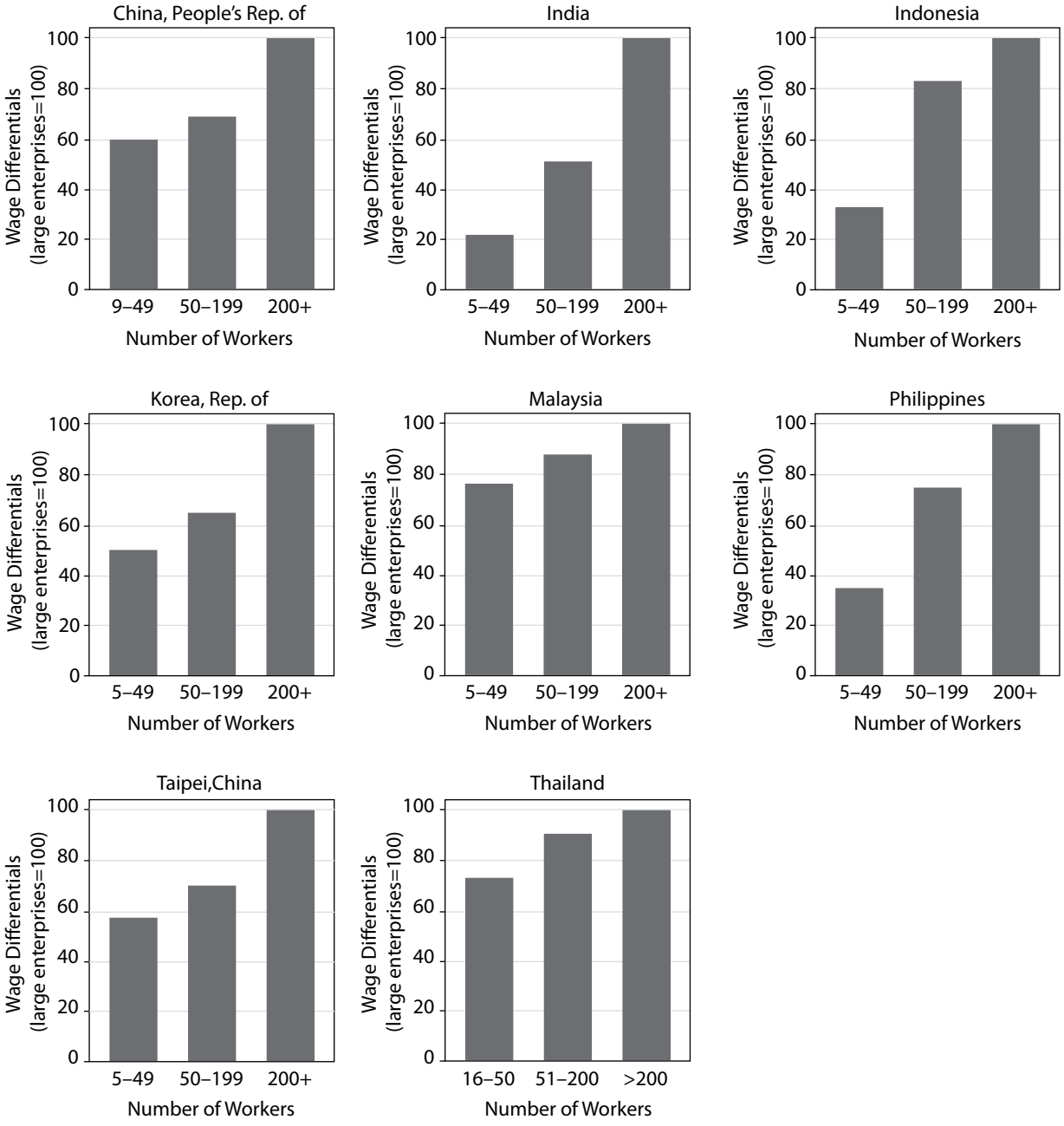
This pattern of the distribution of employment has important welfare implications. First, large enterprises are on average more productive (Figure 2) and pay higher wages on average (Figure 3). Accordingly, the preponderance of Indian manufacturing employment in small-size firms thus means low wages for a large fraction of workers. (It also means high levels of wage inequality: The distributions implicit in the figures shown here yield Gini coefficients of 0.35 in India versus 0.16 in the Republic of Korea and 0.13 in Taipei,China.)

Figure 2: Productivity (value-added per worker) Differentials by Enterprise Size Groups (large enterprises=100)



Source: ADB (2009).

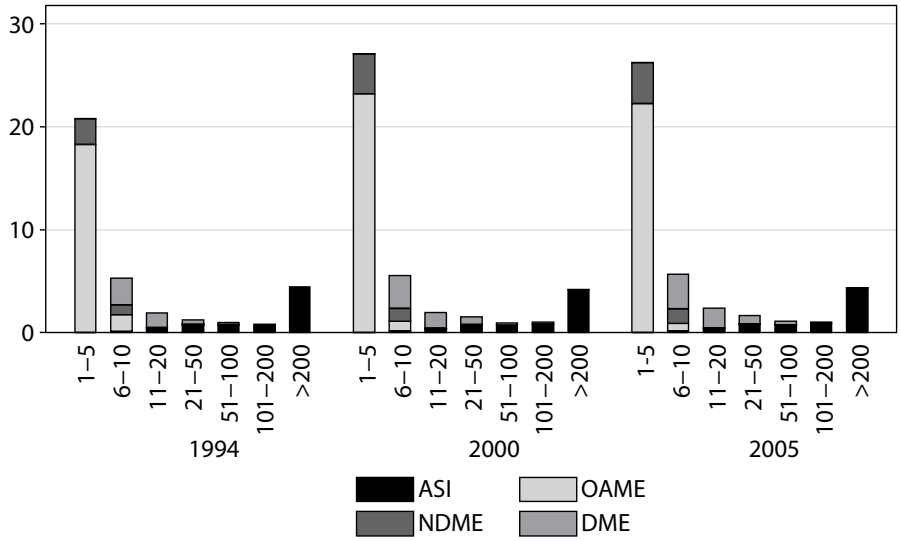
Figure 3: Wage Differentials by Enterprise Size Groups (large enterprises=100)



Source: ADB (2009).

