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Symposium on “Jobs”

Editor’s Note

Emmanuel Jimenez 1

Firm Dynamics, Productivity Growth, and Job Creation in Developing Countries: The Role of Micro- and Small Enterprises

Yue Li and Martin Rama 3

Growing through Cities in Developing Countries

Gilles Duranton 39

Does FDI Bring Good Jobs to Host Countries?

Beata S. Javorcik 74

Pathways from Jobs to Social Cohesion

Frank-Borge Wietzke 95

Labor Market Regulations: What do we know about their Impacts in Developing Countries?

Gordon Betcherman 124

Editor's Note

Emmanuel Jimenez

In developing countries and advanced economies alike, it is hard to imagine a more pressing concern for politicians and policy makers than “Jobs”. The World Bank in its flagship publication, the *World Development Report 2013 (2013 WDR)*, argued that most of what we care about in development happens through jobs. In countries which are too poor to afford large redistribution programs, most people move out of poverty through their own work. Gender equality advances as women become income earners, acquiring greater agency at home and in society. Urbanization takes place through people working in cities, and in doing so making each other more productive. And jobs, together with security and justice, are one of the main avenues out of conflict.

Some jobs are better than others from a worker's perspective. The 2013 WDR also explored which jobs – formal or informal – are good from a country's perspective: for example, more productive jobs for the poor, paying jobs for women, jobs in vibrant cities, jobs for the young men who could end up in militias. And it analyzed the obstacles to the creation of more of these “good jobs for development” in countries with different characteristics. In doing so, the 2013 WDR produced a rich set of background papers and self-standing studies. Comprehensive as the report was, it could not reflect all the depth of these analyses. To fill this gap, this issue of the *World Bank Research Observer* includes five of these papers, which were all subjected to the usual review process of the WBRO.

In this issue, Li and Rama ask: who creates jobs in developing countries? The conventional answer is that small and medium enterprises do; but that answer is biased by the use of firm data that, by design, excludes a vast number of micro- and small enterprises. Li and Rama show that this truncation of the data presents a distorted picture of the drivers of employment and productivity growth. Duranton focuses on how cities contribute to making jobs more productive. He shows that

agglomeration effects are important and pervasive in developing countries, but the productive advantage of large cities is constantly eroded and needs to be sustained by new job creation. He concludes that the process of creative destruction in cities is shaped by the characteristics of urban systems. The contribution of global integration to making jobs more productive is the topic of Javorcik's paper. She shows that jobs created by Foreign Direct Investment are good jobs from the workers' perspective, as they are likely to pay higher wages and offer more training. But they are also good jobs from the recipient country's perspective, because of their spillovers on the productivity of local firms. Borge presents empirical evidence on the pathways from employment outcomes to a range of social outcomes and behaviors that are typically associated with higher levels of social cohesion. He shows that the link tends to be stronger for formal employment. Borge's finding begs the question of whether labor regulation contributes to or deters job creation in general, and formalization in particular. Betcherman addresses this by focusing on minimum wages and employment protection legislation, often contentious areas of public policy. The paper shows that the employment impacts of these regulations – in either direction – are generally smaller than the heat of the debates would suggest. Distributional impacts are clearer. They include both an equalizing effect among those covered and a greater exclusion of women, youth and the less skilled.

Not only did these five papers support the preparation of the 2013 WDR: they also stand on their own as contributions to one of the most important issues in development economics nowadays.

Firm Dynamics, Productivity Growth, and Job Creation in Developing Countries: The Role of Micro- and Small Enterprises

Yue Li and Martín Rama

The conventional wisdom on firm dynamics, productivity growth, and job creation in developing countries is based on data that, by design, excludes a vast number of micro- and small enterprises, many of which are informal. Some may not view this exclusion as an issue, on the grounds that the omitted economic units reflect survivorship rather than entrepreneurship. However, the thresholds that determine the truncation of the data are relatively arbitrary, and the firms that are typically excluded are associated with a large share of total employment. This paper assesses the ways in which the conventional wisdom on developing countries would change if micro- and small enterprises were taken into account in the analyses. The assessment shows that micro- and small enterprises account for a greater share of gross job creation and destruction than acknowledged by the conventional wisdom. It also reveals a greater dispersion of firm productivity, a weaker correlation between firm productivity and firm size, and a smaller contribution of within-firm productivity gains to aggregate productivity growth. This assessment points to new directions in the data and research efforts needed to understand the role of micro- and small enterprises and to identify policies with the potential to foster job creation and aggregate productivity growth in developing countries. JEL Codes: D22, D24, L11, L25, L26, J23, O4

Growth occurs as jobs become more productive over time but also as more productive jobs are created and less productive jobs are destroyed. Dynamism at the enterprise level underlies this creative production process ([Schumpeter 1934](#)). In the case of advanced economies, the availability of high-quality data to track enterprises over time has led to the accumulation of solid empirical knowledge on the relationship among firm dynamics, productivity growth, and job creation. Although gray

areas remain, an increasingly clear picture has emerged in which most net job creation is associated with young firms, productivity varies widely across firms, and aggregate productivity growth is driven by both productivity gains within firms and reallocation across firms, including entry and exit. There is also evidence that some of the young firms (the so-called “gazelles”) experience rapid gains in productivity and employment, which makes them one of the most important sources of economic growth.

Micro-level data that are supposedly comparable to data from advanced economies are increasingly available in developing countries, mainly in the form of enterprise surveys compiled by official statistical agencies. International partners, including the World Bank, have made consistent efforts to support data collection and research along the lines of advanced economies. Because the quality of the data is not as high as it is in advanced economies and the number of studies is not as large, the accumulated knowledge on developing countries remains more tentative. Some results are in line with the findings for advanced economies but with important nuances. For instance, the dispersion of productivity across firms is found to be higher than in advanced economies. However, surveys of developing countries generally cover formally registered firms and exclude the vast majority of micro- and small enterprises, which are typically informal. It is admittedly difficult to reach economic units that are not formally registered with the authorities, but the result is a disturbing “truncation” of the data.

This paper re-examines the conventional wisdom on firm dynamics, productivity growth, and job creation in developing countries, explicitly accounting for the role played by micro- and small enterprises. The paper first relies on household surveys, labor force surveys, and economic censuses to reconstruct the true distribution by size of economic units and highlight the extent of data truncation. It then summarizes the existing literature on the topic, using the studies of advanced economies as the benchmark and reviewing studies of developing countries conducted with the use of enterprise surveys that are formally similar to those of advanced economies but are truncated. This review allows for the articulation of the conventional wisdom on enterprise dynamics in developing countries. Finally, the conventional wisdom is reassessed by using the true distribution by size of economic units to re-weight the samples of standard enterprise surveys, by combining the resulting insights with those from studies focusing specifically on micro- and small enterprises, and by conducting a meta-analysis of the biases that may arise from the use of truncated data.

The overall result is a new perspective on firm dynamics, productivity growth, and job creation in developing countries:

- Because micro- and small enterprises are under-represented in the data, their contribution to total employment is not adequately captured. Their

contribution to gross job creation and gross job destruction is under-estimated as well. When re-weighting the samples of standard enterprise surveys to recover the true distribution of firms by size, it appears that most gross job creation comes from micro- and small enterprises, even in high middle-income countries. Because churning is the norm among micro-enterprises, gross job destruction is equally important in their case.

- Productivity dispersion in developing countries is wider than generally assumed because micro- and small enterprises have low productivity on average. Productivity is also less correlated with firm size than it is in advanced economies. Many large firms in developing countries are inefficient, which is most likely the result of limited competition. However, micro- and small enterprises are a heterogeneous group, with some paying higher labor earnings than formal sector jobs. In sum, in developing countries, a multiplicity of “mice” and a few “elephants” dominate the economic landscape, whereas “gazelles” are rare.
- The under-representation of micro- and small enterprises also results in a distorted image of the contribution of firm dynamics to aggregate productivity growth. Most obviously, the truncation of the data causes the growth of some firms – or their formalization – to be misconstrued as entry, whereas declines in size or shifts to the informal sector can be misclassified as exits. These measurement errors lead to an over-estimation of the gains from entry and an under-estimation of the gains from exit. Because micro-enterprises are prone to churning, there is also an over-estimation of the productivity gains from reallocation.

This reassessment of the conventional wisdom points to new directions in the data and research efforts needed to understand the role of micro- and small enterprises and to identify the policies with the potential to foster job creation and aggregate productivity growth in developing countries.

The Size Distribution of Firms

Even in advanced economies, the distribution of firms is skewed toward micro- and small enterprises. In the case of the United States, this was shown by [Neumark, Wall, and Zhang \(2009\)](#) using the National Establishment Times Series (NETS), which covers both employers and self-employment businesses and reports approximately 13.1 million firms and 14.7 million establishments in a typical year. According to this study, firms with fewer than 20 employees account for more than 26 percent of total private sector employment, and firms with fewer than 50 employees account for approximately 36 percent. Also for the United States, [Haltiwanger, Jamin, and Miranda \(2010\)](#) using a rich dataset of employers based

on the Census Bureau Business Dynamics Statistics and the Longitudinal Research Database (LRB) and found that more than 35 percent of employment from startups is in firms with fewer than 20 employees, and more than 70 percent of employment is in firms with fewer than 50 employees.¹ The picture is similar among advanced economies in Europe. According to the Structural Business Statistics database of EUROSTAT, firms with fewer than 20 employees account for approximately 37 percent of total private sector employment, and those with fewer than 50 employees account for approximately 47 percent (EUROSTAT 2013).²

Micro- and small enterprises represent an even larger share of the total number of firms in developing countries. Pagés (2010) reported that more than 80 percent of registered manufacturing establishments in Argentina, Bolivia, El Salvador, and Mexico have fewer than 10 employees. According to ADB (2009), approximately 90 percent of formal registered manufacturing establishments employ five to 59 workers in China, Indonesia, Korea, the Philippines, and Taiwan (China). Outside the manufacturing sector, the share of micro- and small enterprises is even higher. Again, Pagés (2010) reported that micro-enterprises alone account for 94 percent of the services sector of Mexico. Freund et al. (2012) showed that their share reaches approximately 98 percent of all private sector establishments in Tunisia. ADB (2009) estimated that there are more than 14 million informal enterprises in India's manufacturing sector, which is more than four times the number of formal enterprises.

Because most micro-enterprises and many small firms in developing countries operate without formal registration with official authorities, reaching them through survey instruments is difficult. Additionally, most surveys in developing countries truncate their target population of firms from below, with thresholds typically varying from one to 20 employees. The focus on formal firms and the size thresholds imply that many more micro- and small enterprises are excluded from the datasets in developing countries than in advanced economies.

However, with very few exceptions, these are the datasets on which analyses of firm dynamics are conducted. For example, the smallest size group in the analysis by Ayyagari, Demirgüç-Kunt, and Maksimovic (2011b) is firms with fewer than 20 employees. In their data, the median employment share of enterprises in this size group across all countries is 17 percent, and the mean is 21 percent. These shares are below those observed in the United States and advanced economies in Europe. Also, according to the data reported in that paper, firms in that size group account for 15 percent of private sector employment on average in 11 transition countries, with a maximum share of 22 percent in Estonia. However, according to the Structural Business Statistics database of the EUROSTAT, they account for over 40 percent of employment in the same sectors in these 11 countries (EUROSTAT 2013).³ The differences are largely driven by the fact that their data do not cover

firms with zero to four employees and only take into account permanent, full-time employment.

A straightforward way to grasp the importance of micro- and small enterprises in developing countries is to reconstruct the size distribution of firms from household surveys and labor force surveys that are representative of the entire population. In a number of countries, such surveys ask interviewees about the size of the businesses which they own or work at, including the possibility of working on their own. Answers to this question can be used to estimate the distribution of businesses by size.⁴ This distribution differs quite dramatically from that implied by World Bank Enterprise Surveys (figure 1).⁵ The share of micro-enterprises (defined as those with fewer than 10 employees) is higher when relying on household and labor force surveys, and especially so in developing countries.⁶ Further, the distribution based on household or labor force surveys is relatively stable over time, whereas the distribution based on Enterprise Surveys fluctuates erratically for some countries.

The limited coverage of informal firms and the truncation of firms below a certain threshold may bias empirical analyses on the relationship among firm dynamics, job creation, and productivity growth in developing countries.

