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# Economic Premise

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## Who Creates Jobs?

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*There is a consensus that jobs are vital in translating economic growth into lasting poverty reduction and social cohesion. But who creates jobs is an understudied field. This Economic Premise argues that there is a strong link between initial levels of young and small firms and subsequent job growth, as evidenced in India. The economic geography of entrepreneurship in India is still evolving. It is worrying that there are too few entrepreneurs in India for its stage of development. Yet there is no question that entrepreneurship works—cities and states that have embraced entrepreneurship have created more jobs. However, the link between entrepreneurship and job growth is not automatic. Cities that have a higher quality of physical infrastructure and a more educated workforce attract many more entrepreneurs. Supportive incumbent industrial structures for input and output markets are strongly linked to higher entrepreneurship rates. There are many policy levers that can be used by policy makers to promote entrepreneurial growth. Instead of being preoccupied with firm chasing—attracting large mature firms from other locations—policy makers should focus on encouraging entrepreneurship in their communities.*

The role of entrepreneurs in economic growth and job creation has a long intellectual tradition. Cantillon (1730) described entrepreneurship as self-employment, with entrepreneurs buying at certain prices in the present, and selling at uncertain prices in the future. Knight (1921) explained the unique role that entrepreneurs play by emphasizing how entrepreneurs take risk and act upon fundamental market changes—recognizing opportunity, bearing uncertainty, and directing new ventures. Schumpeter (1942) linked entrepreneurship to growth by highlighting how they convert new ideas into successful innovations, generating “creative destruction” by simultaneously creating new products and eliminating others. More recently, Glaeser (2007) has identified entrepreneurship with urban success.

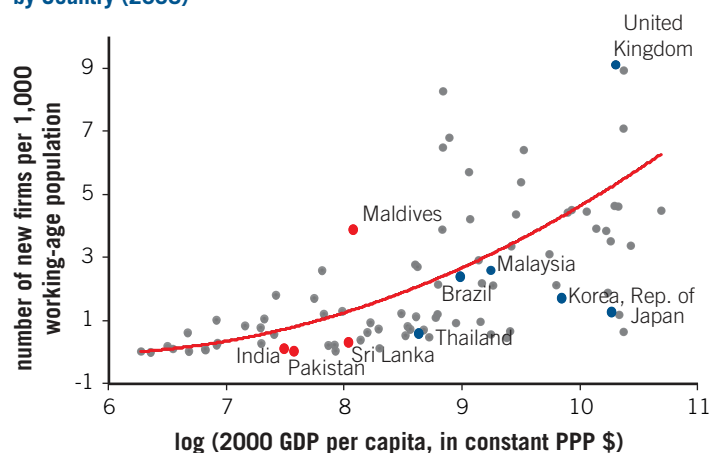
While the great giants of economic history recognized the link between entrepreneurship, economic growth and job creation, challenges and controversies remain. Understanding of

entrepreneurship is still at an early stage (Glaeser, Rosenthal, and Strange 2009; Klapper and Love 2011). How should one define/quantify entrepreneurship? What kind of entrepreneurship—mom and pop shops or formal firms—creates more jobs? Do young and small establishments or large and established firms contribute more to job growth? At what kind of geographical scale do entrepreneurial mechanics function? Why do some cities attract entrepreneurs while others do not? Do agglomeration economies differ across industries, cities, and gender? What makes some local governments fiscally more entrepreneurial than others? These questions have started to attract attention, but many of them remain unanswered.

### Quantifying Entrepreneurship

This analysis starts by examining the impact of entrepreneurs in South Asia (Ghani, Kerr, and O'Connell 2011a). Figure 1 compares the new business registration density of South Asian

**Figure 1. New Business Registration Density and GDP per Capita, by Country (2008)**



Source: World Bank Group Entrepreneurship Snapshots 2010; World Development Indicators 2010.