A more disaggregated look at the distribution of Indian manufacturing employment by firm size helps frame policy issues more sharply. Figure 4, which considers the distribution of workers by finer size-groups than considered so far indicates that a very large portion of employment is accounted for by firms with five workers or less. Moreover, as the figure also shows, the overwhelming majority of these micro enterprises are the OAME.

Figure 4: Number of Workers by Firm Size and Type (millions)

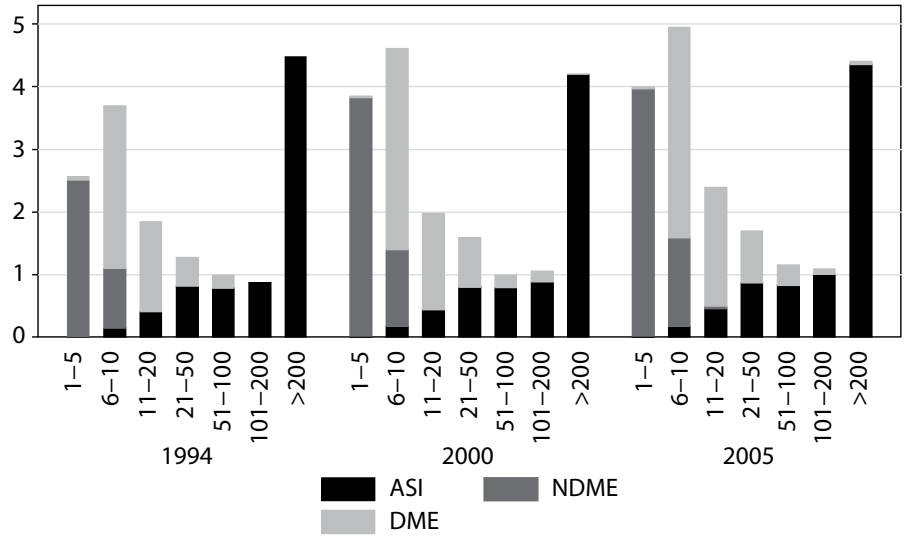


ASI = Annual Survey of Industries; OAME = own-account manufacturing enterprises; NDME = nondirectory manufacturing enterprises; DME = directory of manufacturing enterprises.
Source: Authors' computations.

Figure 5 presents the distribution of workers once again, but this time omitting the OAME. While the figure continues to show how important small enterprises are to manufacturing employment in India, it highlights a second feature of the distribution of employment by firm size in India—the relatively low levels of employment in firms with 51–200 workers.

As can be seen from the two figures, both features of the employment distribution are present in each of the 3 years of our data. In the absence of panel data (which would enable us to examine how given enterprises evolved in size) these features of the size distribution *suggest* some combination of the following: (i) very small establishments seem unable/incapable of expanding, i.e., the transition from a micro enterprise to a small enterprise seems difficult; and (ii) the transition from small- to medium-size also seems difficult.

Figure 5. Number of Workers by Size and Firm Type, Without OAME Workers (millions)



ASI = Annual Survey of Industries; OAME = own-account manufacturing enterprises; NDME = nondirectory manufacturing enterprises; DME = directory of manufacturing enterprises.
Source: Authors' computations.

Given the size–productivity–wage relationship discussed earlier, the patterns above strongly suggest that understanding what holds back Indian enterprises of different size groups from expanding is critical insofar as the goal of generating better paying jobs is concerned. Given that micro enterprises, especially the OAME, are likely to be very different in characteristics and face different constraints in their operations and growth than small- and medium-size enterprises, we discuss the factors that may be responsible for the patterns we see separately for the OAME and the remaining firms.

IV. Own-account Manufacturing Enterprises

As noted earlier, OAMEs comprise very small enterprises that do not hire even one worker from outside the family on a regular basis. Tables 4 and 5 show us which industries the OAME workers operate in and where they are located. OAME are mostly based in rural areas (up to three quarters). Moreover, they are mostly confined to a few industries, namely: wood/wood products, food products, beverage, textiles and textile products.

Table 4: OAME Workers by Industry Affiliation (percent)

Industry	1994	2000	2005
Food Products	19	18	15
Beverages, Tobacco	12	14	20
Textiles	11	9	7
Textile Products	10	19	24
Wood/Wood Products	22	20	16
Paper/Paper Products	1	1	1
Leather/Leather Products	1	1	1
Basic Chemicals	1	1	2
Rubber/Plastic/Petroleum/Coal	0	0	0
Non-Metallic	9	7	5
Metals and Alloys	0	0	0
Metal Products	3	3	3
Machinery	0	1	1
Electrical Machinery	0	0	0
Transport	0	0	0
Other Manufacturing	10	5	4
Total	**100**	**100**	**100**

OAME = own-account manufacturing enterprises.
Source: Authors' computations based on NSSO (various years).