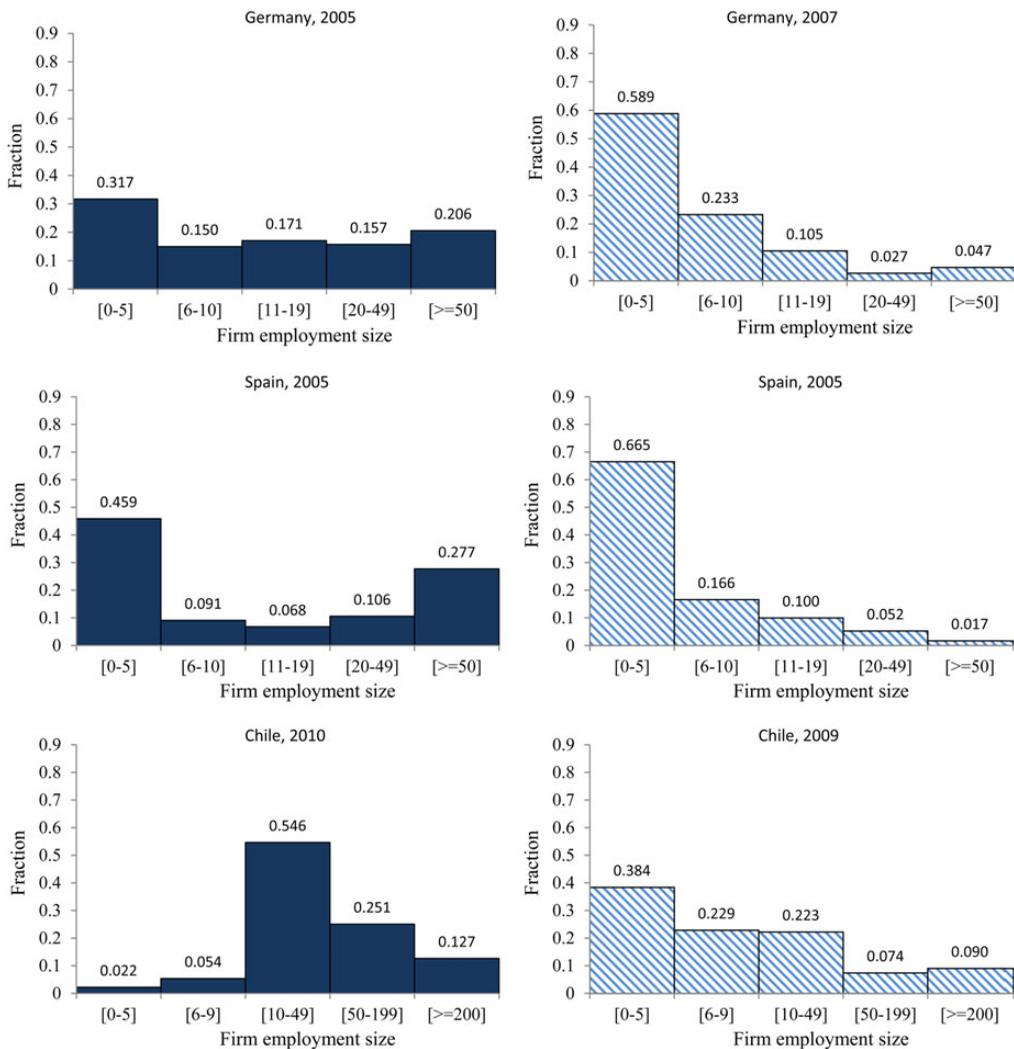
This potential bias is illustrated by the change in the relationship between development level and establishment size across countries depending on the data used. Unlike the World Bank Enterprise Surveys, a new dataset by [Bento and Restuccia \(2014\)](#) includes micro-enterprises and informal firms. This new dataset, which covers manufacturing establishments across 124 countries between 2000 and 2012, was developed from economic censuses and enterprise surveys that use comprehensive business registries as their sampling frame. The dataset includes household businesses with premises and takes into account both paid and unpaid workers. Based on this dataset, the average establishment size is strongly positively correlated with GDP per capita; the elasticity is approximately 0.26.

The same analysis yields a drastically different picture if World Bank Enterprise Surveys are used instead (figure 2). To ensure comparability, the only enterprise surveys considered are those conducted between 2002 and 2011 that contain information on sampling weights and on both full-time employees and temporary workers.⁷ Fifty-nine developing countries meeting these criteria are included in the [Bento and Restuccia \(2014\)](#) dataset. For these 59 countries, the elasticity of the average establishment size to GDP per capita is approximately 0.31 and it is significant. In contrast, the elasticity is -0.03 but is not significant if World Bank Enterprise Surveys are used. The difference is not surprising given that the correlation between the average establishment sizes in the two datasets is barely 0.22.

The under-sampling of micro- and small enterprises affects not only the perceived static distribution of firms by size but also the assessment of firm dynamics. Available empirical evidence suggests that micro- and small enterprises often experience a different life cycle than their larger counterparts do. If the extent of

under-sampling is correlated with firm size, the result will be a distorted picture of the contribution firms of different sizes make to aggregate job creation and productivity growth. Sample truncation may also lead to the mistaken classification as firm “entry” of what is in reality a transition from a smaller size—poorly captured by the survey—to a larger size, or from informality to formality. Similarly, firm “exit” could actually be a transition to a smaller size that is out of the purview the survey.⁸

Figure 1. Enterprise Surveys Do Not Capture Small Businesses Well



Source: Authors' calculations based on data from I2D2 and World Bank Enterprise Surveys.

Continued

Figure 1. Continued.

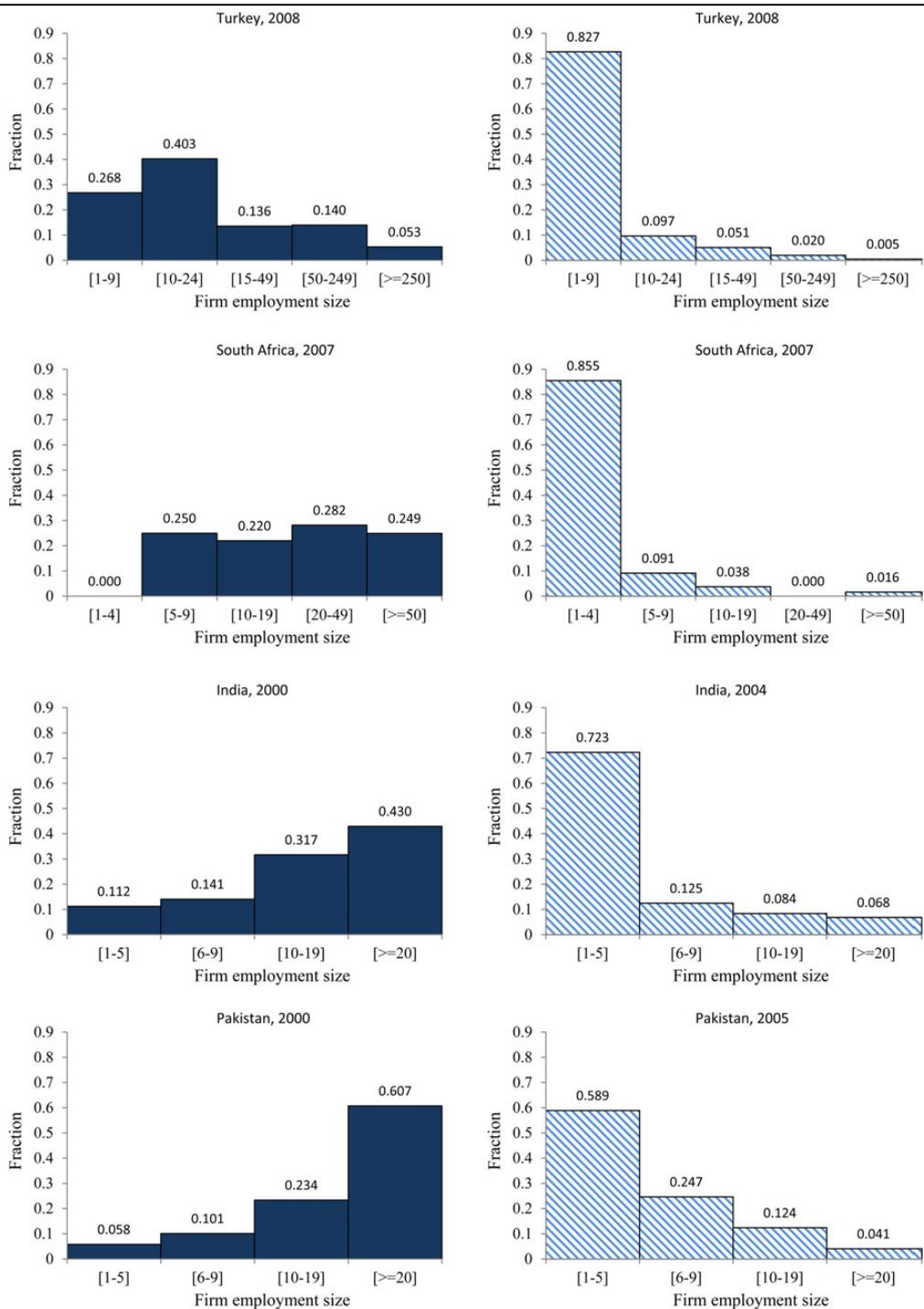
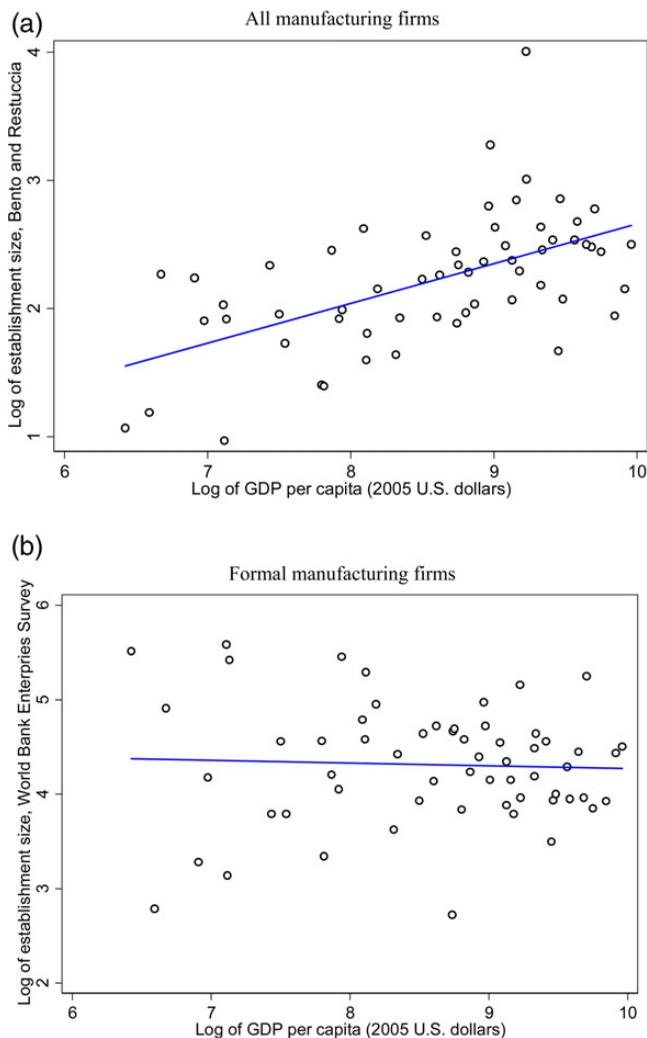


Figure 2. Truncated Data Biases the Relationship between Establishment Size and Development



Source: Authors' calculations based on data from [Bento and Restuccia \(2014\)](#) and World Bank Enterprise Surveys.

Advanced Economies as the Benchmark

Although the literature on job creation and destruction, firm productivity, and firm dynamics is vast, for the purpose of this review, it can be conveniently regrouped under three main questions. The first question, which is of direct interest to policy makers, is which enterprises create more jobs. Its answer may refer to net job creation or to gross job creation and destruction flows. A second question concerns the

extent to which productivity varies across enterprises. If the dispersion is wide, the question of who creates more jobs is relevant not only from an employment point of view but also from the perspective of aggregate productivity gains. Finally, a third question concerns the relative contribution of firm entry and exit, productivity gains at the firm level, and labor reallocation across firms to economic growth. Answering this question requires an understanding of the life cycle of firms.

Question 1: Which Firms Create More Jobs?

Worldwide, commentators and politicians are quick to claim that small and medium enterprises are the main engine of job creation. Researchers are not so sure. [Birch \(1981, 1987\)](#) was the first to provide evidence in support of the standard claim for the United States. His methodology, however, was questioned on measurement and statistical grounds ([Davis and Haltiwanger 1992](#)). No systematic relationship between the net job creation rate and plant size in the manufacturing sector was found by [Davis, Haltiwanger, and Schuh \(1996\)](#). However, [Neumark, Wall, and Zhang \(2009\)](#) revisited this question using the National Establishment Times Series between 1992 and 2004 and concluded that firms with fewer than 20 employees contribute the largest share of net job creation, disproportionate to their employment share. These authors also concluded that the relationship between the net job creation rate and firm (or establishment) size was negative in both the manufacturing and the services sectors.

The validity of the standard claim of the importance of firm size becomes less clear when the age of enterprises is considered as well. Using the richer Census Bureau Business Dynamics Statistics and Longitudinal Research Database, [Haltiwanger, Jamin, and Miranda \(2010\)](#) confirmed that the net job creation rate is larger among smaller establishments. However, their results also indicate that the relationship between the net job creation rate and firm (or establishment) size becomes much weaker when controlling for firm age. Their more robust finding concerns firm age. Younger firms exhibit higher rates of net job creation, but with the vast majority of young firms and startups being small, there appears to be a relationship between the net job creation rate and firm size.

Net changes in employment hide a considerable amount of gross job creation and gross job destruction. The magnitude of these gross employment flows was first highlighted by [Davis, Haltiwanger, and Schuh \(1996\)](#). Each year, millions of jobs are created as a result of growth in existing businesses and the entry of new businesses. At the same time, millions of jobs are destroyed as businesses contract or close. According to [Haltiwanger \(2011\)](#), between 1980 and 2009, approximately 17 percent of all jobs in the United States were created within the same year by expanding or entering business; simultaneously, approximately 15 percent of all jobs disappeared as a result of contracting or exiting businesses. Furthermore, 18

percent of gross job creation was accounted for by entrants, and 17 percent of gross job destruction was due to firms exiting.

