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What Makes Cities More Competitive? Lessons from India

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Policy makers in both developed and developing countries want to accelerate spatial development, make cities more competitive, attract new entrepreneurs, boost economic growth, and promote job creation. These are commendable goals given that city populations in developing countries are expected to double from 2 billion to 4 billion people between 2000 and 2030. So what makes some cities more competitive than others? This note examines city competitiveness in India through the lens of spatial location choices of new and young entrepreneurs using plant-level data from the manufacturing and services sectors, including formal and informal operations. Findings show that the two most consistent factors that predict overall entrepreneurship for a district are its population's level of education and the quality of local physical infrastructure; these patterns are true for manufacturing and services. Agglomeration economies are much stronger in India than in the United States, but there is much greater variation in spatial outcomes in India than in the United States. Micro evidence for India also suggests that while strict labor regulations discourage formal sector entry, better household banking environments encourage entry into the informal sectors. Informal sectors conform much more closely to the overall contours of India's economic geography than formal sectors. Policy makers looking to promote competitiveness in their local areas have several policy levers to exploit.

Many policy makers want to encourage entrepreneurship at the local level, given its central role in economic growth and development. Multiple studies have examined this question of how to promote entrepreneurship in advanced economies. However, similar work for developing countries is still at an early stage. Why do some cities in developing countries attract more entrepreneurs and become engines of growth? Why are other cities short of entrepreneurs?

Finding and understanding the answers to these questions from a developing-country perspective can help these countries jump start economic growth in their cities. The roles that education or infrastructure play, for example, regarding entry into an advanced economy like the United States may be quite different than their impact in a setting like India, where lack of human capital and lack of roads continue to hamper development. Likewise, there is extensive evidence on the importance of agglomeration economies in advanced countries, but the relevance of these patterns in developing economies has not been consistently established.

A recent working paper by Ghani, Kerr, and O'Connell (2012), key elements of which are featured in a forthcoming article in *Regional Studies* (Ghani, Kerr, and O'Connell forthcoming), examines these questions for manufacturing and services in India for 630 districts spread across 35 states/union territories. Within these two industry groups, analysis also compares the formal and the informal sectors. Results show that certain factors and traits of districts and industries systematically predict stronger entry of new firms. Ghani, Kerr, and O'Connell (2012) seek to determine the general degree to which the economic geography of India can be explained with a parsimonious set of specifications, and to compare the specific factors identified as important relative to those in the United States.

Drivers of Entrepreneurship and District-Level Competitiveness

The study examines the roles of demographic traits (age profiles, population, and population density), structural traits (education of the local labor force, quality of local physical infrastructure, travel time to major cities, stringency of labor laws, and household banking conditions), and agglomeration economies and their impacts on entrepreneurship and district-level competitiveness. While these traits do not constitute an exhaustive list of local conditions, they are motivated by the literature on India's development.

The analysis develops metrics that unite the incumbent industrial structures of districts with the extent to which industries interact through three traditional agglomeration channels that have been discussed since Alfred Marshall. The first agglomeration channel is proximity to customers and suppliers, which reduces transportation costs and thereby increases productivity. The second channel is the Chinitz effect, which descends from the work of Benjamin Chinitz on how small-scale suppliers can provide specific aid to new firms. The third channel is labor pooling, which picks up on the themes of specialized workers tightly clustered together. These metrics unite the industrial structures of cities with the degree to which industries interact (following Glaeser and Kerr [2009]).

Empirical Findings

Table 1 presents the key findings by sector, with more detailed coefficients provided in referenced studies. The first column considers the organized manufacturing sector. An initial unreported analysis first considers the predictive power for entrepreneurship of a parsimonious regression that includes district populations, district-industry employments, and industry-fixed effects as explanatory variables. Not surprisingly, existing district-industry employment strongly shapes the spatial location of entry: a 10 percent increase in incumbent employment raises entry employment by around 2 percent. In addition, a district's population increases entry rates with an elasticity of 0.5.

Table 1 also includes district traits and agglomeration economies, of which three factors stand out as discouraging entrepreneurship in organized manufacturing: high population density, strict labor regulations, and greater distance from 1 of India's 10 biggest cities. The first pattern has been observed in many settings—the traded nature of manufacturing products allows more rural settings for firms, and manu-

Table 1. Summary of District-Industry Entrepreneurship Estimations

	Organized manufacturing sector	Unorganized manufacturing sector	Organized services sector	Unorganized services sector
Log of incumbent employment in district-industry	0	0	--	+
Log of district population	+++	+++	+++	+++
District traits:				
Log of district population density	---	0	0	-
Share of population with graduate education	+++	0	+++	+++
Demographic dividend for district (age profiles)	0	+++	+	++
Index of infrastructure quality for district	0	+++	+++	+++
Strength of household banking environment	0	+++	++	+++
Stringency of labor laws in district's state	---	0	-	---
Log travel time to closest large city	---	0	0	0
Local industrial conditions by incumbent firms:				
Labor market strength for district-industry	0	+++		
Inputs/supplier strength for district-industry	+++	+++		
Outputs/customer strength for district-industry	+++	+++		
Chinitz strength for district-industry	0			
Industry-fixed effects	Yes	Yes	Yes	Yes
Observations	4843	6451	3340	6552
Adjusted R-squared	0.218	0.264	0.252	0.536

Source: Authors' compilation.
Notes: Estimations quantify the relationship between district-industry employment in new establishments and local conditions.

facturers often seek cheaper environments than the wages and rents associated with high-density areas. The second pattern connects with the earlier studies of India that argue strict labor laws reduce economic growth. Entrepreneurship in labor-intensive industries is disproportionately reduced by strict labor laws. The final factor highlights that while manufacturers avoid the high costs of urban areas, they also avoid the most remote areas of India in favor of settings that are relatively near large population centers, likely to access customers directly or to connect to shipping routes.