Note: Countries designated as offshore tax shelters excluded. Fitted line depicts regression of density on 2000 log (GDP/cap) and its square term. Eighty-nine countries with available data shown.

countries with the rest of the world. Contrary to popular belief, it turns out that India, as well as other countries in the region, has too few entrepreneurs for its stage of development.

Demographic trends for India, the second most populous country in the world, suggest that 1 million new workers will join the labor force every month for the next two decades (Bloom, Canning, and Rosenberg 2011; World Bank 2011a). This is equivalent to the entire population of Sweden joining the labor force in India every year for the next two decades (Kochhar 2011b; Mitra 2011). The pace at which new jobs are created will determine whether the demographic trends become a dividend or a disaster in India.

There are many distinct characteristics of entrepreneurship—self-employment, firm size, ownership, entry, and innovation—that have been highlighted in the literature. Measuring different aspects of entrepreneurship can be difficult. Recent studies note the challenges that come with using self-employment metrics to describe the entrepreneurship necessary for economic growth and job creation. Due to the much larger raw count of self-employed workers, self-employment indices accord much more weight to hobby entrepreneurship than entrepreneurship that can lead to substantial job creation.

So the focus has now shifted from self-employment to formal establishments that employ paid workers. These thresholds—being incorporated and paying payroll taxes—are in some sense arbitrary, but they are natural, given the fundamental interest in describing job creation. Its relevance is

even greater for India, given the huge size of the informal sector (Kanbur 2011) and the urgency to pull millions out of the informal and into the formal sector.

Following this emerging strand, this note defines entrepreneurship as the presence of young establishments, less than three years old, in the formal manufacturing sector. The primary metric of entrepreneurship used here—young establishments per 1,000 workers in the formal sector—shows a slight upward trend over time in India; but it also shows significant heterogeneity across states.

Table 1 describes the correlation between the young establishments per worker measure and the other metrics across states or industries. There is a modest degree of correlation within the formal group, which is comparable to the 0.4–0.6 correlations that Glaeser and Kerr (2009) observed across U.S. cities for entrepreneurship metrics. The link across metrics is much weaker in the informal sector, especially in regional variation. The correlation between formal and informal sector measures is much weaker. For example, the correlation between young establishments per worker in the formal sector and the self-employment rate in the informal sector is about 0.1. There is likewise a much weaker correlation between small establishment metrics and self-employment metrics. This analysis excludes self-employment and the informal sector, except as robustness checks and to contrast results.

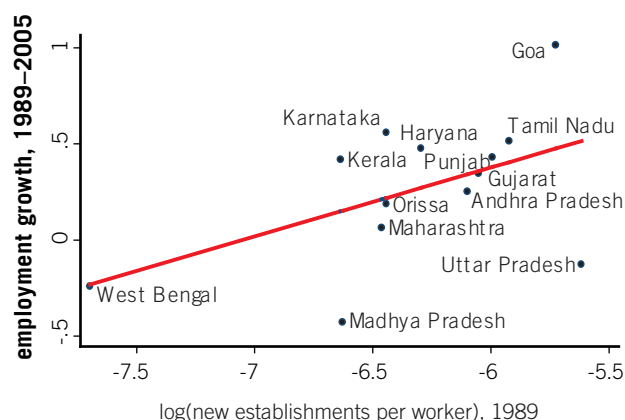
**Table 1. Correlation between Measures of Entrepreneurship in Indian Manufacturing**

	Correlation to count of young establishments per 1,000 workers		
	Formal sector only	Informal sector only	Combining formal and informal
<i>Correlation across regions</i>			
Count of small establishments per 1,000 workers (< 20 employees), 1989	0.20	0.10	0.15
Share of workers in young establishments, 1989	0.64*	0.91*	0.78*
Share of workers in small establishments, 1989	0.23	-0.04	-0.07
Self-employment share, 1989	0.45	0.34	0.49*
<i>Correlation across industries</i>			
Count of small establishments per 1,000 workers (< 20 employees), 1989	0.68*	0.39*	0.52*
Share of workers in young establishments, 1989	0.66*	0.77*	0.80*
Share of workers in small establishments, 1989	0.71*	0.04	0.66*
Self-employment share, 1989	0.22	0.49*	0.18

Source: Ghani, Kerr, and O'Connell 2011a.