Similar to the case of net job creation, the general claim that small enterprises are the main creator of jobs in gross terms comes into question when firm age is considered. [Neumark, Wall, and Zhang \(2009\)](#) found that the smallest firms contribute a disproportionate share of gross job creation and a slightly disproportionate share of gross job destruction. Again, however, age is a more important determinant of gross job creation than size. [Haltiwanger, Jamin, and Miranda \(2010\)](#) confirmed that rates of gross job creation and gross job destruction were higher among younger firms. Startups, in particular, account for almost 20 percent of gross job creation, though they represent only 3 percent of total employment.

Question 2: How Much Dispersion Is There in Productivity?

Simple economic models assume a representative firm and hence no dispersion of productivity other than that created by policy distortions. However, more complex models can account for industry equilibria with heterogeneous producers—generally related to the “creative destruction” process. For example, [Nelson \(1981\)](#) treated firms as entities that make technological bets with inherent uncertainties and end up with different productivities. [Jovanovic \(1982\)](#) modeled firms with a time-invariant efficiency parameter, implying that a firm’s productivity varies initially but converges over time to a constant value. [Ericson and Pakes \(1995\)](#) extended the model to incorporate stochastic shocks, which can cause very productive firms to experience losses in efficiency.⁹ These models vary in their assumptions regarding sunk costs, the stability of productivity, market selection, and learning. However, they all imply that over time more productive firms expand at the expense of less productive ones. As a result, a positive correlation between productivity and firm size can be expected, indicating allocative efficiency.

Empirical results from advanced economies have consistently revealed a large dispersion of productivity even within narrowly defined industries. [Syverson \(2004\)](#) found that within industries at the four-digit SIC level in the US manufacturing sector, the average ratio of total factor productivity (TFP) between plants in the 90th and 10th percentiles was 1.92. Using a revenue measure of TFP, [Hsieh and Klenow \(2009\)](#) found that the ratio was as high as 3.3; it was even higher when using a physical measure of TFP. [Faggio, Salvanes, and Van Reenen \(2010\)](#) documented that the dispersion of productivity within industries in the United Kingdom has trended upwards for the past couple of decades. [Bartelsman, Haltiwanger, and Scarpetta \(2009a\)](#) exposed a large dispersion of both TFP and labor productivity within industries in France, Germany, Netherlands, the United Kingdom, and the United States.¹⁰

Based on simple economic models of the firm, it would be tempting to interpret this observed dispersion in productivity as the result of measurement error. However,

detailed microeconomic case studies have documented wide productivity gaps for specific industries. Further, meaningful correlations emerge between the estimated productivity and the level of wages, export success, and the use of modern technology (Bartelsman and Doms 2000). In line with the more complex models, empirical evidence following the decomposition proposed by Olley and Pakes (1996) confirms that a positive relationship between labor productivity and firm size exists at the industry level in France, Germany, the Netherlands, the United Kingdom, and the United States (Bartelsman, Haltiwanger, and Scarpetta 2009a). The relationship is strongest in the United States, where the average labor productivity is 50 percent higher than if employment was randomly allocated across firms within each industry. The corresponding figure for the Western European countries is between 20 and 30 percent, which indicates less allocative efficiency.

Question 3: Which Firms Drive Productivity Gains?

Greater allocative efficiency among surviving firms is only one of the mechanisms through which a country's aggregate productivity can grow. This is the so-called "between" effect – the increasing output shares of high-productivity plants and the decreasing shares of low productivity plants. Other mechanisms are productivity growth within surviving firms, and the entry and exit of firms whose productivity differs from the average.

Assessing the relative contribution of these mechanisms has been a controversial matter. In their pioneering work, Baily, Hulten, and Campbell (1992) found that the "between" effect accounted for a large share of aggregate productivity growth in manufacturing in the United States. The findings are sensitive to the decomposition methodology, however. Reviewing existing studies and comparing several methods, Foster, Haltiwanger, and Krizan (2001) concluded that the contributions of different components fluctuate with the business cycle and vary across industries. As for the contributions of entry and exit, they are larger the longer the time horizon over which the changes are measured. In manufacturing, a robust finding is that the contribution from within-firm gains is sizable, but in the retail sector aggregate productivity growth is almost entirely driven by entry and exit (Foster, Haltiwanger, and Krizan 2006).

Relying on harmonized methodologies and indicators, Bartelsman, Haltiwanger, and Scarpetta (2004, 2009b) concluded that in advanced economies within-firm gains contribute the bulk of aggregate productivity growth. They also found that the between effect varies significantly across countries and that the exit effect is always positive. Although the entry effect tends to be positive in European countries, it is negative in the United States. The weaker contribution of entrants in the United States may suggest greater market selection and learning by doing. Surviving entrants also expand more rapidly in the United States than in other

advanced economies, whereas low productivity entrants exit more rapidly (Bartelsman, Scarpetta, and Schivardi 2005).¹¹

The case of the United States highlights the importance of understanding the life cycle of firms (Dunne, Roberts, and Samuelson 1989; Davis, Haltiwanger, and Schuh 1996; Sutton 1997; Caves 1998). In the manufacturing sector of the United States, 35-year-old plants are, on average, almost 10 times larger than they were at birth in terms of employment; they are also nine times more productive (Hsieh and Klenow 2011). Similar evidence was provided for all firms with paid labor in Portugal by Cabral and Mata (2003), who found that age plays an important part in shaping firm size distribution. Young firms tend to be small, but they become larger as they age. The firms that survive over time were initially larger than the rest, but the effect of this difference in initial sizes is small in comparison with the effect of aging.

Not all firms go through the same life cycle, however. An important insight by Birch and Medoff (1994) is the distinction among “mice”, “gazelles”, and “elephants”. Gazelles are rapidly growing firms that account for much of the net growth in employment, and are also characterized by rapid productivity gains (Henrekson and Johansson 2010; Acs 2011). In contrast, mice are small firms that never grow much, whereas elephants are large and stagnant firms that may, on occasion, shed large numbers of jobs. The coexistence of mice and gazelles within the universe of firms cast doubts on the idea that startups are the main source of economic dynamism because startups could belong in either of these groups (Shane 2009). Additionally, startups’ chances of success depend not only on their own characteristics but also on the characteristics of the metropolitan areas in which they operate (Acs and Mueller 2008).

Conventional Wisdom on Developing Countries

Micro-level data that are supposedly comparable to data from advanced economies are increasingly available in developing countries, mainly in the form of enterprise surveys compiled by official statistical agencies. International partners, including the World Bank, have made consistent efforts to support data collection and research along the lines of advanced economies. Similar questions on enterprise dynamics, productivity growth, and job creation have been addressed in numerous studies. Because the quality of the data is not as high as it is in advanced economies and the number of studies is not as large, the accumulated knowledge on developing countries is more tentative.

Question 1: Which Firms Create More Jobs?

The transition from a planned economy to a market-based one offers a useful laboratory to understand firm dynamics because the restructuring of the state sector

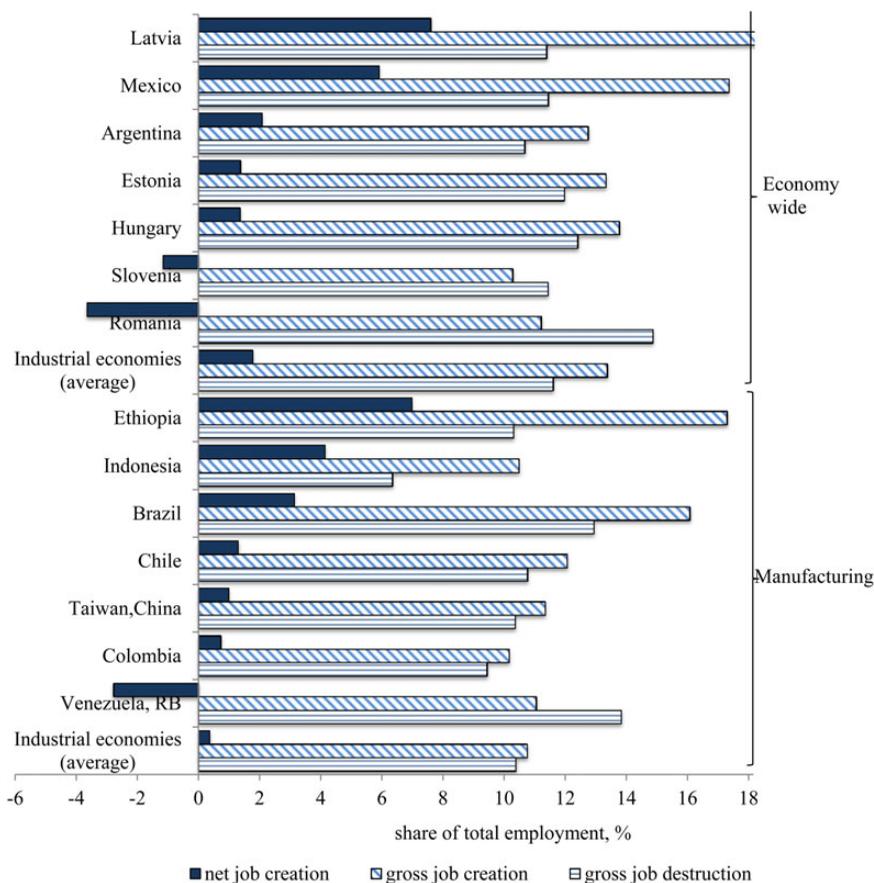
typically entails massive job destruction, whereas the emergence of a private sector should lead to substantial job creation. A careful review of the literature on this process shows that it involved clearly different phases (Haltiwanger, Lehmann, and Terrell 2003). In early stages of the transition, gross job destruction was large and dominated gross job creation; subsequently, gross job creation increased, and net job creation became positive. Eventually, the rates of gross job creation and destruction largely converged to the levels seen in the United States.

The rates of gross job creation and destruction are also high in other developing countries, although these countries have not experienced the turmoil of transition economies. For instance, Roberts (1996) and Tybout (2000) claimed that gross rates of job creation and destruction are greater in Chile, Colombia, and Morocco than they are in the United States. However, differences in methodologies and indicators often hinder cross-country comparisons. Using a harmonized approach, Bartelsman, Haltiwanger, and Scarpetta (2009b) conducted a thorough analysis of establishment-level data from five transition economies from Central and Eastern Europe, six Latin American countries, and three emerging economies from East Asia.¹² This analysis revealed a high degree of employment turbulence in all countries, reflected in simultaneously large gross job creation and job destruction flows. In the manufacturing sector, between 7 and 20 percent of all jobs are created during the year, and a similar proportion is destroyed (figure 3). These ratios are comparable to what is observed in the United States and other advanced economies.

In contrast with the emerging consensus for advanced economies, there is controversy regarding the nature of the relationship between firm age, firm size and the net job creation rate in developing countries. The first comprehensive study to assess this relationship, by Ayyagari, Demirgüç-Kunt, and Maksimovic (2011b), was based on enterprise surveys from 99 countries. The results showed the importance of establishment size, not age, in explaining net job creation. According to this study, small plants and mature plants—defined as those with five to 99 employees and older than 10 years, respectively—are the greatest contributors to net job creation. Controlling for firm age, smaller plants display higher net employment growth rates.

However, a more recent study focusing on the manufacturing sector in India by Martin, Nataraj, and Harrison (2014) reached the opposite conclusion. This study used data from the Annual Survey of Industries, which is representative of registered manufacturing firms in the country.¹³ By design, the survey only includes establishments with 20 or more employees (10 or more if the establishment uses a power source). Based on this dataset and controlling for firm age, job creation was positively correlated with establishment size between 2000 and 2007. Factories with more than 50 employees contributed positively to net job creation, whereas micro- and small factories with fewer than 20 employees contributed negatively.

Figure 3. Simultaneous Job Creation and Destruction Characterize All Economies



Source: Bartelsman, Haltiwanger, and Scarpetta (2009) and Shiferaw and Bedi (2009). Data refer to the periods indicated in parentheses: Argentina (1996–2001), Brazil (1997–2000), Canada (1984–97), Chile (1980–98), Colombia (1983–97), Estonia (1996–2000), Ethiopia (1997–2007), Finland (1989–97), France (1989–97), Germany (1977–99), Hungary (1993–2000), Indonesia (1991–4), Italy (1987–94 and 1988), Latvia (1983–98), Mexico (1986–2000), the Netherlands (1993–5), Portugal (1983–98), Romania (1993–2000), Slovenia (1991–2000), Taiwan, |China (1986, 1991), United Kingdom (1982–98), United States (1989–91 and 1994–6), and Venezuela, RB (1996–8).

Question 2: How Much Dispersion Is There in Productivity?

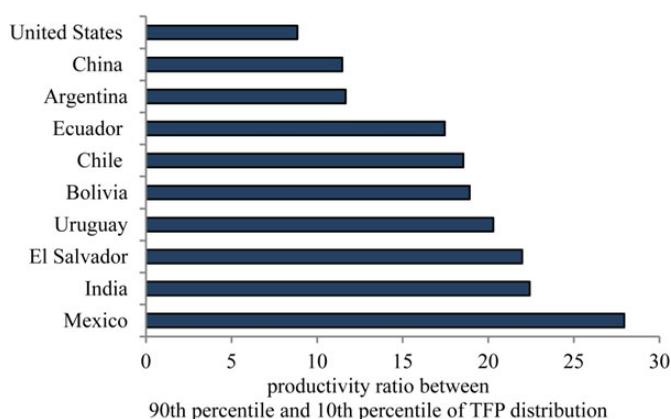
When comparable establishment-level data are used, the dispersion of productivity is found to be higher in developing countries than in advanced economies. This finding was initially obscured by the reliance on comparisons involving different levels of aggregation for the data, different methodologies (for instance, stochastic or deterministic frontiers), or different measures of productivity. Thus, in a review

on manufacturing firms in developing countries, [Tybout \(2000\)](#) concluded that productivity dispersion was not higher in developing countries and that average deviations from the efficiency frontier were not typically larger than those observed in advanced economies.