The education of a district's workforce is strongly linked to higher entry rates. The elasticity is, in fact, stronger in economic magnitude than that evident in comparable studies of advanced economies. Looking at agglomeration economies, the qualities of input and output markets are exceptionally strong, with 0.4–0.5 elasticities. Labor market and Chinitz measures have positive coefficients, but are not statistically significant. The decline in the main effect of incumbent employment suggests that these four new metrics capture the positive channels of agglomeration on entry.

Column 2 repeats this approach for the informal/unorganized manufacturing sector: several distinct differences exist. First, local population plays a much greater role with unit elasticity evident, much stronger than for organized manufacturing. This greater connection of entry to the overall size of local markets almost certainly reflects unorganized entry being proportionate to market size and servicing local needs. Unorganized manufacturing clearly conforms much more closely to the overall contours of India's economic geography than organized manufacturing.

The other two district traits that are associated with strong entry rates are the strength of local, within-district, physical infrastructure and the strength of local household banking environments. This contrasts with organized manufacturing entry, where education stood out. An intuitive explanation, which is also reflected in the services estimations, is that these patterns and their differences reflect the factors on which each sector depends most. Organized manufacturing establishments, for example, may have broader resources that reduce dependency on local infrastructure and household finance. Likewise, the unorganized sector depends less on educated workers than the organized sector.

Columns 3 and 4 present comparable estimations for the services sector. The patterns and their contrast to organized manufacturing are again quite intriguing. First, overall district population is as important as it was for unorganized manufacturing, with its elasticity greater than 1. Similar also to unorganized manufacturing, population density and travel time to major cities are not important in the multivariate setting, while the district's age profile does contribute to higher entry levels.

Among district traits, education and infrastructure matter the most. Overall, education is found to be generally important, and particularly relevant in the organized sectors of manufacturing and services. Physical infrastructure is also important, particularly in the unorganized sectors. The strength of the household banking sector is also very important in the unorganized sectors.

Agglomeration economies operate as strongly for entrants in India as they do in advanced economies. The importance of the Chinitz effect is concentrated among small entrants. The importance of overall output markets and labor spillovers grows with entrant size. It appears that input cost factors are more influential in the location choices of small start-ups in India, while output conditions and labor markets are more important for large entrants.

Conclusions

India's city competitiveness and industrial landscape is still taking shape. A comparison of India with United States shows that existing city population levels, city-industry employment, and industry-fixed effects can explain 80 percent of the spatial variation in entry rates in the United States. The comparable explanatory power for India is just 29 percent for manufacturing and 33 percent for services. A large portion of this gap is because India is in a much earlier stage of development. India's industrial landscape is also adjusting after the deregulations of the 1980s and 1990s. At such an early point, and with industrial structures not yet entrenched, local policies and traits can have profound and lasting impacts by shaping where industries plant their roots.

Agglomeration economies are very important for India's entry patterns. The results of this analysis show strong evidence of agglomeration economies in India's manufacturing sector. In a similar manner, there is extensive evidence that the incumbent compositions of local industries influence new entry rates at the district-industry level within manufacturing. This influence is through both traditional Marshallian economies, like a suitable labor force and proximity to customers, and through the Chinitz effect, which emphasizes small suppliers.

Education and physical infrastructure matter greatly. The two most consistent factors that predict overall competitiveness and entrepreneurship for a district are its level of education and the quality its local physical infrastructure. These patterns are true for both manufacturing and services. These relationships are much stronger in India than those found in the United States. Higher levels of education in a local area increase the supply of entrepreneurs and increase the talent available to entrepreneurs for staffing their companies. Investment in people is an easy call for policy makers. Likewise, cities must improve their infrastructure—electricity, roads, tele-

com, and water/sanitation facilities—to attract these entrepreneurs, retain the new businesses, and strengthen their competitiveness.

Eliminating extreme poverty and promoting shared prosperity. South Asia is currently the least urbanized region of the world, with only about 30 percent of its population in cities. It also has the highest concentration of the world's poor. India and South Asia are now at the forefront of a major population shift, moving from a largely rural to a rapidly urbanizing population. Nearly half a billion more people will live in metropolitan areas in the region as the urban population is expected to more than double over the next 25 years. While this shift presents special challenges, there will also be unique opportunities to make a difference and have development impacts that reduce extreme poverty and promote shared prosperity.

More research on agglomeration economies and entrepreneurship in developing countries is important for urban and development economics going forward. Identifying conditions and factors that support entrepreneurship and agglomeration economies and acting upon them is essential to fostering economic growth in the cities of developing countries. While focusing on entrepreneurship, policy makers also need to recognize that large firms play an important role in regional development. The giant firms of South Asia are becoming globally powerful and growing in efficiency, and they too will shape employment opportunities in the decades ahead. However, the history of regional development shows that big firms are not enough: an entrepreneurial foundation that provides for local growth and regeneration is essential for long-term success and prosperity.

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