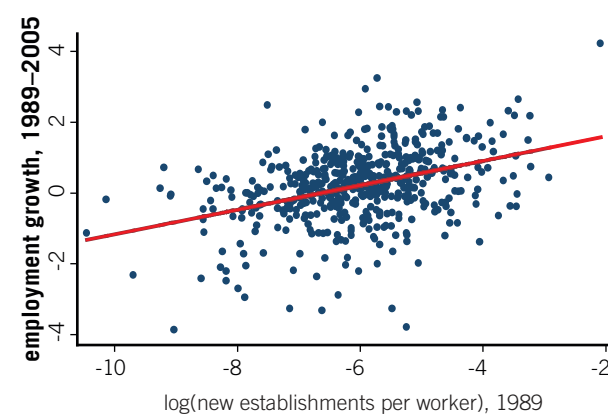
Note: \* = significant at 10% level.

**Figure 2. Entrepreneurship and Growth in Indian Manufacturing**



Source: India Annual Survey of Industries, 1989–2005.

**Figure 3. Entrepreneurship and Growth in Indian Manufacturing**



Source: India Annual Survey of Industries, 1989–2005.

Note: Plotted points represent state-industry clusters.

**Table 2. Region-Industry Employment Growth in Formal Manufacturing and Various Entrepreneurial Metrics**

	Count of young establishments per worker	Count of small establishments per worker	Share of workers in young establishments	Share of workers in small establishments	Self-employment share in formal sector	Self-employment share in informal sector
	(1)	(2)	(3)	(4)	(5)	(6)
A. Dependent variable: region-industry employment growth in formal manufacturing, 1989–2005						
Entrepreneurship level in region-industry in 1989	0.334 (0.040)***	0.255 (0.040)***	0.178 (0.046)***	0.269 (0.040)***	0.051 (0.028)*	0.072 (0.037)**
Adjusted R-squared	0.108	0.087	0.038	0.090	0.002	0.006
B. Panel A, controlling for initial employment						
Entrepreneurship level in region-industry in 1989	0.258 (0.049)***	0.163 (0.040)***	0.101 (0.045)**	0.176 (0.041)***	0.017 (0.027)	0.040 (0.038)
Employment level in region-industry in 1989	-0.097 (0.030)***	-0.137 (0.027)***	-0.149 (0.027)***	-0.135 (0.027)***	-0.161 (0.024)***	-0.191 (0.026)***
Adjusted R-squared	0.125	0.126	0.087	0.129	0.079	0.104

Source: Ghani, Kerr, and O'Connell 2011a.

Notes: Estimations quantify the relationship between region-industry employment growth in the formal manufacturing sector over 1989–2005 and initial entrepreneurship conditions in 1989. Column headers indicate entrepreneurship metric employed. All variables are in logs. Estimations report robust standard errors, are unweighted, and have 575 observations. \* = significant at 10% level; \*\* = significant at 5% level; \*\*\* = significant at 1% level.

## Link between New Establishments and Job Growth

Figure 2 provides the simplest representation of the link between entrepreneurship and job growth. The vertical axis is the log employment growth in the region from 1989 to 2005, while the horizontal axis is the log count of new establishments per worker in 1989. There is a strong upward slope to the trend line, similar to that found across cities in the United States (Glaeser and Kerr 2010a), and it is clear that the relationship does not overly depend upon any one region.

Figure 3 provides a comparable picture using region-industry employment growth and initial entrepreneurship levels. The pattern looks even more powerful and robust at this level of detail. It is important to note that these correlations are not between contemporaneous entry rates and employment growth, which can potentially have a mechanical relationship, but instead between initial entry rates and subsequent region-industry employment growth.