A much-cited study by [Hsieh and Klenow \(2009\)](#) compared the dispersion of productivity within narrowly defined manufacturing industries in China, India, and the United States and found it to be larger in the former two countries. For China and India, the data are drawn from three rounds of annual surveys of manufacturing enterprises, with TFP measured based on both revenue and quantities. As a benchmark, in the United States, the TFP of a firm in the 90th percentile of the productivity distribution is approximately 8.9 times higher than that of a firm in the 10th percentile. In contrast, the ratio reaches 11.5 in China and a staggering 22.4 in India. Relying on the same methodology, [Pagés \(2010\)](#) computed firm- or establishment-level physical TFP in the manufacturing sector of seven Latin American countries and found even larger dispersion in these countries (figure 4). Although detailed data for other sectors are scarce, the dispersion of TFP among retail traders in Mexico and among communication and transportation businesses in Uruguay also appeared to be sizable.

A positive correlation is generally found between firm productivity and firm size, suggesting the existence of static allocative efficiency. Based on the World Bank Enterprise Surveys for developing countries, [Ayyagari, Demirgüç-Kunt, and Maksimovic \(2011a\)](#) documented that large firms are typically more productive than small firms. Using the same type of surveys, the [World Bank \(2012\)](#) replicated the approach for a broader sample of 102 developing countries and found that firm

Figure 4. The Dispersion of Productivity in Manufacturing is Greater in Developing Countries



Source: [Pagés \(2010\)](#).

size is positively correlated with labor productivity and export success. Across 47 developing countries, it also found that firm size is positively correlated with innovative activities such as developing new product lines, introducing new technology, outsourcing, and engaging in joint ventures with foreign partners.

However, the correlation between firm size and firm productivity is found to be lower in developing countries than in advanced economies. In Bangladesh, it has even been claimed that the correlation is negative (Fernandes 2008). Transition economies, in turn, provide clear evidence on the importance of market competition. [Bartelsman, Haltiwanger, and Scarpetta \(2009a\)](#) showed that the correlation between labor productivity and firm size within narrowly defined manufacturing industries in Central and Eastern European countries was close to zero at the beginning of their transition. However, the correlation increased substantially during the 1990s as market mechanisms gained in strength. [Wang and Yao \(1999\)](#) and [Lin \(2012\)](#) documented a similar pattern in China's case. In the 1990s, the new small township and village enterprises were found to be less productive than large and medium-size private companies but more dynamic and productive than large SOEs. Their flexibility in decision making and responsiveness to market signals more than compensated for their lack of human and financial resources. More generally, [Ayyagari, Demirgüç-Kunt, and Maksimovic \(2011a\)](#) showed that large state-owned enterprises (SOEs) without foreign competitors are less productive and innovative than other large firms.

Question 3: Which Firms Drive Productivity Gains?

A burgeoning literature has addressed the contribution of firm entry, firm exit, growth at the firm level and employment reallocation across firms to aggregate productivity growth in developing countries. Most studies, however, are country specific. The focus has been transition economies, Latin American countries, and emerging economies in East Asia. More recently, comparable studies on other regions, particularly Sub-Saharan Africa, are starting to emerge.

Country-specific studies generally suggest that reallocation, especially through entry and exit, makes a positive contribution to aggregate productivity growth and that the contribution of reallocation is larger following market-oriented reforms. For instance, [Tybout \(1996\)](#) showed that the productivity of exiting plants is much lower than the industry average in Chile and that new entrants move up to the industry average after three or four years in Colombia. For Chile and Colombia, [Pavcnik \(2002\)](#) and [Eslava et al. \(2004\)](#) found that aggregate productivity growth following trade reforms is largely driven by the reallocation of market shares from less productive to more productive firms.¹⁴ [Aw, Chen, and Roberts \(2001\)](#) found that within-firm gains make a sizable contribution in most industries in Taiwan (China) but that the productivity differential between entering and exiting firms is

important too. A similar conclusion was reached by [Haltiwanger et al. \(2007\)](#) and [Brandt, van Biesebroeck, and Zhang \(2012\)](#) in the case of China's manufacturing sector during the market reform era.

In the Indian case, [Harrison, Martin, and Nataraj \(2013\)](#) found that aggregate productivity growth underwent three distinct phases from 1985 to 2004, with the sub-periods differing in the intensity of market-oriented reform. From 1985 to 1990, aggregate productivity growth was driven by both within-firm gains among surviving firms and firm entry and exit. In 1991–4, the period immediately following India's market reforms, the reallocation of market share between firms became the most important contributor to aggregate productivity growth. However, from 1998 to 2004, aggregate productivity growth was again mainly driven by within-firm gains and entry and exit.

Business cycles also affect the relative contribution to aggregate productivity growth of firm entry, firm exit, growth at the firm level and employment reallocation across firms. In Indonesia, during the Asian economic crisis contributions from firm entry and reallocation among surviving firms became stronger, and the impact from firm exit became more negative ([Hallward-Driemeier and Rijkers 2011](#)). This sensitivity to the business cycle is consistent with evidence from the United States. In Morocco, reallocation among incumbent firms and net entry contribute to productivity growth, but the impact of net entry is often smaller ([Hallward-Driemeier and Thompson 2009a,b](#)).

The use of harmonized methodologies and indicators allowed [Bartelsman, Haltiwanger, and Scarpetta \(2004, 2009b\)](#) to make more meaningful comparisons between developing countries and advanced economies. Their results showed that the patterns were very similar in both cases. Overall, productivity gains within firms drive aggregate productivity growth. However, employment reallocation and firm entry and exit play a stronger role in promoting aggregate productivity growth in the longer term (defined as five years or more). The contribution of employment reallocation among surviving firms is smaller than that of firm entry and exit. In most developing countries, the exit of low productivity firms is prominent in promoting productivity growth, but in transition economies the entry of new firms often plays a more important role. This is due to both very high rates of firm turnover and the substantive productivity gaps between entrants and surviving firms. However, transition economies also display considerable churning—simultaneous entry and exit of firms that may not be conducive to aggregate productivity growth.

Churning seems to be more common in Sub-Saharan African countries, especially among small firms. Using enterprise surveys from nine of these countries, [van Biesebroeck \(2005\)](#) showed that small firms rarely move to the top of the size and productivity distributions and contribute little to aggregate growth, whereas large firms tend to grow faster.¹⁵ Using the same surveys for Ghana, Kenya, and Tanzania, [Soderbom, Teal, and Harding \(2006\)](#) further illustrated the divide

between small and large firms. Efficiency contributes to the survival of large firms, but being relatively productive does not prevent small firms from going out of business. In Côte d'Ivoire, larger firms are also less likely to exit (Klepper and Richmond 2011). In Ghana, this is true for both larger firms and older firms (Frazer 2005). In Ethiopia, Bigsten and Gebreyesus (2007) and Shiferaw (2007, 2009) showed that the mobility of formal manufacturing plants (with at least 10 employees) across the size distribution is limited. Entry and exit occur predominantly among small firms, and the immediate contribution of this turnover to aggregate productivity does not appear to be very large.

The Role of Micro- and Small Enterprises

To generate an undistorted picture of firm dynamics, productivity growth and job creation in developing countries, it is necessary to correct the biases that may arise from the exclusion or underrepresentation of micro- and small firms in enterprise surveys. Different approaches can be combined to this effect. Household and labor force surveys can be used to recalibrate the firm size distribution that emerges from enterprise surveys. Studies based on data from both formal and informal enterprises can provide complementary insights to the literature on micro- and household enterprises. Further, meta-analysis can shed light on the direction of the biases that emerge due to relying on truncated data.

Question 1: Which Firms Create More Jobs?

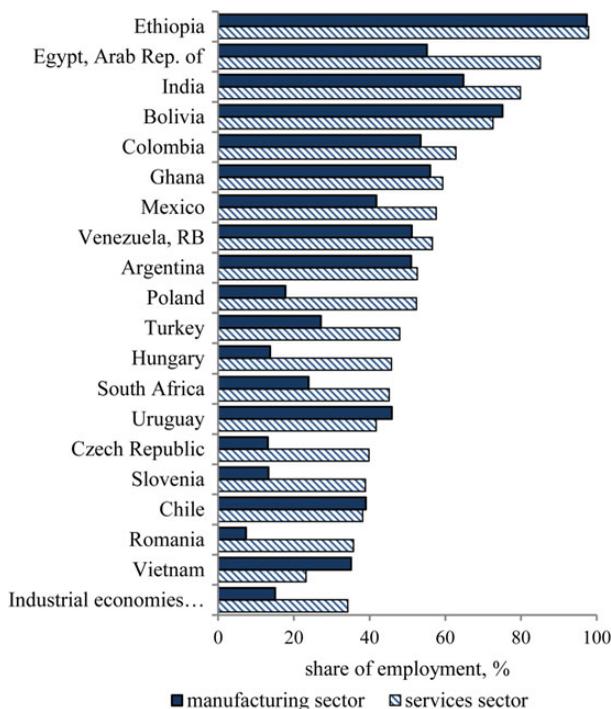
The literature on household enterprises and the informal sector consistently suggests the important role of micro-enterprises in total employment and job creation. Fox and Sohnesen (2012) conducted surveys of household enterprises in nine Sub-Saharan African countries and found that almost all of the labor force participants from low-income groups were engaged in household-based activities or informal enterprises. These economic units generated the majority of new nonfarm jobs. Similar evidence has been found beyond Sub-Saharan Africa (Banerjee and Duflo 2011). Micro- and small enterprises account for the vast majority of employment in Peru (Göbel, Grimm, and Lay 2011). Household businesses grow alongside large enterprises, and the informal sector represents a significant component of non-farm job creation in Vietnam (Nordman, Nguyen, and Roubaud 2011).

The underrepresentation of micro- and small firms by enterprise surveys leads to an underestimation of the contribution this group makes to total employment and gross job flows. One way to overcome this limitation is to reconstruct the size distribution of firms from household and labor force surveys that are representative of the entire population. The resulting size distribution can then be used to recalculate the weights that apply to observations from enterprise surveys.

This methodology was used to reconstruct the distribution of employment by the size of the business in 19 developing countries and advanced economies (World Bank 2012). The results show that micro-enterprises alone contribute the bulk of employment, even in middle-income countries (figure 5). For example, in the manufacturing sector of Ethiopia micro-enterprises account for a staggering 97 percent of employment. However, even in the manufacturing sector of Chile, an upper middle-income country that has already joined the Organisation for Economic Cooperation and Development, their employment share is approximately 39 percent. With a few exceptions, the employment share of micro-enterprises in the services sector is higher than in manufacturing. Even in transition economies, where private sector entry is only two decades old, micro-enterprises account for 10 to 20 percent of employment in manufacturing and 30 to 50 percent of employment in services.

The reweighting of observations from enterprise surveys can also be used to estimate gross job creation and destruction by firm size. The World Bank (2012) applied this approach to Chile's national survey of manufacturing enterprises, the Annual National Industrial Survey, which captures more than 90 percent of

Figure 5. The Employment Share of Micro-enterprises is Greater in Developing Countries



Source: World Bank (2012).

employment among establishments with more than 50 employees but less than half among establishments with 10 to 49 employees and only a fraction of micro-enterprises. When weights are recalculated based on the size distribution of businesses emerging from Chile’s main household survey, the estimated gross job creation and destruction become much larger, and micro-enterprises contribute to the bulk of gross job flows (figure 6). This estimate should not be taken literally because the micro-enterprises for which information on job creation and destruction is available in the Annual National Industrial Survey are not necessarily representative. However, even with this caveat, the difference is so large that it changes the picture of gross job creation and destruction.

Another way to overcome the underrepresentation of micro- and small firms by enterprise surveys is to reconstruct the size distribution using the more comprehensive economic censuses. In the case of India, for example, the economic censuses of 1998 and 2005 can be used to reassess the findings on net job creation by establishment size from [Martin, Nataraj, and Harrison \(2014\)](#) based on the Annual Survey of Industries from 2000 to 2007.

According to the economic censuses and using the approach proposed by [Davis, Haltiwanger, and Schuh \(1996\)](#), the annualized job creation by all manufacturing establishments amounted to 1.7 percent of average employment ([CSO 2001, 2008](#)). This is also the annualized net job creation rate that [Martin, Nataraj, and Harrison \(2014\)](#) estimated based on the Annual Survey of Industries. The difference between the data sources is the “unorganized” sector – plants with fewer than 10 employees and all plants with fewer than 20 employees that do not use power. It follows that the net job creation rate is the same – 1.7 percent – in both the organized and unorganized sectors. However, this is not what [Martin, Nataraj, and Harrison \(2014\)](#) found. Because firms grow or contract over time, the Annual

Figure 6. Micro-enterprises Account for Most Job Creation and Destruction



Source: [World Bank \(2012\)](#).