Table 5: OAME Workers by Urbanity and Industry Affiliation (percent)

	1994		2000		2005	
Industry	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
Food Products	74	26	83	17	83	17
Beverages, Tobacco	76	24	80	20	83	17
Textiles	66	34	73	27	59	41
Textile Products	69	31	69	31	69	31
Wood/Wood Products	84	16	90	10	90	10
Paper/Paper Products	39	61	34	66	52	48
Leather/Leather Products	58	42	54	46	27	73
Basic Chemicals	48	52	46	54	72	28
Rubber/Plastic/Petroleum/Coal	44	56	47	53	53	47
Non-Metallic	80	20	87	13	87	13
Metals and Alloys	19	81	53	47	43	57
Metal Products	69	31	70	30	76	24
Machinery	70	30	74	26	62	38
Electrical Machinery	27	73	52	48	51	49
Transport	46	54	43	57	47	53
Other Manufacturing	66	34	48	52	40	60
Total	**73**	**27**	**77**	**23**	**76**	**24**

OAME = own-account manufacturing enterprises.
Source: Authors' computations based on NSSO (various years)

Why are there so many OAME? Do they possess the potential to grow and expand? Will they eventually become significant employers? It is beyond the scope of this paper to shed light on these issues. However, it is useful to consider the results of some recent research on this issue from another South Asian country, Sri Lanka, and examine what implications there may be for the case of India.

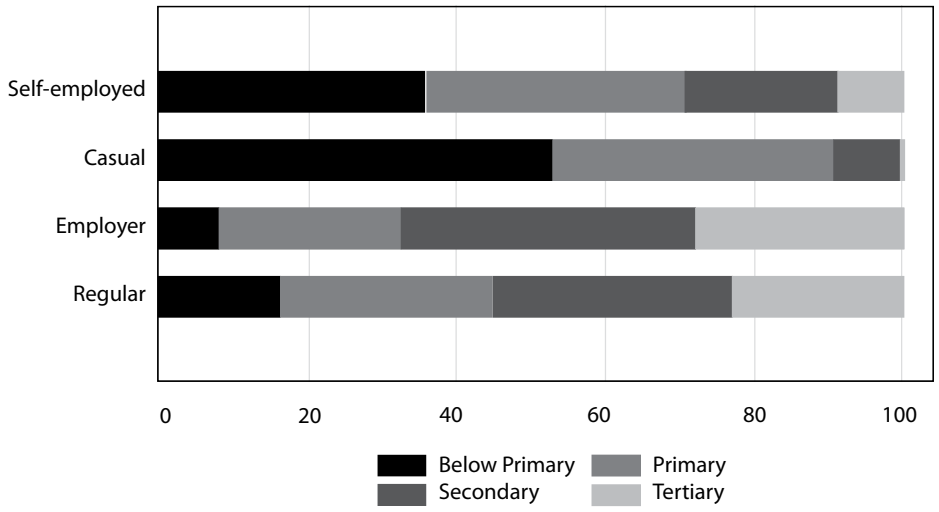
As de Mel, McKenzie, and Woodruff (2008) argue, understanding the OAME is very crucial since it can guide policies on industrial development and employment generation. In particular, it can help determine whether the focus of policy should be on helping microenterprises grow, or on the constraints to growth of those employers operating relatively larger enterprises, i.e., over a particular size threshold. The issue in the literature is still unsettled. In a useful summary of the unsettled debate in this area, de Mel, McKenzie, and Woodruff note that while scholars such as Peruvian economist Hernando de Soto (1989) tend to consider microenterprise owners as capitalists-in-waiting held back by credit constraints, weak property rights, and burdensome regulation, a very different view comes from other scholars such as Viktor Tokman and associated with the International Labour Organization (ILO). Tokman (2007) believes that these workers are the product of the "failure of the economic system to create enough productive employment", and that given the opportunity for regular salaried work, they may be more than willing to make the change and abandon their businesses.

Recent evidence suggests that the Tokman and ILO view has the upper hand. In a systematic comparison of wage workers, own-account workers, and employers in Sri Lanka, de Mel, McKenzie, and Woodruff (2008) find that in a wide range of ability measures and cognitive tests, own-account workers and wage workers are relatively similar, with scores that are below that of entrepreneurs operating larger enterprises. Moreover, they also find that parents of entrepreneurs are more educated than parents of wage workers, who, in turn cannot be distinguished from the educational achievements of the parents of own-account workers. Employers are also more motivated (important for running a business) and more tenacious (important for making the business grow) than own-account workers, according to industrial psychology tests. Taken together, this study puts into doubt the idea that owners of microenterprises are capable of growing their business.

There is also some suggestive evidence to support these findings in the Indian context. Figure 6 describes the distribution of education for different categories of nonagricultural workers using data from the 2004–2005 NSS Employment-Unemployment Survey. The self-employed are distinguished between employers and own-account workers, while wage earners are distinguished between permanent and casual workers. The figure shows that the own-account workers are fairly similar to casual wage labor, and employers to regular wage workers. For both the self-employed and casual wage workers, a large share of workers have less than primary education, while very few have tertiary education. Interestingly, as Figure 7 displays, the similarities in education