Table 2 provides a systematic comparison of the entrepreneurship metrics using the region-industry variation. The sample includes 575 region-industry pairs that have positive employ-

ment in 1989. Panel A presents an unconditional estimation, while panel B conditions on log initial employment (Delgado, Porter, and Stern 2010; Glaeser and Kerr 2010a). Column headers indicate the entrepreneurship metric employed.

Elasticities, in the first four columns in panel A, range from 0.18 to 0.33 at the region-industry level: all estimates are statistically significant. In strong contrast, there is a much weaker link from self-employment metrics, in either the formal or informal sector, to subsequent job growth. This stresses the importance of how entrepreneurship is measured to estimate its link to local job growth. There are similar results in panel B after controlling for initial employment levels in region-industries. Coefficients tend to be a quarter to a third smaller, but they remain economically and statistically significant. High levels of initial employment are correlated with lower job growth to 2005, indicative of convergence. These estimates provide simple and transparent evidence.

It is natural to worry about omitted factors that could influence both employment growth and firm age. Table 3 provides a more formal set of growth regressions using young establishments in a region-industry context. To address this uncertainty, column 1 begins by simply including the explanatory variables of initial entrepreneurship and employment levels at both

region and region-industry levels. This starting point is interesting because it highlights that entrepreneurship at both levels is important for growth in the local region-industry. Similar patterns are evident in the United States.

Column 2 further incorporates a vector of industry fixed effects. These fixed effects capture the general growth of industries in India between 1989 and 2005 and the levels of entrepreneurship that existed in 1989. Whereas the simplest correlations could have reflected general differences between textile and chemical industries, for example, these fixed effects require that the estimates only exploit variations across states after controlling for general industry differences. These fixed effects also account for other fixed industry factors like capital intensity and export behavior. Elasticities are similar in this estimation, although the region-industry entrepreneurship variable loses about half of its strength. This suggests that general industry differences—some sectors being very entrepreneurial and fast growing across all Indian states—partly explain the strong effects in table 2. Nevertheless, region-industry entrepreneurship remains important economically and precisely estimated in the conditional regression.

Column 3 goes a step further and includes a vector of state fixed effects. Like industry fixed effects, regional fixed effects re-

**Table 3. Region-Industry Growth Estimations for Formal Manufacturing Employment**

	Base estimation with young establishments	Including industry fixed effects	Including industry and region effects	Weighting by initial region-industry size	Controlling for age structure of region-industry	Using only standalone establishments
	(1)	(2)	(3)	(4)	(5)	(6)
A. Dependent variable: region-industry employment growth in formal manufacturing, 1989–2005						
Entrepreneurship level in region-industry in 1989	0.215 (0.050)***	0.113 (0.054)**	0.138 (0.056)**	0.164 (0.054)***	0.148 (0.060)**	0.090 (0.044)**
Employment level in region-industry in 1989	-0.124 (0.034)***	-0.226 (0.049)***	-0.236 (0.049)***	-0.228 (0.047)***	-0.236 (0.049)***	-0.265 (0.046)***
Entrepreneurship level in region in 1989	0.244 (0.110)**	0.308 (0.102)***				
Employment level in region in 1989	0.0831 (0.058)	0.196 (0.068)***				
Average establishment age in region-industry in 1989					0.071 (0.146)	
Adjusted R-squared	0.133	0.300	0.328	0.344	0.327	0.325
Industry fixed effects		Yes	Yes	Yes	Yes	Yes
Region fixed effects			Yes	Yes	Yes	Yes

Source: Ghani, Kerr, and O'Connell 2011a.