Survey of Industries contains a sizeable number of firms below 20 employees. The estimated net job creation rate in their case is -3.1 percent. Such a large difference casts doubt on job creation rates by establishment size estimated on the basis of truncated data.

Question 2: How Much Dispersion Is There in Productivity?

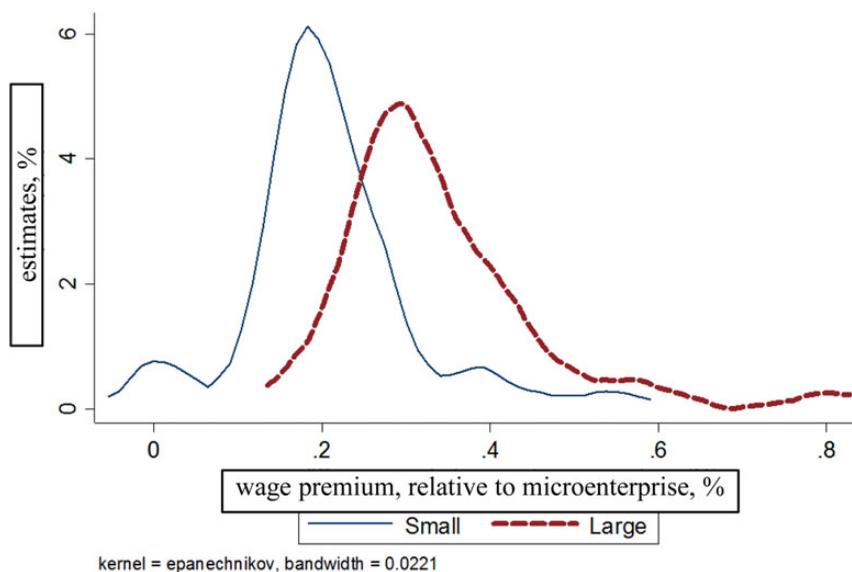
Measuring the productivity of micro-enterprises is difficult, but labor earnings and other dimensions of the quality of jobs provide indirect evidence of their performance. Numerous studies have documented that the micro- and even small enterprises of developing countries tend to be a means of subsistence for the poor (Schoar 2010). Based on household surveys from 18 developing countries, Banerjee and Duflo (2011) found that 44 percent of the people living on fewer than US\$1 a day in urban areas and 24 percent of those in rural areas work in a non-agricultural business where they secure dismally low earnings. A majority of these businesses have little capital and lack a fixed address.

A vast body of literature has documented that labor earnings are, on average, lower in informal businesses than in formal firms. Good summaries of this literature are provided by Leontaridi (1998), Perry et al. (2007), and Ruffer and Knight (2007), among others. Using data from household and labor force surveys in 33 developing countries, Montenegro and Patrinos (2012) showed that labor earnings in micro-enterprises are lower than in small and medium-sized firms, even after controlling for worker characteristics such as age and education (figure 7). These findings are consistent with results from country and regional studies (e.g., Van Biesebroeck 2005).

Low labor earnings can be partly attributed to the very small capital of most micro-enterprises. Using Mexico's National Survey of Micro Enterprises, McKenzie and Woodruff (2006) found that the median investment of new micro- and small enterprises is very low in some sectors. For instance, it is below US\$100 in construction and personal services, which is less than half of the monthly earnings of a low-wage worker. Based on surveys from seven Sub-Saharan African countries, Grimm, Kruger, and Lay (2011) showed that the median capital stock of an urban informal enterprise was less than US\$80. Fox and Sohnesen (2012) documented that 25 to 45 percent of micro-enterprises use their home as their primary point of operation and that another 10 to 40 percent simply work on the street.¹⁶ Many of these micro- and small firms are located in rural areas and absorb some labor slack during the low agriculture season, which is consistent with the findings of earlier studies, including Mead and Liedholm (1998) and Liedholm (2002).

The flip side of limited assets is high returns to capital. McKenzie and Woodruff (2006) reported marginal return rates of 15 percent per month among Mexican micro- and small firms with investment levels below US\$200. Using data from a

Figure 7. Labor Earnings are Lower in Micro-enterprises



Source: [Montenegro and Patrinos \(2012\)](#).

Notes: Data are from 138 household and labor force surveys spanning 33 countries over 1991–2010. The premium is estimated based on an earnings equation, controlling for worker characteristics. Large firms employ more than 50 workers, and small firms employ 10 to 50 workers.

randomized experiment in Guanajuato (Mexico), [McKenzie and Woodruff \(2008\)](#) estimated the marginal returns to capital in micro-enterprises with less than \$900 of capital stock to be in the range of 20 to 33 percent a month, which is three to five times higher than market interest rates. Based on data from a randomized experiment in Sri Lanka, De Mel, [McKenzie, and Woodruff \(2008\)](#) found the marginal returns to capital in micro-enterprises to be 4.6 to 5.3 percent per month – substantially higher than market interest rates. [Udry and Anagol \(2006\)](#), [Göbel, Grimm, and Lay \(2011\)](#), and [Grimm, Kruger, and Lay \(2011\)](#) reported similar results for micro-enterprises in Ghana, Peru, and other Sub-Saharan African countries, respectively.

Low labor earnings together with high returns to capital suggest an inefficient combination of production factors in micro-enterprises and, hence, lower productivity than in larger firms. However, averages can be misleading; there is also evidence of a wide dispersion of productivity among micro-enterprises ([Sutton and Kellow 2010](#)).

Labor earnings are higher in some micro-enterprises than in larger firms. Using data from employment and labor force surveys in Brazil, Mexico, and South Africa, [Bargain and Kwenda \(2011\)](#) showed that some self-employed workers receive a

significant earnings premium that may compensate for the absence of the benefits typically associated with formal jobs. However, the relative size of this group varies considerably across countries. Most of the self-employed enjoy an earnings premium in Mexico, but few do so in South Africa. Using a household survey panel from Vietnam, [Nordman, Nguyen, and Roubaud \(2011\)](#) found that labor earnings in the informal sector depend on job status; informal self-employed workers generally receive a premium relative to formal wage workers, and the premium becomes higher when moving up the pay ladder. Using data from a survey on micro- and small enterprises in Madagascar, [Nordman, Rakotomanana, and Roubaud \(2012\)](#) found qualitatively similar results: earnings in the informal sector vary depending on the worker's job status, and most of the self-employers enjoy an earnings premium.

A similar dispersion is found in relation to assets and returns to capital. In the Sub-Saharan African countries covered by their study, [Grimm, Kruger, and Lay \(2011\)](#) showed that the average capital stock among the top quintile of urban informal enterprises is more than 60 times the median capital stock. The average monthly profit of this group is seven times the median. De Mel, [McKenzie, and Woodruff \(2008\)](#) found that returns to capital vary significantly in Sri Lanka. Among the participants in their randomized experiment, 20 percent of male-owned enterprises and 60 percent of female-owned enterprises had returns lower than market interest rates. One salient factor underlying the variation is entrepreneurial ability, including years of education, and numeracy and cognitive processing capability. [De Mel, McKenzie, and Woodruff \(2009a\)](#) further showed that entrepreneurial ability significantly and substantially affect the incidence of innovation among micro- and small enterprises, which directly affects firm profitability. [Grimm, Knorringa, and Lay \(2012\)](#) found similar evidence for Sub-Saharan African countries.

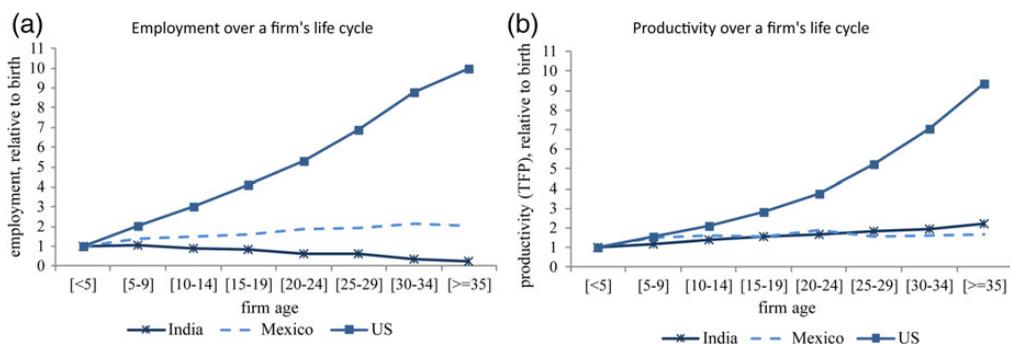
Question 3: Which Firms Drive Productivity Gains?

To the best of our knowledge, there are no studies based on data representative of all firm sizes to assess the relative contribution to aggregate productivity growth of gains at the firm level, reallocation across firms, and entry and exit in developing countries. However, a meta-analysis can shed light on the potential biases of decompositions based on truncated data. Such a meta-analysis relies on the findings of recent studies that have attempted to gain a deeper understanding of the life cycle of firms, including micro-enterprises, in the context of developing countries. Some of these studies have been able to overcome the limitations of official censuses and surveys by either using censuses with comprehensive coverage or merging data sets of formal firms with those of informal firms. Others (admittedly only a handful) have relied on data that specifically allow them to analyze the dynamics of micro-enterprises and informal businesses.

Using comprehensive datasets that cover micro- and small enterprises, [Hsieh and Klenow \(2011\)](#) compared the life cycle of manufacturing plants in India and in Mexico relative to that observed in the United States. For India, they merged the Annual Survey of Industries, a census of manufacturing plants with at least 100 employees supplemented by a random sample of formally registered establishments with fewer than 100 employees, with the Survey of Informal Establishments of the National Sample Survey. For Mexico, they relied on the Mexican Economic Census, which is a complete enumeration of all fixed establishments in Mexico. The only establishments not included in the Economic Census are street vendors, which are unlikely to be important for manufacturing. Following cohorts of firms over their life cycle, the study showed that the average employment of 35-year-old plants was one-fourth of the average employment at birth in India, and the average employment of 35-year-old plants was twice the average employment at birth in Mexico. Productivity growth displayed similar patterns in both countries. This finding is in sharp contrast to what is observed in the United States, where by age 35, both plant size and productivity are approximately eight times higher on average (figure 8).

A similar comparison, this time involving a sub-Saharan African country, was attempted by [Sandefur \(2010\)](#). The data were from Ghana's National Industrial Census, which incorporates all manufacturing firms in the country, both formal and informal (household enterprises are excluded though). Following the work on Portugal by [Cabral and Mata \(2003\)](#), changes in the size distribution of firms between 1987 and 2003 were decomposed into changes due to selection among entrants and changes due to the aging of surviving firms. The results showed that in Ghana's case the evolution of firm size over time was almost entirely driven by selection and not by aging. The Ghanaian firms that survived from 1987 to 2003 were abnormally large to begin with and did not constitute a representative sample

Figure 8. The Majority of Firms Grow Little in Developing Countries

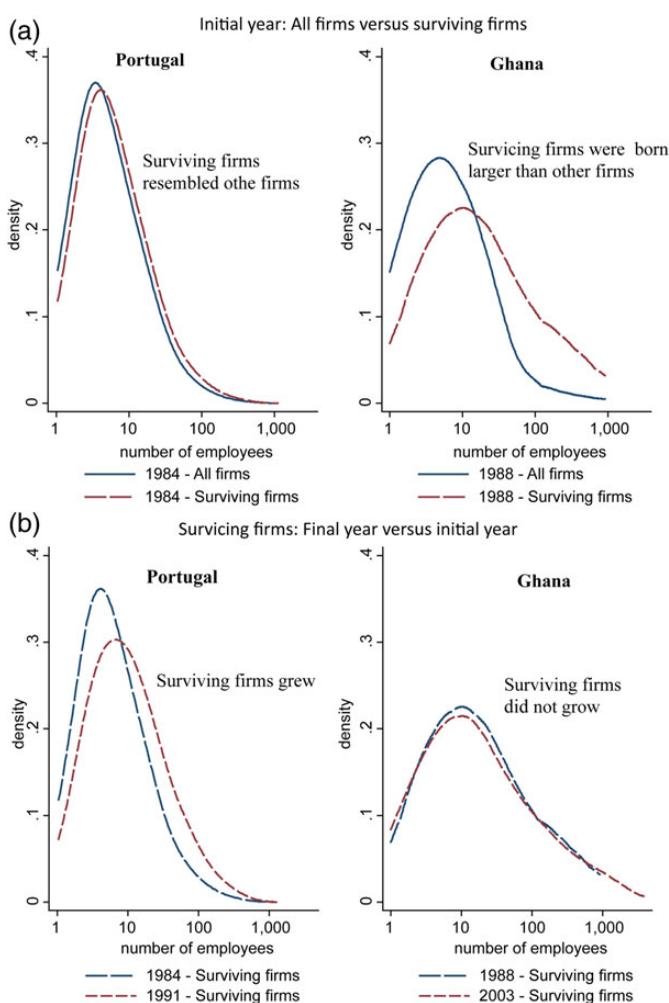


Source: [Hsieh and Klenow \(2011\)](#).

of the universe of firms. On average, the growth of these surviving firms was negative. This is the opposite of what was observed in Portugal's case (figure 9).

A number of studies have corroborated the lack of dynamism of micro- and small firms in the informal sector. Using Mexico's National Urban Employment Survey, Fajnzlber, Maloney, and Rojas (2006) found that individuals who start micro-enterprises are much more likely to remain the sole worker than to hire other workers and increase the size of their business. Following the same cohort of own-account firms between 1987 and 2001, they documented that approximately

Figure 9. Aging Does Not Contribute Much to Firm Growth



Source: Cabral and Mata (2003) and Sandefur (2010).