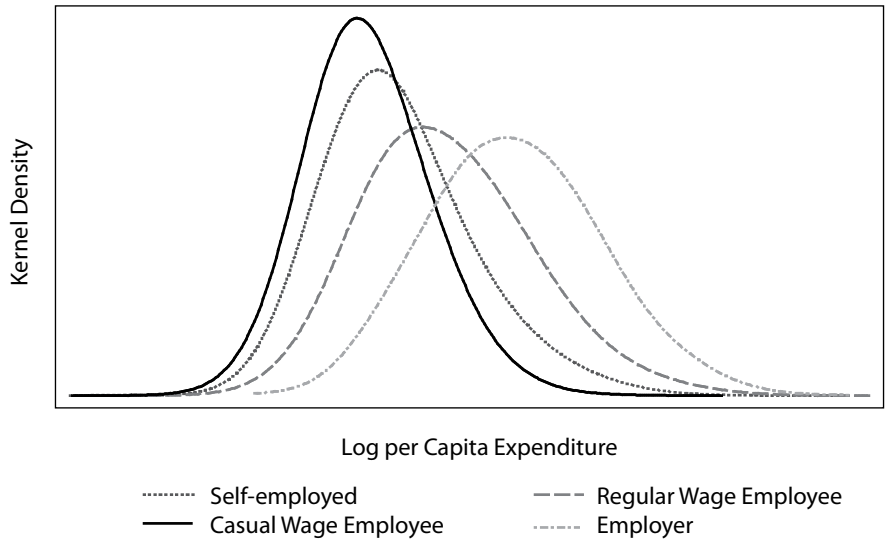
profiles also extend to very similar profiles of household per capita expenditures across Indian households relying on self-employment (own account) income and casual wage employment, and across households relying on permanent wage employment and income from being a self-employed employer. Both these patterns suggest important dissimilarities of microenterprise owners and entrepreneurs of larger enterprises. Indeed, it is quite plausible that the vast majority of microenterprises are unlikely to expand and become employers.

Figure 6: Distribution of Education by Type of Employment in India (percent)



Source: Authors' calculations based on the 2004–2005 NSS Employment-Unemployment Survey.

Figure 7: Household Per Capita Expenditure by Type of Employment in India (Rupees)



Source: Authors' calculations based on the 2004–2005 NSS Employment-Unemployment Survey.

To the extent that this is correct, the policy imperative of generating good jobs has to focus on understanding the barriers to growth among larger enterprises. Accordingly, we omit the OAME in the rest of our analysis and focus on understanding the distribution of employment by size groups for all enterprises other than the OAME.

V. Understanding the Size Distribution of Employment in Non-OAME Enterprises

What is causing the appearance of the missing middle? There are a host of factors that affect the pattern of size distribution. To a certain extent, the pattern will reflect industrial composition. If technology in a given industry is characterized by economies of scale—that is, the average cost of producing each unit of product falls as total output increases—we can expect larger plant size. In general, the more capital (machines) required in a production process, the greater will be the scope for reaping scale economies, and thus the larger the optimum size of enterprises. For example, automobile production requires far more capital per unit of labor than apparel production, and economies of scale are very important to the production process. As a result, the typical automobile plant will be much larger than an apparel plant. This can be seen quite clearly in Figure 8, which compares the distribution of employment across size groups in apparel and motor vehicles and parts in India. While there is a mass of employment in very small enterprises in apparel, the situation is very different in motor vehicles. Since total employment in apparel is over 12 times that in motor vehicles and parts (5 million versus 430,000 workers in 2005), this will certainly exert a natural influence on the distribution of employment across size groups in manufacturing as a whole.[7]

In this way, the size distribution of enterprises in an economy will depend to some extent on the industrial composition of the economy. Since lower-income countries will tend to have a composition dominated by simpler-to-manufacture products like apparel and footwear, metal products, and furniture—low incomes on average will mean greater demand for these types of products—we can expect a tendency for a concentration of small enterprises in these countries.

[7] Of course, the relationship between production technology and the optimum size of enterprises can be quite complex, and has changed over time. Moreover, other factors matter for firm size, such as the nature and evolution of transaction costs. See Section 4 of ADB (2009) for more details.

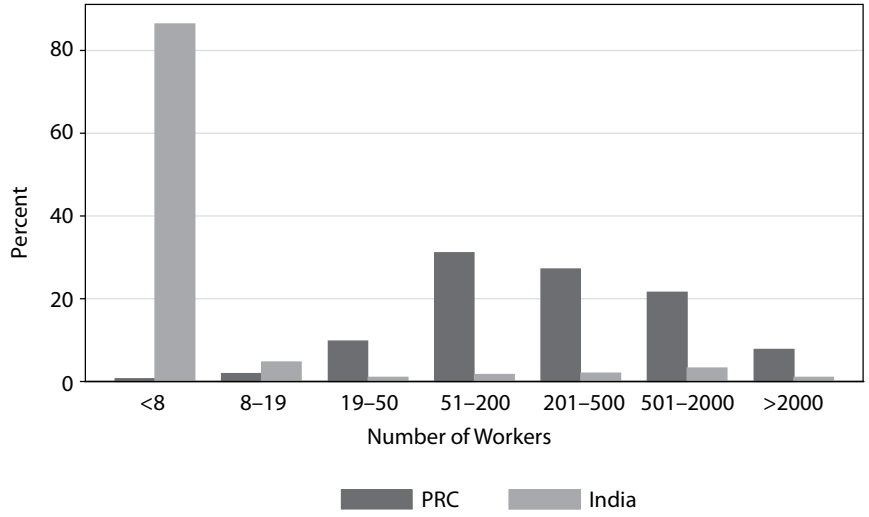
Figure 8: Distribution of Employment by Enterprise Size Groups—Apparel vs. Motor Vehicles and Parts, 2005

Source: Authors' computations.

As noted by Mazumdar (2009), however, the effects of broad industrial composition should not be exaggerated. This is because the size distribution within the same industry can show significant variations across country. Thus, while apparel can be manufactured in small establishments where one or a few tailors work on basic sewing machines, production can also occur in large establishments using sophisticated machines (for example, machines for spreading and cutting cloth). Figure 9 compares the distribution of employment across size groups in the People's Republic of China (PRC) and India for apparel products. Large enterprises account for much more of total employment in apparel in the PRC than in India.[8] The very different distributions across these two countries strongly suggest very different production technologies for a broadly similar set of products and very different implications for firm size distribution. Indeed, these two distributions are entirely consistent with the qualitative description provided by McKinsey Global Institute (2001) of the structure and production technologies of Indian apparel producers in comparison with counterparts in the PRC and Sri Lanka.