Notes: Estimations quantify the relationship between region-industry employment growth in the formal manufacturing sector over 1989–2005 and initial entrepreneurship conditions. Entrepreneurship conditions are described through young establishments per worker. Estimations report robust standard errors, are unweighted except for column 4, and there are 575 observations. \* = significant at 10% level; \*\* = significant at 5% level; \*\*\* = significant at 1% level.

move general differences across locations—for example, the lower average entry in West Bengal. State fixed effects also remove traits and policies that influence all industries equally: for example, aggregate regional growth that increases demand for all manufacturing goods. The estimation now requires that higher employment growth at the region-industry level be linked to higher rates of young establishments after removing any systematic industry and region effects. The importance of region-industry entrepreneurship is very robust for this specification choice.

This estimate of 0.138 (0.055) is the preferred specification. In other words, estimates suggest that a 10 percent increase in initial entrepreneurship in a region-industry in 1989 was associated with a 1.3 percent higher rate of employment growth to 2005. This estimate derives from removing effects of initial employment levels and systematic growth effects by regions and industries. While India has historically been weaker in terms of growth-oriented entrepreneurship overall, industries and regions that have embraced entrepreneurship have grown faster. Given the potential for the manufacturing sector to expand in India, this is very encouraging for future growth prospects.

Columns 4–6 provide additional robustness checks on this conditional specification. First, analysis testing for outliers by weighting the regression by initial employment in the region-industry finds very similar effects. Column 5 further controls for average age of establishments in the region-industry to verify that the observed young establishment relationship is not due to broader product cycles and industry evolution (Faberman 2007; Jovanovic and MacDonald 1994). This broader age regressor does little to explain the relationship between job growth and young establishments.

## Economic Geography of Entrepreneurship

There is huge heterogeneity in entrepreneurship across states in India. The spatial distribution of start-ups in India is more

fluid than in the United States. For the United States, existing city population levels, city-industry employment, and industry fixed effects can explain 80 percent of the spatial variation in entry rates. The comparable explanatory power for India is 29 percent for manufacturing and 33 percent for services. While this lower explanatory power could be due in part to dataset features and/or subtle, necessary shifts in the empirical estimations, it is clear that a large portion of this gap is due to India being at a much earlier stage of development, both generally and for these particular sectors.

The importance of entrepreneurship to growth and job creation leads to a natural, policy-relevant question: which regional traits encourage local entrepreneurship? Is it differential returns to entrepreneurship? Or do entrepreneurs respond to differences in the availability of infrastructure and education? This list is by no means exhaustive, but it parallels the well-known list of explanations for the agglomeration of economic activity.

Table 4 tests the entrepreneurial returns hypothesis. From Indian manufacturing data, the dollar value of shipments per worker in 2005 in each region-industry is calculated separately for single-unit and multi-unit establishments. This shipment per employee metric is used as a proxy for future profitability and therefore the returns to entrepreneurship. This proxy is subject to including industry fixed effects that control for industry-level production techniques.

This analysis did not find a strong relationship between the heightened presence of young establishments in 1989 and the subsequent value per worker in the region-industry. This weak explanatory power is for both economic magnitude and statistical significance. These patterns suggest that anticipation of abnormal returns is not the driving force behind the observed relationships in India. Demographics, too, have limited explanatory power.

The two most consistent factors that predict overall entrepreneurship are local education levels and the quality of local physical infrastructure (Ghani, Kerr, and O'Connell 2011b). These patterns are true for manufacturing and services. Among general district traits, quality of physical infrastructure and workforce education are the strongest predictors of entry, with labor laws and household banking quality also playing important roles. There is evidence that strict labor regulations discourage formal sector entry, and better household banking environments encourage entry in the unorganized sector. Looking at the district-industry level, there is extensive evidence of agglomeration economies among manufacturing industries. In particular, supportive incumbent industrial structures for input and output markets are strongly linked to higher establishment entry rates. Start-ups are more frequent for a city in industries that share common labor needs or have customer-supplier relationships with the city's incumbent businesses. There is also substantial evidence for the Chinitz

**Table 4. Estimations of Localized Entrepreneurial Returns**

	Average labor returns for single-units in 2005	Average labor returns for multi-units in 2005
	(1)	(2)
Entrepreneurship level in region-industry in 1989	0.024 (0.105)	-0.090 (0.225)
Employment level in region-industry in 1989	-0.015 (0.079)	0.033 (0.039)
Adjusted R-squared	0.273	0.145
Observations	607	346
Industry fixed effects	Yes	Yes
Region fixed effects	Yes	Yes

Source: Ghani, Kerr and O'Connell, 2011a.