52 percent of them stayed at the same scale, whereas only 0.7 percent grew to become enterprises with at least five employees. In Sub-Saharan African countries, [Fox and Sohnesen \(2012\)](#), [Grimm, Kruger, and Lay \(2011\)](#), [Kinda and Loening \(2008\)](#), and [Loening and Imru \(2009\)](#) showed that few household enterprises expand into employing beyond the household, even when they are able to survive for a long time.

The picture that emerges from studies that explicitly consider micro- and small enterprises can be summarized in the form of three stylized facts:

- *Slow within-firm growth*: Surviving firms grow more slowly in developing countries than in advanced economies in terms of both employment and productivity. It does not follow that productivity growth is lower among the micro- and small enterprises of developing countries than among their larger firms. Whereas the former group is mainly made of “mice”, the latter includes “elephants” that were born large and grow little.
- *Massive but undifferentiated entry and exit*: Micro- and small enterprises constantly churn through entry and exit, creating many jobs but destroying almost as many along the way, and likely contributing little to aggregate productivity growth. Productivity differences among entering, exiting, and surviving businesses are smaller among micro- and small enterprises than among larger firms.
- *Limited gains from reallocation*: The reallocation of resources is closer to a random process in developing countries than in advanced economies. The correlation between firm productivity and firm growth is weaker, as reflected in the relative scarcity of gazelles and the prevalence of churning among micro-enterprises. Reallocation may not be less buoyant than in advanced economies, but it is less likely to result in aggregate productivity gains.

Building on these three stylized facts, predictions can be made regarding the sign of possible biases from relying on truncated data distributions to assess the drivers of aggregate productivity in developing countries. The analysis follows the decomposition proposed by [Melitz and Polanec \(2012\)](#), which, in turn, extends the methodology of [Olley and Pakes \(1996\)](#). The decomposition expresses aggregate productivity growth between two periods as the sum of four components: i) within-firm gains, calculated as the average productivity change among surviving firms; ii) between effect, defined as the change of the covariance between size and productivity among surviving firms; iii) gains from entry, computed as the employment share of the entrants multiplied by the difference between the weighted average productivity of entrants and that of surviving firms; and iv) gains from firm exit, as the employment share of the exiting firms multiplied by the difference between the weighted average productivity of surviving and exiting firms.

Three predictions emerge from this exercise (table 1). First, because of the limited gains from reallocation among micro- and small enterprises, decompositions of

Table 1. Ignoring Micro-enterprises Biases the Assessment of the Drivers of Aggregate Productivity Growth

Component	Analytical expression*	The role of micro- and small enterprises	Conventional wisdom bias
Within-firm gains	$\Delta\bar{\varphi}_S$	Productivity growth among surviving firms is lower in developing countries than in advanced economies ($\Delta\bar{\varphi}_S$ is small). However, it may not be lower among the micro- and small enterprises of developing countries than among their larger firms because the latter include stagnant or declining “elephants”.	Within-firm gains may be over- or under-estimated
Between effect	$\Delta cov(\varphi, s)$	Churning implies that it is not necessarily the most productive firms that survive and expand in developing countries, and churning is more prevalent among micro- and small enterprises than among larger firms ($\Delta cov(\varphi, s)$ is small)	Gains from between effect are over-estimated
Entry of new firms	$e \times (\Phi_e - \Phi_s)$	The sample truncation implies that, among firms that enter with a size below the threshold, surviving firms that reach a relatively high employment level are treated as statistical entrants. The correlation between firm productivity and firm size is smaller in developing countries than in advanced economies, but it is positive. This means that the average productivity of statistical entrants is higher than that of true entrants (the true $(\Phi_e - \Phi_s)$ is smaller). Churning among micro-enterprises also implies that there are more true entrants than there are statistical entrants (the true e is larger).	Losses (gains) from entry are under- (over-) estimated
Firm exit	$x \times (\Phi_s - \Phi_x)$	The sample truncation implies that surviving firms that fall below a relatively high employment level are treated as statistical exists. The correlation between firm productivity and firm size is positive, and the average productivity of statistical exits is higher than that of true exits (the true $(\Phi_s - \Phi_x)$ is larger). Churning among micro-enterprises also implies that there are more true exits than there are statistical exits (the true x is larger).	Gains (losses) from exit are under- (over-) estimated

Source: The analysis follows the decomposition proposed by [Melitz and Polanec \(2012\)](#), which extends the methodology of [Olley and Pakes \(1996\)](#).

Notes: The decomposition expresses aggregate productivity growth between two periods as the sum of four components: i) within-firm gains, calculated as the average productivity change among surviving firms, ($\Delta\bar{\varphi}_S$); ii) the between effect, defined as the change of the covariance between size and productivity among surviving firms, ($\Delta cov(\varphi, s)$); iii) gains from entry, computed as the employment share of the entrants, (e), multiplied by the difference between the weighted average productivity of entrants and that of surviving firms, ($\Phi_e - \Phi_s$); and iv) gains from firm exit as the employment share of the exiting firms, (x), multiplied by the difference between the weighted average productivity of surviving and exiting firms, ($\Phi_s - \Phi_x$).

aggregate productivity gains based on truncated data tend to over-estimate the between effect. Second, the gains (losses) from firm entry are over-estimated (under-estimated). The correlation between firm productivity and firm size is smaller in developing countries than in advanced economies, but it is positive. This means that the average productivity of statistical entrants is higher than that of true entrants. Churning among micro-enterprises also implies that there are more true entrants than there are statistical entrants. Third, for the reasons stated above, the gains (losses) from firm exit are under-estimated (over-estimated). The contribution of within-firm gains, in contrast, may be either over- or under-estimated when using truncated distributions. Productivity growth among surviving firms is lower in developing countries than in advanced economies. However, it may not be lower among the micro- and small enterprises of developing countries than among their larger firms because the latter include stagnant or declining “elephants”. Therefore, the direction of the bias (if any) depends on the specific context.

Conclusion

The conventional wisdom on firm dynamics, productivity growth, and job creation in developing countries is based on data that, by design, exclude a vast number of micro- and small enterprises, most of which are informal. Researchers are generally aware of this truncation of the data, although they may under-estimate its real extent. Some may not view it as an issue on the grounds that the omitted economic units reflect survivorship rather than entrepreneurship (Schoar 2010). From that perspective, the conventional wisdom and its associated analyses (e.g., on the most important constraints faced by firms) provide a good characterization of the “real” private sector.

However, there are two important issues with this view. The first one is the relative arbitrariness in the thresholds that determine the truncation of the data. There is no reason to believe that a firm with 10 workers is substantially different from one with eight, but the number of firms belonging to that small interval can be very large. The second issue is that a large share of total employment is associated with the firms that are typically excluded from enterprise censuses and surveys.

This paper assesses the ways in which the conventional wisdom on developing countries would change if micro- and small enterprises were taken into account in the analyses. Several tentative conclusions emerge from this analysis, including the greater role played by micro- and small enterprises in gross job creation and destruction, the greater dispersion of firm productivity, the weaker correlation between firm productivity and firm size, and the smaller contribution of within-firm productivity gains to aggregate productivity growth. However, it is difficult to take

this assessment much farther in the absence of better quality data on the economic units that are typically excluded from enterprise censuses and surveys.

The limitations of truncated enterprise censuses and surveys call for an effort to collect more comprehensive firm data. There have been creative efforts in this direction, which could be emulated in a more systematic manner. For instance, Fajnzlber, Meloney, and Rojas (2006) combined information from labor force surveys with surveys on micro-enterprises to adequately cover the informal sector. [Cling, Razafindrakoto, and Roubaud \(2005\)](#) produced 1-2-3 surveys for a handful of countries, a combination of household and enterprise surveys specifically designed to capture informal sector businesses. The Global Entrepreneurship Monitor (GEM) research program collected cross-country data on entrepreneurs, including those from micro- and small firms ([Kelley, Bosma, and Amorós 2010](#)). Several countries, including India, Mexico, and Peru, have taken the lead in compiling data on informal enterprises on a regular basis.

Data quality and comparability is another challenge to address. In developing countries very few micro-enterprises keep reliable financial records. The information they provide is based on recall, which is subject to a myriad of problems ([De Mel, McKenzie, and Woodruff 2009b](#)). As a result, it is difficult to distinguish between expenditures for household consumption and those for business operations. Even the labor input is difficult to capture because the boundaries between the time spent on either household chores or business activities are often blurred, and unpaid work by household members, particularly children, is not adequately accounted for. Production by micro-enterprises also tends to be more seasonal. An effort to improve the quality and comparability of data on micro- and small enterprises requires a systematic effort to address these issues to the greatest extent possible.

There are implications for research as well. This paper assesses how the use of truncated data can bias the answer to questions such as which firms create more jobs, how much dispersion there is in productivity, or which firms drive productivity gains. However, the answers are necessarily tentative at this stage. There are good examples of studies that address these issues with more comprehensive data and that pay attention to the methodological challenges that arise along the way. The work by [Hsieh and Klenow \(2011\)](#) is a case in point. Because many micro- and small enterprises are informal, the nature of regulations may be less important for them than the characteristics of the cities in which they operate. For instance, [Ghani and Kanbur \(2013\)](#) explored whether agglomeration effects differ between formal and informal sector units in India's cities. More research of this sort is needed.

Finally, explicitly accounting for micro- and small enterprises also has important policy implications. There is awareness that in many developing countries, "informal is normal". However, from a policy perspective, there is a tendency to think in terms of a dual economy model, where the growth of the modern sector will eventually lead to the disappearance of subsistence units. The consequence is a focus on

revamping formal sector regulations, even if many of these regulations are irrelevant for informal micro- and small enterprises. The emphasis is often on larger firms on the grounds that they tend to be more productive, but this focus amounts to ignoring that they can also be “elephants”. Although there are notable exceptions, such as [Nichter and Goldmark \(2009\)](#) and [De Mel, McKenzie, and Woodruff \(2009a\)](#), little thinking goes into policies to support productivity growth among the micro- and small enterprises that employ the bulk of the labor force and to help more “gazelles” emerge from among them.

Notes

Yue Li, World Bank; Martín Rama, World Bank. Corresponding author: Yue Li, World Bank, 1818 H St. NW; MSN MC10-1011; Washington, DC 20433, USA. yli7@worldbank.org. The authors would like to thank two anonymous referees for their insightful comments. Virgilio Galdo and Junko Sekine provided excellent research assistance. The views expressed in the paper are those of the authors and should not be attributed to the World Bank, its Executive Directors or the countries they represent.

1. In a typical year, the Longitudinal Business Database reports approximately 6 million firms and 7 million establishments with at least one paid employee. The Census Bureau also reports more than 15 million self-employment businesses. It follows that NETS combines employer and self-employment businesses but does not reflect the universe of businesses.

2. The data referred to here were updated on January 7, 2013. The numbers are weighted averages of data from Austria, Belgium, Cyprus, Finland, France, Germany, Italy, Luxembourg, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. The data cover total business economy, repair of computers, and personal and household goods, except financial and insurance activities.

3. The 11 countries are Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovak Republic, and Slovenia. In this comparison, the data from EUROSTAT are limited to the sectors considered by [Ayyagari, Demirgüç-Kunt, and Maksimovic \(2011b\)](#), namely, manufacturing, services, construction, transport, storage, communications, and computer and related activities.

4. The surveys of a number of countries ask both employers and employees about the size of their company. The size distributions that emerge from these two answers tend to be consistent with each other.

5. Because the classification of businesses by size differs across household and labor force surveys, the exercise regroups the size thresholds considered by World Bank Enterprise Surveys to make the classification comparable between the types of surveys.

6. Results for two advanced economies (Germany and Spain) and five developing countries (Chile, India, Pakistan Turkey, and South Asia) are reported, but the patterns are similar for other countries. The estimated distributions can be provided upon request.

7. These surveys do not report unpaid workers. The conclusion is the same when average establishment size is calculated based on permanent full-time employees.

8. [Bartelsman, Haltiwanger, and Scarpetta \(2009b\)](#) review the measurement and analytical challenges of handling micro-level data, including the sampling problem.

9. More recent approaches include those by [Melitz \(2003\)](#) and [Asplund and Nocke \(2006\)](#).

10. See [Bartelsman and Doms \(2000\)](#) for a review of earlier studies.

11. Additional evidence on the contribution of firm dynamics to aggregate productivity growth is provided by [Bartelsman and Doms \(2000\)](#), [Ahn \(2001\)](#), and [Syverson \(2011\)](#), among others.

12. The countries were Estonia, Hungary, Latvia, Romania, and Slovenia in Central and Eastern Europe; Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela in Latin America; and Indonesia, the Republic of Korea, and Taiwan (China) in East Asia.

13. The sampling universe for the ASI includes all the establishments registered under Sections 2(m)(i) and 2(m)(ii) of the Factories Act, 1948, that is 10 or more workers with the aid of power or 20 or more workers without the aid of power. It also includes all the establishments that is registered under the Bidi and Cigar Workers (Conditions of Employment) Act 1966, and all electricity undertakings that are not registered with the Central Electricity Authority (CEA).

14. Pavcnik (2002) also found that the productivity of exiting plants is much lower than that of surviving plants.

15. The nine countries are Burundi, Cameroon, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Tanzania, Zambia, and Zimbabwe. The data collection was coordinated by the World Bank as part of its Regional Program on Enterprise Development (RPED).