[8] A question that arises is why firms of different sizes seem to coexist in the same broad product line. One reason is to be found in the diversity in quality of the product. While there are certainly exceptions, it is generally the case that higher-quality products require greater mechanization and more tasks. Accordingly, the optimal size of the enterprise increases.

Figure 9: Distribution of Firm Size, Apparel



Source: Authors' computations.

As Mazumdar (2009) argues, a number of factors can explain the coexistence of firms of different sizes within a given product line including the transition of production technologies derived from "crafts" tradition to modern methods (especially important in textiles and apparel), product market differentiation whereby low-income consumers demand low-quality, low-priced products (especially important in countries with large rural populations such as India); differential access to finance (especially problematic for smaller firms); transaction costs; and a wide range of government policies encompassing industrial regulations, trade policy, and even labor market regulations.

Understanding which factors are key ones is important from a policy point of view. In this context, analysis of detailed micro-level survey data can be helpful in discriminating between different possibilities. In what follows, we provide an illustration of how the survey data we have access to can be used to examine how one element of regulation, namely, labor regulations, may be affecting firm size distribution. (For an analysis of how recent changes in trade policy have affected firm size distribution, see Nataraj 2009.)

VI. Labor Market Regulations and Firm Size Distribution

Why should labor regulations affect firm size distribution? From the perspective of the individual firm, complying with labor regulations raises the costs of production and/or adjustment of employment levels. If the labor regulations apply uniformly over all firms,

then the size *distribution* of firms is unlikely to be affected. However, if labor regulations apply to a subset of firms—for example, firms above a threshold size—then the size distribution of firms may be affected. In the context of Indian manufacturing, various aspects of labor regulation kick in depending on whether a firm has 10, 50, or 100 workers or more. To the extent that the labor regulations impose significant costs on an individual firm, we can expect an incentive for firms to stay below the relevant threshold, all else being equal.

The specific regulations that have been pointed to by analysts as being especially onerous from the perspective of firm owners include Chapter VB of the Industrial Disputes Act (IDA) and Section 9A of the IDA and the Industrial Employment (Standing Orders) Act (see, for example, the arguments of Panagariya 2008; see also Anant et al. 2006 for a comprehensive discussion of Indian labor regulations). The first of these makes it necessary for firms employing more than 50–100 workers to obtain the permission of state governments in order to retrench or lay off workers—permission that some argue is rarely forthcoming and thereby ends up raising the effective cost of labor usage in production.[9] The second regulation pertains to terms and conditions of work and applies to firms employing over 10 workers (20 if the production process does not use electricity) that are legally mandated to operate in the registered sector of manufacturing. While these two regulations seek to make labor contracts complete, fair, and legally binding, they can constrain firms from making quick adjustments to changing conditions, especially in view of weaknesses in collective bargaining mechanisms.[10]

It is important to note that not all analysts agree that India's labor laws have made for a rigid labor market. In particular, a counterargument to the views above is that the rigidity-inducing regulations have been either ignored (see Nagaraj 2002), or circumvented through the increased usage of temporary or contract labor (Ramaswamy 2003).[11] Ultimately, whether or not India's labor laws have created significant rigidities in labor markets is an empirical issue.

How can we test whether India's labor regulations have affected firm size distribution? We follow the approach pioneered by Besley and Burgess (2004), henceforth BB, and exploit variation in labor regulations across India's states. As per the constitution, India's states are given control over various aspects of regulation (and enforcement). Labor market regulation is one such area, and starting with BB, various studies have attempted

[9] Until 1976, the provisions of the IDA on retrenchments or layoffs were fairly uncontroversial. The IDA allowed firms to lay off or retrench workers as per economic circumstances as long as certain requirements such as the provision of sufficient notice, severance payments, and order of retrenchment among workers (last in first out) were met. An amendment in 1976 (the introduction of Chapter VB), however, made it compulsory for employers with more than 300 workers to seek the prior approval of the appropriate government before workers could be dismissed. A further amendment in 1982 widened the scope of this regulation by making it applicable to employers with 100 workers or more. In some states, the threshold of 100 was reduced to 50 workers or more.

[10] See Anant (2000) for a discussion on this.

[11] For a detailed review of Indian labor regulations and the debate surrounding the issue of rigidity, see Anant et al. (2006).

to codify state-level differences in labor regulation. If labor regulations do generate incentives to remain small, then states coded as having "rigid" ("flexible") labor regulations should have a firm size distribution that is characterized by greater prevalence of smaller (larger) firms.

Unfortunately, quantifying differences in labor market regulations across states—a critical step in evaluating whether labor regulations have affected different dimensions of industrial performance—has proven to be contentious. For example, BB exploit state-level amendments to the Industrial Disputes Act (IDA)— arguably the most important set of labor regulations governing Indian industry—and code legislative changes across major states as pro-worker, neutral, or pro-employer. Bhattacharjea (2006), however, has argued that deciding whether an individual amendment to the IDA is pro-employer or pro-worker in an objective manner is quite difficult. Even if individual amendments can be so coded, the actual workings of the regulations can hinge on judicial interpretations of the amendments. Moreover, if noncompliance with regulations is widespread, then even an accurate coding of amendments that takes into account the appropriate judicial interpretation loses its meaning.

In our analysis, we follow Gupta, Hasan, and Kumar (2009), henceforth GHK, to deal with the above problem. In particular, we partition states into flexible and rigid labor regulation states not only on the basis of the coding of regulations due to BB, but also that generated by GHK by combining information from BB and Bhattacharjea (2008). Basically the measures are coded as "1" if the state has a flexible labor market and "0" otherwise (Table 6).