Note: \* significant at 10% level; \*\* significant at 5% level; \*\*\* significant at 1% level.



effect where small local incumbent suppliers encourage entry. The importance of agglomeration economies for entry hold when considering changes in India's incumbent industry structures from 1989, determined before large-scale deregulation began, to 2005.

## Conclusion

Job growth is predicted by higher concentrations of new and young establishments in India. The self-employment rate of entrepreneurship does not fully capture the scale of entrepreneurship or its success. Alternative measures, such as number of formal establishments per worker in an area, are better predictors of subsequent job growth. Cities and states that have embraced entrepreneurship have created more jobs and experienced higher regional growth. Policy message is clear: if job creation is a priority, policy makers should focus on promoting entrepreneurship locally.

The economic geography of entrepreneurship in India is still at an early stage. India has much greater variation in spatial outcomes than is present in the United States. The differences in the spatial location of entrepreneurship do not seem to be a result of differences in entrepreneurial returns. The two most consistent factors that attract new entrepreneurs are local education levels and the quality of local physical infrastructure. There are many policy levers that can be used by the policy makers to promote entrepreneurial growth (Devan 2011).

The empirical link between education and entrepreneurship has strong roots (Acs et al. 2008). Education improves skill and spreads ideas faster and wider (Atinc 2010). There are well-understood limits to the pace with which countries can accumulate capital, but the limitations on the speed with which the gap in knowledge can be closed are less clear (Stiglitz 2011). Because of the strong link between education and entrepreneurship, policy makers should remove any constraints that restrict the growth of local colleges and educational institutions. Along with education, physical infrastructure is also essential to supporting a modern economy. Goods and services cannot be produced and delivered without roads, electricity, and telecommunication. And moving people is as important, if not more important, as moving goods.

There is no magic formula, or one size fits all, for making cities more enterprising. More competitive cities—that are livable, have good infrastructure, invest widely in knowledge generation and capacity building, are well governed, support sound national urban policy frameworks, and work through strengthened public and private partnerships at local, national, and international levels—also attract more entrepreneurs (Pradhan 2011).

Some targeted interventions work; others fail. Most end up favoring a few rich and politically well-connected larger, estab-

lished firms, and not new firms. Cost-benefit analysis is an excellent tool for evaluating the potential merits of every single targeted intervention. Such analysis forces policy makers to provide quantitative data to back up qualitative arguments and is therefore an invaluable technique for increasing social welfare (Krueger 2011).

It is worrying that there are too few entrepreneurs in India and other countries in South Asia for their stage of development. If South Asian countries continue to undertake some basic policy steps to help entrepreneurs—develop infrastructure, improve education, lower entry costs, reduce regulatory burdens, further develop financial access—they have the potential to unleash business creation and job growth.

It is well known that manufacturing is underdeveloped in India relative to its economic size, and while India has a disproportionately high rate of self-employment and many small manufacturing establishments, this has not translated as readily into as many young, entrepreneurial firms as could be expected. Yet there is no question that entrepreneurship works in India! Formal economic job growth—which is what India and other countries in the region need to build a robust path to prosperity—has been strongest in regions and industries that have exhibited high rates of entrepreneurship and dynamic economies.

The entrepreneurial potential of India is very large (Khanna 2008). Most policy steps are not unique to India or South Asia, but are encouraged worldwide. India has experienced record growth over the past decade. Imagine if India had more entrepreneurs: given the link between entry, young establishments and job growth, how fast would its growth and job creation then be?

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