16. The core analysis of the paper is based on nationally representative household survey data from Burkina Faso, Cameroon, Republic of Congo (urban only), Ghana, Mozambique, Rwanda, Senegal, Tanzania, and Uganda.

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Growing through Cities in Developing Countries

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This paper examines the effects of urbanization on development and growth. It begins with a labor market perspective and emphasizes the importance of agglomeration economies, both static and dynamic. It then argues that more productive jobs in cities do not exist in a void and underscores the importance of job and firm dynamics. In turn, these dynamics are shaped by the broader characteristics of urban systems. A number of conclusions are drawn. First, agglomeration effects are quantitatively important and pervasive. Second, the productive advantage of large cities is constantly eroded and must be sustained by new job creation and innovation. Third, this process of creative destruction in cities, which is fundamental for aggregate growth, is determined in part by the characteristics of urban systems and broader institutional features. We highlight important differences between developing countries and more advanced economies. A major challenge for developing countries is to reinforce the role of their urban systems as drivers of economic growth. Cities and development, Local labor markets, Jobs and firm dynamics, Urban systems. JEL codes: j24, o18, r23

Urbanization and development are tightly linked. The strong positive correlation between the rate of urbanization of a country and its per capita income has been repeatedly documented (see, for instance, [World Bank 2009](#); [Henderson 2010](#); [Henderson 2002](#)). Much of the causation goes from economic growth to increased urbanization. As countries grow, they undergo structural change, and labor is reallocated from rural agriculture to urban manufacturing and services ([Michaels, Rauch, and Redding 2012](#)).¹ The traditional policy focus is to ensure that this reallocation occurs at the ‘right time’ and that the distribution of population across cities is ‘balanced’. Urbanization without industrialization ([Fay and Opal 1999](#); [Gollin, Jedwab, and Vollrath 2013](#); [Jedwab 2013](#)) and increased population

concentrations in primate cities (Duranton 2008) are often viewed as serious urban and development problems.

This paper takes a different perspective and seeks to examine the extent to which growth and economic development are affected by urbanization. In this case, urbanization is no longer a change that follows from growth and needs to be accommodated. On the contrary, it is viewed as an integral part of the growth process. To evaluate how cities affect growth, it may seem natural to take a macroeconomic perspective and assess the effects of urbanization and its characteristics. Doing so involves taking a cross-country perspective and regressing growth on urbanization. Extremely, few studies take this approach, and cross-country growth regressions have come under heavy criticism.²

Instead, it is useful to reframe the question about the effects of urbanization on growth as a question about the effects of cities on worker productivity over different time horizons. Are workers more productive when they move to cities? Do they become more productive in cities? If yes, over what time horizon, how, and to what extent? The general answer is that workers in cities benefit from agglomeration economies, which take place through a variety of channels: resource sharing, quicker and better matching, and more learning. Section 2 provides a discussion of these issues. The bottom line is straightforward: cities have a positive effect on productivity and wages. There is a short-run effect in which workers are more productive on average in large cities than in small cities and in small cities than in rural areas. There is also a medium-run effect in which workers learn more in cities and gradually become more productive.

This greater productivity of labor in cities does not exist in a void. Urban workers hold jobs that allow them to be more productive. Section 3 broadens the discussion to job creation and firm dynamics in cities. More productive jobs in cities need to be created. Innovation, entrepreneurial activity, and firm growth all play crucial roles in this respect. Additionally, more productive jobs do not remain more productive forever. This productivity advantage is constantly eroded and needs to be constantly recreated. The process of creative destruction in cities (i.e., more firm entry and exit and a higher portion of innovative young firms) is also fundamental.

The dynamics of firms and jobs in cities are shaped by the broader characteristics of urban systems in the long run. In section 4, we highlight major differences between cities in developing countries and more advanced economies. In short, the urban system of many developing countries often acts as a brake on economic growth. A major challenge for these countries is to ensure that their urban systems act as drivers of economic growth. More specifically, cities in developing countries appear to be far less functionally specialized compared with cities in more advanced economies. This phenomenon hampers the dynamism of the largest cities, which are burdened by many ancillary activities in developing countries. These activities

add to urban crowding without adding to agglomeration benefits. Better infrastructure, particularly better transportation infrastructure, and a reduction in favoritism toward large cities may be a way to remedy these problems. Policies to foster job creation directly may be tempting, but their record in more advanced economies is unsatisfactory.

In addition, developing cities function less efficiently and face challenges that differ from those of cities in more advanced economies. Appropriate management of the transition to full urbanization, a strengthening of urban governance, a reduction in labor market duality with the gradual integration of informal workers into the formal labor market, and a reduction or full elimination of land market duality are key challenges that must be addressed for developing cities to take full advantage of agglomeration effects and foster aggregate growth.

Because the literature on the issues discussed here is often extremely thin for developing cities, the exposition proceeds as follows. It first discusses the most recent findings about cities and various aspects of economic growth. Although much of the evidence comes from developed economies, this examination allows us to develop a rich vision of how cities can affect growth. Then, the evidence that relates specifically to developing cities is discussed. It is sometimes difficult to do more than highlight existing gaps in our knowledge and conjecture about how far the evidence can be extrapolated to developing cities.

Cities, Productivity, and Wages

The most immediate way for cities to foster economic growth and development is by making urban labor more productive. More specifically, we are interested in knowing whether households are more productive in cities than in rural areas and more productive in larger cities than in smaller cities. Ideally, we would like to be able to compare the same households across locations and assess their income, consumption, human capital acquisition, and quality of life. Because of a lack of data on many aspects of urban life, much of the literature focuses on wages and productivity and attempts to measure an urban wage or productivity premium.

The Link between City Scale and Labor Productivity

Cities enjoy a productive advantage over rural areas, and this advantage is larger for larger cities. This conjecture dates back at least to Adam [Smith \(1776\)](#) and was more fully articulated by Alfred Marshall (1890). The positive association between various measures of productivity and urban scale has been repeatedly documented since [Shefer \(1973\)](#) and [Sveikauskas \(1975\)](#). The fact that larger cities obtain higher scores on many productivity metrics, from wages to output per worker or

the total factor productivity of firms, is now beyond doubt. Most of the studies reviewed by [Rosenthal and Strange \(2004\)](#), [Melo, Graham, and Noland \(2009\)](#), and [Puga \(2010\)](#) measure an elasticity of wages or firm productivity with respect to city employment or urban density of between 0.02 and 0.10. That is, a city that is 10% larger in population offers wages that are 0.2 to 1% higher.

This type of work involves regressing an outcome variable by location on a measure of agglomeration. In the early literature, the typical regression of choice involved using output per worker as the dependent variable and city population as the explanatory variable. In the early 1990s, authors often employed more indirect strategies and began to use variables such as employment growth or firm creation as outcome measures (e.g., [Glaeser, Kallal, Scheinkman, and Shleifer 1992](#); [Henderson, Kuncoro, and Turner 1995](#)). More recently, the literature has moved to microdata and returned to more direct outcome measures, namely the total factor productivity of firms and wages. Importantly, the focus is on differences in *nominal* wages between cities that reflect differences in productivity rather than on differences in real wages, which would measure differences in the ‘standard of living’. We return to this distinction below, but for now, we examine productivity studies that typically estimate a regression such as

$$\log w_{ic(i)} = \alpha \log Pop_{c(i)} + \eta_{c(i)} + u_i + \varepsilon_{ic(i)} \quad (1)$$

where c denotes cities and i denotes individuals or groups of individuals. The dependent variable is $\log w$, the log of the wage, and the explanatory variables are $\log Pop$, the log of population as a measure of urban scale; η , a city effect (usually proxied through a number of control variables at the city level); and u , an individual effect (often proxied through observable individual characteristics). Finally, ε is an error term. The estimated value of the coefficient of interest, α , is usually positive and significant.

A few comments regarding the choice of variables are in order. The dependent variable is the log of the wage. Regressions similar to (1) can be proposed using measures of firm-level productivity as the dependent variable. Although the two types of measures are not exactly equivalent, they are close substitutes.³ Using a population- or employment-based measure of agglomeration as the dependent variable of interest makes little difference to the results, given the high correlation between the two. After [Ciccone and Hall \(1996\)](#), density has often been favored relative to population because it appears to yield more reliable results. The reason is most likely that density-based measures of agglomeration are more robust to zoning idiosyncrasies. For instance, treating Washington and Baltimore as one large consolidated metropolitan area or two separate cities makes a substantial difference to their employment count but little difference to density.⁴

Is the Relationship between City Scale and Productivity Causal?

Recall that the question raised above involves comparing the same households or workers in different locations. The regression described by equation (1) compares the outcomes across different workers who chose to be where they are, which is potentially a very different matter. Put differently, there is a robust statistical association between productivity outcomes and agglomeration, but it is unclear whether the estimated coefficient α in regression (1) reflects a causal effect of agglomeration on wages. A closer examination of equation (1) reveals three possible sources of bias (Combes, Duranton, Gobillon, and Roux 2010). They all stem from the fact that the measure of urban scale, such as $\log Pop_{c(i)}$, is indexed by $c(i)$; that is, city c is chosen by worker i .⁵

The first source of bias is the possible link between city effects (which are not observed directly) and the variable of interest, i.e., city population or density. Put differently, the ‘quantity of labor’ may be endogenous, and it is reasonable to expect workers to go to more productive cities. A possible solution to this problem is to use instruments for city population or density (Ciccone and Hall 1996; Combes et al. 2010). These instruments need to predict current population patterns but must be otherwise uncorrelated with city productivity. Deep historical lags, such as the population from 200 years ago or soil characteristics, can do the job (at least under some circumstances—see Combes et al. 2010, for a discussion). Studies using these types of approaches typically find that correcting for the endogeneity of the population has only a mild downward effect on the estimation of the coefficient of interest α .

The second main identification problem in the estimation of equation (1) involves a possible correlation between the measure of city population and individual effects. That is, the quality of labor may be endogenous, and we expect more productive workers to reside in larger cities (Glaeser 1999; Behrens, Duranton, and Robert-Nicoud 2014). A first possible solution to this problem is to control for an extensive set of individual characteristics (Bacolod, Blum, and Strange 2009; Glaeser and Resseger 2010). A more drastic solution is to use (whenever possible) the longitudinal dimension of the data and impose worker fixed effects, as done by Combes, Duranton, and Gobillon (2008). The endogenous quality of labor seems to be an important source of bias in the estimation of equation (1). The estimated value of α is typically reduced by 30 to 50 percent when extensive individual controls or worker effects are used.⁶

The third source of bias in the estimation of equation (1) is the possibility of a correlation between the error term and the measure of city population of interest. If, for instance, workers move more easily from large cities to small cities than the opposite in case of a good external wage offer, this will create another source of bias, which, in this particular situation, leads to an underestimate of agglomeration economies. No satisfactory solution to this problem has been proposed so far.⁷

At this point, the conclusion of the agglomeration literature is that there is a causal static effect of cities and urbanization on wages in more advanced economies, but this effect represents only approximately half the measured association between city population or density and wages (or alternative measures of productivity). The rest of the association between population or density and wages reflects the sorting of more productive workers in larger and denser cities and, to a lesser extent, reverse causality and workers moving to more productive places. Recent investigations that address the concerns mentioned above find agglomeration elasticities of approximately 2 to 4 percent. Thus, these studies suggest rather modest static effects of cities on productivity.

Beyond developed economies, the association between urban scale and productivity has been documented in a number of developing countries, including China, Colombia, Korea, Indonesia, India, and Brazil. A detailed discussion of these studies can be found in [Duranton \(2008\)](#), [Overman and Venables \(2005\)](#), and [Henderson \(2005\)](#). These three reviews lament the paucity of work estimating agglomeration effects in developing countries and call for more work on the topic. Six years after the last of these surveys was written, this call has yet to be answered. There are only a handful of recent studies not reviewed in these surveys. These studies focus on Turkey ([Coulibaly, Deichmann, and Lall 2007](#)), China ([Bosker, Brackman, Gerresten, and Schramm 2012](#); [Combes, Démurger, and Shi 2013](#)), India ([Chauvin, Glaeser, and Tobio 2013](#); [Ghani, Kanbur, and O'Connell 2013a](#)), and Colombia ([Duranton 2014a](#)).

Methodologically, the literature on agglomeration effects in developing countries is often less advanced, and identification concerns have not been taken seriously. In the rare cases where they have been considered (such as [Combes et al. 2013](#) for China; [Chauvin et al. 2013](#) for India; [Duranton 2014a](#) for Colombia), three interesting features occur. First, as in developed economies, better controls for individual effects lower the estimates of the agglomeration elasticities. This finding is unsurprising because larger cities in developing countries tend to be populated by more educated workers. Second, in China and India, instrumenting for city size tends to raise the estimates for agglomeration effects instead of lowering them if we expect workers to move to high-wage cities. This may occur because policy in these two countries has sought to limit the migration of workers to larger and more productive cities. Hence, this perverse finding may not be as perverse as it seems and may only reflect a different policy context for these two countries. Third, after the best attempts to address estimation issues, estimated agglomeration effects in China and India remain much higher than the corresponding coefficients for developed economies. For instance, [Combes et al. \(2013\)](#) suggest agglomeration externalities of 10 to 12 percent for China. In Colombia, the estimated agglomeration effects are also higher than in developed economies, but the difference is smaller. A deeper understanding of what drives this heterogeneity in agglomeration effects is an obvious research priority.