Table 6: Labor Market Regulations across States

State	Besley and Burgess	Gupta, Hasan, and Kumar
Andhra Pradesh	1	1
Assam	0	0
Bihar	0	0
Gujarat	0	0
Haryana	0	0
Karnataka	1	1
Kerala	1	0
Madhya Pradesh	0	0
Maharashtra	0	0
Orissa	0	0
Punjab	0	0
Rajasthan	1	1
Tamil Nadu	1	1
Uttar Pradesh	0	1
West Bengal	0	0

1 = flexible labor regulation; 0 = inflexible labor regulation.

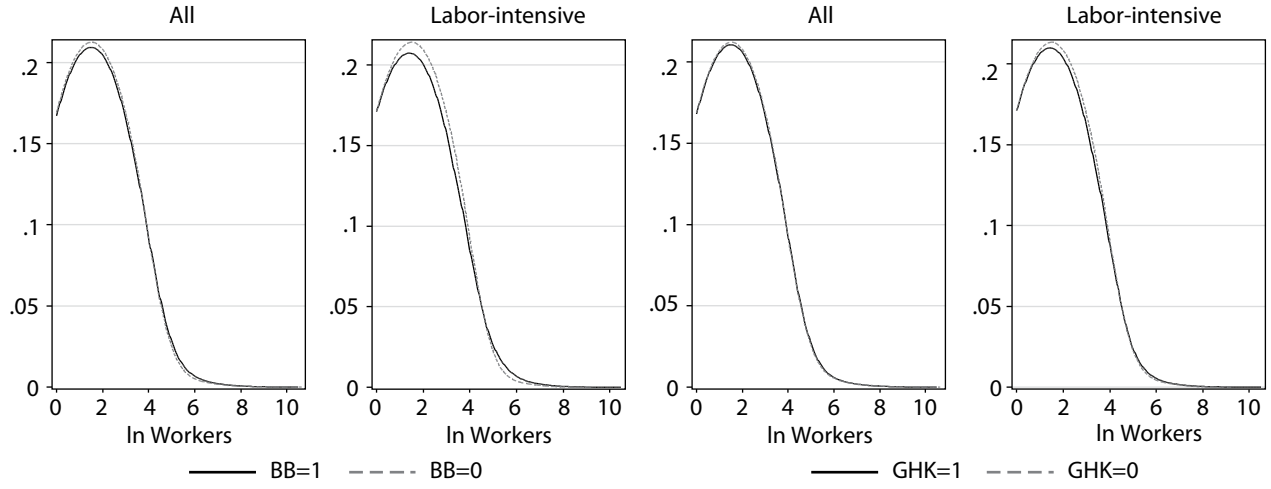
Turning to the assessment of whether labor market regulations affect firm size distribution, a useful starting point is Figure 10, which shows kernel density plots of the distribution of the number of workers across firms in states with flexible and inflexible labor regulations in 1994, the year in which differences are most pronounced (though qualitatively similar to the other years). A visual inspection of the plots shows that the distributions are very similar (though a Kolmogorov-Smirnov test rejects the equality of distribution for flexible and nonflexible states for all years). However, states deemed to have inflexible labor regulations tend to have a larger share of employment accounted for by smaller-sized firms. The opposite is true for states deemed to have flexible labor regulations, i.e., the share of employment in larger firms tends to be higher in such states. The broken lines (associated with the distribution in inflexible states) are located slightly above and to the left of the solid line depicting the distribution in flexible states at the lower end of the employment distribution; the broken lines are slightly below the solid lines at the upper end of the employment distribution.

Figure 10 also allows a comparison of the plots for all industries with labor-intensive industries.[12] It is quite possible that the bite of labor regulations is greater in such industries. If so, differences between the distribution of firm size across states should be more apparent if we restrict attention to labor-intensive industries. As can be seen, differences across the distributions for flexible and inflexible labor regulation states are more pronounced in labor-intensive industries.

To further examine the relationship of labor market regulations and firm size, we now turn to some econometric analysis. Our interest is in examining how the share of total state manufacturing employment in various size groups varies across states with flexible and inflexible labor regulations. In general, if labor regulations have any bite to them, we would expect to see a greater share of employment in relatively small-size firms in states with inflexible labor regulations, all else being equal. Similarly, we would expect to see a greater share of employment in relatively large-size firms in states with flexible labor regulations.

[12] See footnote 3 for how industries are classified.

Figure 10: Kernel Density of Workers in Flexible and Inflexible States, All Industries and Labor-intensive Industries, 1994



BB = Besley and Burgess; GHK = Gupta, Hasan, and Kumar.
Source: Authors' computations.

Accordingly, we estimate the following equation:

$$\theta_{kst} = \alpha + \beta s_{skt} + \gamma L_s^{L\in(BB,GHK)} + \delta L_s^{L\in(BB,GHK)} \times s_{skt} + \eta_t \cdot T + \varepsilon_{skt} \quad (1)$$

where θ_{kst} is the state-specific employment share in the k^{th} size group in state *s* in time *t*, s_{skt} are size dummies, $L_s^{L\in(BB,GHK)}$ is state-specific labor flexibility indicator (either BB or GHK), *T* denotes time fixed effects, and ε_{skt} is an error term assumed to satisfy the usual properties. We allow for six size groups corresponding to enterprise sizes of 1–5, 6–10, 11–20, 21–50, 51–100, and 101–200. Enterprises with more than 200 workers are the omitted category. As noted earlier, we work with data from 15 major states and 3 years.

As may be noted, the size dummies enter on their own and through an interaction with the state-specific labor flexibility indicator. A positive (negative) coefficient on the interaction term for any given size dummy indicates that employment share of that particular size group is larger (smaller) in states deemed to have flexible labor regulations and relative to the omitted category, i.e., enterprises with more than 200 workers.

In Table 7, we present the results obtained from estimating this equation using data from enterprises belonging to all manufacturing industries (columns 1 and 2) as well as from enterprises belonging only to labor-intensive industries (columns 3 and 4). The coefficients on the size dummies indicate the presence of a missing middle. In specifications (1) and (2), the coefficients for medium-size groups are negative and significant, showing a lower employment share relative to the largest-size group (firms employing over 200 workers) while there is no statistical difference between the

Table 7: Regression of Employment Share on Labor Market Regulation Measures

	All Industries		Labor-intensive Industries	
Dependent Variable: Employment Share	**(1)**	**(2)**	**(3)**	**(4)**
Size group 1: 1–5	−0.00269	−0.00374	0.01007	0.00794
	[1.01]	[1.55]	[3.52]***	[3.86]***
Size group 2: 6–10	0.00047	−0.00082	0.01147	0.00977
	[0.14]	[0.26]	[3.59]***	[3.42]***
Size group 3: 11–20	−0.00817	−0.00835	0.00021	0.00052
	[3.49]***	[3.63]***	[0.14]	[0.34]
Size group 4: 21–50	−0.00982	−0.00977	−0.0008	−0.00135
	[4.61]***	[4.67]***	[0.56]	[1.19]
Size group 5: 51–100	−0.01145	−0.01122	−0.0024	−0.00253
	[5.68]***	[5.61]***	[1.99]**	[2.47]**
Size group 6: 101–200	−0.01158	−0.01142	−0.00354	−0.00362
	[5.72]***	[5.70]***	[3.34]***	[4.26]***
BB	0.00409		0.01634	
	[1.19]		[2.70]***	
BB x Size group 1	−0.0027		−0.01584	
	[0.64]		[2.30]**	
BB x Size group 2	−0.00139		−0.01792	
	[0.27]		[2.56]**	
BB x Size group 3	−0.00155		−0.01425	
	[0.38]		[2.26]**	
BB x Size group 4	−0.00282		−0.01423	
	[0.75]		[2.23]**	
BB x Size group 5	−0.0031		−0.015	
	[0.87]		[2.40]**	
BB x Size group 6	−0.00323		−0.01495	
	[0.90]		[2.43]**	
GHK		0.00621		0.01854
		[1.89]*		[3.22]***
GHK x Size group 1		0.00045		−0.00945
		[0.10]		[1.31]
GHK x Size group 2		0.00248		−0.01279
		[0.50]		[1.81]*
GHK x Size group 3		−0.00099		−0.01517
		[0.26]		[2.52]**
GHK x Size group 4		−0.00297		−0.01259
		[0.82]		[2.05]**
GHK x Size group 5		−0.00379		−0.0146
		[1.11]		[2.43]**
GHK x Size group 6		−0.00372		−0.01469
		[1.08]		[2.49]**
2000 year dummy	0	0	0	0
	[0.00]	[0.00]	[0.00]	[0.00]
2005 year dummy	0	0	0	0
	[0.00]	[0.00]	[0.00]	[0.00]
Constant	0.01504	0.01433	0.00632	0.00559
	[6.99]***	[6.69]***	[5.33]***	[4.84]***
Observations	315	315	315	315
R-squared	0.31	0.37	0.29	0.35

* significant at 10%; ** significant at 5%; *** significant at 1%.
BB = Besley and Burgess; GHK = Gupta, Hasan, and Kumar.
Note: Robust t-statistics in brackets.
Source: Authors' estimates.

employment shares of the smallest groups and the largest group. Results are broadly similar for labor-intensive industries (columns 3 and 4).

Turning to the interaction terms involving the size dummies and the indicator for flexible labor regulations, columns 1 and 2 indicate that there is no statistically significant difference in how employment shares vary across the different size groups for the two sets of states. This can be inferred from the fact that none of the interaction terms in columns 1 and 2 is statistically significant.

Things are different when we consider the results in columns 3 and 4, i.e., results based on labor-intensive industries only. In these columns, the interaction terms involving the size dummies and our measures of labor market flexibility are negative and statistically significant for almost all size groups (the exception being the smallest-sized group when labor market flexibility is measured using GHK). This indicates that in so far as labor-intensive industries are concerned, states deemed to have flexible labor market regulations tend to have a greater share of employment in large-size firms, i.e., those with more than 200 workers.

These results are consistent with the notion that states with more flexible labor market regulations have a higher share of employment in large firms. However, as discussed in the previous section, the size distribution of firms is influenced by many factors. Moreover, it is possible that our measure of labor market flexibility—based on a simple partition of states into two types—may simply be capturing something else. In particular, the absence of a negative and significant interaction involving the sixth size group (101–200 workers) would have been strongly suggstive of the IDA's threshold of 100 as representing a serious barrier to firm growth in states with inflexible labor regulations. Instead, our results show significantly higher employment in inflexible labor regulation states among firms with more than 200 workers. We thus consider how the distribution of firm size varies across states partitioned on the basis of two other characteristics. The two characteristics we consider pertain to physical infrastructure and financial development. In particular, we use the work of Kumar (2002) and partition states into ones with relatively better or worse physical infrastructure and, similarly, states with relatively more or less developed financial sectors. We then examine how the size distribution of firms varies across these two states. As before, we carry out this exercise for the entire sample of enterprises as well as those belonging to labor-intensive industries only.

Figure 11 shows the kernel density plots. The figure shows that infrastructure and finance also affect the distribution of firm size, and employment is higher in states where both are developed. However, this is true for both all industries as well as labor-intensive industries. This is unlike the case of labor market regulations where statistically large differences in employment shares across state types appear in for labor-intensive industries, i.e., the industries one would think would be most affected by labor regulations.

Figure 11: Kernel Density of Workers in States with Developed and Undeveloped Finance and Infrastructure, All Industries and Labor-intensive Industries, 1994

Source: Authors' computations.

VII. Conclusion

In this paper, we have used establishment-level data from Indian manufacturing to examine the distribution of firms across employment size groups. Like Mazumdar (2003) and Mazumdar and Sarkar (2008) we find the Indian size distribution to be characterized by a heavy preponderance of very small enterprises and a "missing middle" even with data as recent as 2005. We have also discussed why such a pattern, especially large share of employment accounted for by small firms, can represent welfare losses. Like a wide international literature on the issue, we find both average wages in labor productivity to be much lower in small firms as compared to large firms.

We have also examined the possible role played by labor regulations in affecting firm size and its distribution. Using available measures of labor regulations across Indian states, we find that in so far as labor-intensive industries are concerned, states with more flexible labor regulations tend to have larger-sized firms. A similar differential between labor-intensive industries and others is not there for partitions of states in terms of indicators of physical infrastructure or financial development. Taken together, the results are suggestive of a link between labor regulations and firm size and firm size distribution. More generally, our paper has served to emphasize the usefulness of survey data for carrying out policy-relevant analysis.

References

ADB. 2009. "Enterprises in Asia: Fostering Dynamism in SMEs." In *Key Indicators for Asia and the Pacific 2009.* Asian Development Bank, Manila.

Anant, T. C. A. 2000. "Reforming the Labour Market." In S. Gangopadhyay and W. Wadhwa, eds., *Economic Reforms for the Poor*. Delhi: Konark.

Anant, T. C. A., R. Hasan, P. Mohapatra, R. Nagraj, and S. K. Sasikumar. 2006. "Labor Markets in India: Issues and Perspectives." In J. Felipe and R. Hasan, eds., *Labor Markets in Asia: Issues and Perspectives*. London: Palgrave Macmillan for the Asian Development Bank.

Besley, T., and R. Burgess. 2004. "Can Regulation Hinder Economic Performance? Evidence from India." *The Quarterly Journal of Economics* 119(1):91–134.

Bhattacharjea, A. 2006. "Labour Market Regulation and Industrial Performance in India: A Critical Review of the Empirical Evidence." *The Indian Journal of Labour Economics* 49(2):211–32.

———. 2008. "How do Indian Firms Respond to Employment Protection Legislation?" University of Delhi. Mimeo.

de Mel, S., D. McKenzie, and C. Woodruff. 2008. Who Are the Microenterprise Owners? Evidence from Sri Lanka on Tokman v. de Soto. Policy Research Working Paper No. 4635, World Bank, Washington, DC.

de Soto, H. 1989. *The Other Path: The Invisible Revolution in the Third World*. New York: Harper and Row.

Gupta, P., R. Hasan, and U. Kumar. 2009. "Big Reforms but Small Payoffs: Explaining the Weak Record of Growth in Indian Manufacturing." *India Policy Forum* 5:59–108.

Kumar, T. R. 2002. "The Impact of Regional Infrastructure Investment in India." *Regional Studies* 36(2):194–200.

Mazumdar, D. 2003. "Small and Medium Enterprise Development in Equitable Growth and Poverty Alleviation." In C. M. Edmonds, ed., *Reducing Poverty in Asia; Emerging Issues in Growth, Targeting and Measurement.* Chaltenham: Edward Elgar for the Asian Development Bank.

———. 2009. "A Comparative Study of the Size Structure of Manufacturing in Asian Countries." Asian Development Bank, Manila. Processed.

Mazumdar, D., and S. Sarkar. 2008. *Globalization, Labor Markets and Inequality in India.* London and New York: Routledge.

McKinsey Global Institute. 2001. *India: The Growth Imperative.* McKinsey & Company, Washington, DC**.**

Ministry of Statistics and Programme Implementation. 2010. Annual Survey of Industries. Available: mospi.nic.in/stat_act_t3.htm for more details.

Moore, H. 1911. *Laws of Wages: An Essay in Statistical Economics*. New York: Augustus M. Kelley.

Nagaraj, R. 2002. Trade and Labor Market Linkages in India: Evidence and Issues. Economic Series Working Paper No. 50, East West Center, Hawaii.

Nataraj, S. 2009. "The Impact of Trade Liberalization on Productivity and Firm Size: Evidence from India's Formal and Informal Manufacturing Sectors." University of California, Berkeley. Mimeo.

Oi, W., and T. L. Idson. 1999. "Firm Size and Wages." In O. C. Ashenfelter and D. Card, eds., *Handbook of Labor Economics Volume 3B.* Amsterdam: Elsevier B.V.

Panagariya, A. 2008. *India: The Emerging Giant*. New York: Oxford University Press.

Ramaswamy, K. V. 2003. "Liberalization, Outsourcing and Industrial Labor Markets in India: Some Preliminary Results." In S. Uchikawa, ed., *Labour Market and Institution in India, 1990s and Beyond*. New Delhi: Manohar.

Tokman, V. E. 2007. Modernizing the Informal Sector. DESA Working Paper No. 42, United Nations, New York.

About the Paper

Rana Hasan and Karl Robert L. Jandoc use establishment-level data from Indian manufacturing to describe the distribution of firm size and discuss its implications for public policy. They note that the small size of the vast majority of Indian firms is likely to be associated with large welfare losses, and that labor regulations that make it difficult to adjust employment levels are likely to be one factor affecting firm size adversely.

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