What are the Sources of Agglomeration Benefits?

After questioning its causal aspect, the second key question about the estimation of agglomeration effects involves their sources. When asking about the ‘sources’ of agglomeration, the literature frequently confuses two separate questions. The first involves which markets are affected by these agglomeration effects, and the second involves which mechanisms actually occur. Regarding the ‘where’ question, it is customary, after [Marshall \(1890\)](#), to distinguish the markets for (intermediate) goods, the market for labor, and the (absent) market for ideas and knowledge. In terms of mechanisms, [Duranton and Puga \(2004\)](#) distinguish among sharing, matching, and learning mechanisms. ‘Sharing’ involves the many possible benefits from the mutualization of specialized input providers, the diversity of local goods, the division of labor, or risks. ‘Matching’ involves the greater probability of finding another party, such as a worker, an employer, a supplier, or an investor, and the greater quality of the match with that party. Finally, ‘learning’ involves better generation, diffusion, and accumulation of knowledge. The latter set of mechanisms is regularly referred to as knowledge spill-overs.

Because of the wide variety of possible mechanisms and the markets in which they can occur, the literature that investigates the sources of agglomeration benefits is much more heterogeneous than the literature that attempts to measure the overall benefits of agglomeration, which naturally coalesces around the estimation of equation (1) or some variant of it.

First, there is a diversity of work that provides evidence of an association between some aspect of agglomeration, such as a particular mechanism or market, and measures of agglomeration such as city size. Let us take only a few recent examples (see [Puga \(2010\)](#) for a more exhaustive discussion). [Holmes \(1999\)](#) provides evidence of a strong association between urban scale and greater outsourcing to other firms, consistent with the importance of input-output linkages. [Overman and Puga \(2010\)](#) show that sectors in which establishments face more idiosyncratic risks tend to cluster more, consistent with the standard argument of better risk sharing in labor market pooling. [Charlot and Duranton \(2004\)](#) show that workplace communication, particularly communication with other workers outside the firm, is greater in larger cities and brings higher wages, consistent with standard spillover arguments. Also consistent with spillover arguments, [Jaffe, Trajtenberg, and Henderson \(1993\)](#) show that innovators are more likely to cite patents invented nearby than remote patents.

Taken together, these studies suggest that many of the agglomeration mechanisms described by the theoretical literature are at work in a variety of markets. This conclusion must be taken cautiously, however. Establishing the direction of causality in this type of work is even more difficult than when attempting to measure the overall effects of agglomeration.

To show that a given factor, such as communication spillovers, is a key channel through which agglomeration benefits percolate, one must establish two different

causal effects. First, one must show that urban scale has a positive causal effect on this factor. This is basically the same regression described by equation (1), except the dependent variable is now the factor under consideration instead of wages. The identification issues are equally challenging. Then, one must show that the factor under consideration (spillovers, in our example) affects the final outcome of interest, such as wages. This is extremely difficult because other agglomeration channels may also be at play and may affect wages.

Given the difficulty of measuring many aspects of agglomeration and given that the list of possible agglomeration sources is fairly open, considering all sources of agglomeration in one regression is not a feasible option. A more reasonable path forward, following [Ellison, Glaeser, and Kerr \(2010\)](#), is to consider several classes of agglomeration sources in the same approach. [Ellison et al. \(2010\)](#) assess how much labor pooling, input-output linkages, and spillovers account for co-agglomeration between industries in the United States. They use a measure of industry co-agglomeration and find more co-agglomeration among (i) industries that buy from each other, (ii) industries that use a similar workforce, and (iii) industries that share a common scientific base. To reduce the possibility that co-agglomerated industries end up buying from each other or using similar workers because of their physical proximity, they instrument their US measures of input-output linkages and labor pooling using corresponding UK data. Of course, if the biases are the same in the United Kingdom as in the United States, these instruments are of limited value.⁸ Another caveat is that input-output linkages may be more easily measured using input-output matrices than spillovers using patent citations. This can also lead to biased estimates because a positive correlation with both linkages and spillovers is likely to be picked up primarily by the better-measured variable (i.e., linkages). [Ellison et al. \(2010\)](#) confirm that the three motives for agglomeration they consider are at play, with input-output linkages playing a more important role according to their results.

There has been almost no work on the sources of agglomeration effects in developing countries. The main exception is [Amiti and Cameron \(2007\)](#), who use an empirical strategy that resembles that of [Ellison et al. \(2010\)](#) to examine the determinants of the productivity of firms in Indonesia. Their estimations strongly underscore the importance of input-output linkages. This result and the sometimes larger agglomeration effects for developing countries discussed above lead to an interesting conjecture. In many developing countries, trade costs with other cities or with foreign countries are particularly high. This would imply that the proximity to suppliers of intermediate goods becomes more important and explains stronger agglomeration benefits. This is only a conjecture, of course, and we discuss transportation issues below.

Even if we abstract from the uncertainty around these results, the notion that several mechanisms, each operating in several markets, contribute to agglomeration benefits is problematic for policy. At their heart, agglomeration benefits rely on

market failures associated with the existence of small indivisibilities with sharing mechanisms, thick market effects with matching mechanisms, and uncompensated knowledge transfers with learning mechanisms. There may be many market failures at play in many markets. In turn, this implies that there may be no hope of fostering agglomeration economies through a small set of simple policy prescriptions.

Heterogeneity in Agglomeration Benefits

Before going further, it is important to note that agglomeration benefits are not 'monoliths' that apply equally to all workers in all cities depending only on their overall size. The literature provides evidence about three sources of heterogeneity.

The first involves the sectoral scope of agglomeration benefits. Agglomeration effects within sectors are referred to as localization economies, and agglomeration effects across sectors are referred to as urbanization economies. When estimating a more general version of regression (1) that accounts for both city size or city density and the degree of same-sector specialization, the extant research has found evidence of both localization and urbanization effects. There is also evidence of significant heterogeneity across industries. This heterogeneity follows an interesting pattern. Following [Henderson et al. \(1995\)](#) for the US, it appears that more technologically advanced industries benefit more from urbanization economies, whereas more mature industries benefit more from localization economies. Interestingly, [Henderson, Lee, and Lee \(2001\)](#) obtained very similar results for Korea.

However, the estimations of [Combes et al. \(2008\)](#) also indicate that in France, the benefits from localization economies are smaller than those of urbanization economies and are mostly uncorrelated with local wages. Put differently, increased local specialization has only small benefits and does not contribute to making workers richer.

The second key form of heterogeneity in agglomeration effects is that not all workers benefit equally from urban scale. Equation (1) estimates an 'average' agglomeration effect. As highlighted by [Wheeler \(2001\)](#) and [Glaeser and Resseger \(2010\)](#), agglomeration effects appear stronger for more educated workers in the United States. Consistent with this finding, [Bacolod et al. \(2009\)](#) find that individuals with better cognitive and people skills benefit more from being in larger cities. In turn, a higher wage premium for more educated workers in larger cities should provide stronger incentives to more skilled workers to locate there. Hence, these results are consistent with the well-documented fact that workers in larger cities in more advanced economies tend to be more educated and better skilled ([Berry and Glaeser 2005](#); [Combes et al. 2008](#); [Bacolod et al. 2009](#)).⁹

Very little is known about differences in agglomeration benefits across skill groups in developing cities. For Colombia, [Duranton \(2014a\)](#) provides evidence of, if anything, lower returns for university-educated workers in large cities. This

phenomenon occurs despite a strong sorting of these workers in large cities. This may be the outcome of better amenities in large cities leading more skilled workers to sort into these cities and thereby depress the returns to education there. More evidence is obviously needed.

Finally, although not all workers benefit equally from agglomeration effects, it also appears that not all workers contribute equally to these effects. There is a large body of literature on human capital externalities suggesting that workers enjoy higher wages when surrounded by more educated workers. Estimates of urban external returns to education in cities are typically between 50 and 100 percent of the corresponding estimates of private returns to education, particularly for university graduates. These findings are robust to a number of estimation concerns and suggestive of large effects.¹⁰ It is beyond the scope of this paper to review this literature extensively. See [Moretti \(2004\)](#) and [Duranton \(2006\)](#) for more in-depth surveys and discussions. Early findings in the literature were generated from US data, but they have been confirmed for most large developed economies. These findings have also been replicated for Malaysia ([Conley, Flyer, and Tsiang 2003](#)), China ([Liu 2007](#)), Russia ([Muravyev 2008](#)), Chile ([Saito and Gopinath 2011](#)), and, in further unpublished work, for a number of other countries, including Colombia, India, and Turkey.

Worker Learning and Dynamic Agglomeration Effects

There is emerging evidence from US and European data that wage growth also depends on city size/density. To demonstrate this, one can estimate a regression along the lines of regression (1) using wages in the first difference instead of in levels as the dependent variable:

$$\Delta_{t+1,t} \log w_{ic(i)} = \alpha \log \text{Pop}_{c(i)t} + \eta_{c(i)} + u_i + \varepsilon_{ic(i)t}, \quad (2)$$

where Δ is used to note time differences between t and $t + 1$. Among a number of papers, [Peri \(2002\)](#) and [Wheeler \(2006\)](#) confirm that wage growth is stronger in larger cities. Although this result appears robust in many advanced countries, evidence from developing countries is still lacking.

Because the structure of regression (2) is the same as that of regression (1) for the static estimation of agglomeration economies, it suffers from the same identification problems. First, rather than being causal, the association between agglomeration and wage growth may be explained by the sorting of workers with faster wage growth in larger cities. For instance, ‘fast learners’ may tend to locate in larger cities. Using the same sort of fixed-effect strategy described above and applying it to a regression such as (2), [Freedman \(2008\)](#) nonetheless shows that this type of result holds even after controlling for the fact that some workers may experience higher wage growth independently of their location.¹¹

Although the result that wages grow faster in cities is frequently interpreted as evidence of faster learning in cities and knowledge spillovers, the mechanisms that drive it are unclear. In the same way that regressing wages in levels on a measure of urban scale in equation (1) does not tell us anything about the sources of static agglomeration economies, regressing wage growth on urban scale in equation (2) is equally uninformative about the mechanisms driving agglomeration dynamics. Interestingly, [Wheeler \(2008\)](#) shows that young workers tend to change jobs more often in larger cities, whereas the opposite holds for older workers. This type of evolution is consistent with a matching model in which workers can find their ‘ideal match’ more quickly in larger cities and then stick to it. Such a mechanism could explain both faster wage growth and eventually higher wages in larger cities.

As proposed by [Glaeser and Maré \(2001\)](#), evidence about learning in cities can come from the fact that workers retain some benefits from agglomeration after they leave their city. Consistent with this finding, [Combes, Duranton, Gobillon, and Roux \(2012c\)](#) find that ‘worker skills’, as measured by their fixed effect in a wage regression, do not differ much between less dense and denser areas in France for young workers. However, when older workers come from denser areas, they can command much higher wages than similar workers from less dense areas. This effect seems to be driven by labor market experience in denser areas rather than by increased sorting of intrinsically more skilled workers.

[De la Roca and Puga \(2012\)](#) provide the most comprehensive treatment of these urban learning issues to date using Spanish data. They assess agglomeration benefits in terms of both wage levels and wage growth. Their findings suggest the existence of both a level effect of cities on wages (of the same magnitude as those discussed above) and a dynamic effect. Over the long run, workers in large cities seem to gain about as much from each of these two effects. Confirming these findings for developing cities is, of course, a priority.

To sum up, this discussion of agglomeration economies, which focuses mainly on workers and jobs, reaches a number of interesting conclusions. First, larger cities make workers more productive. There is both a static and a dynamic component to these gains. A static elasticity of wages with respect to city population of 0.03—as typically found in developed economies—implies that a worker receives a 23 percent higher wage when moving from a tiny city with a population of 5,000 to a large metropolis with a population of 5 million. Taking an elasticity of 10 percent, as found by [Combes et al. \(2013\)](#) for China, leads to a much more significant gain of 100 percent. Over time, dynamic effects make this urban premium larger. Assuming an extra 3 percent from learning in the medium run of 3 to 10 years, as [De la Roca and Puga \(2012\)](#) find for Spain, yields another 23 percent from the same move. Although long-run gains of 50 to 125 percent are not miraculous, they are nonetheless sizeable.

These numbers are, of course, only an illustration of the magnitudes at stake. They do not constitute a welfare pronouncement. Cities offer pecuniary benefits,

such as higher wages in both the short and medium runs, as discussed above. They also offer non-pecuniary benefits such as a greater diversity of goods and services (Handbury and Weinstein 2010; Couture 2013). However, cities also generate pecuniary costs such as higher prices for housing and longer commutes and non-pecuniary costs such as, often, worse pollution and more crime.

Although the balance between costs and benefits is not precisely known, three elements are worth keeping in mind.¹² First, mobile labor is expected to go where welfare is highest. Even in countries where mobility is restricted, households vote with their feet and move to cities in large numbers.¹³ This phenomenon is certainly consistent with higher welfare in cities. Second, some urban costs, such as higher land costs, are only transfers. Although they do not benefit newcomers who do not own land, higher land costs in larger cities are benefits that accrue to land owners.¹⁴ Third, urban costs are typically only paid when households reside in cities, whereas urban benefits that arise from learning are retained by households even after they leave a city. Hence, the choice to reside in cities should be viewed as an investment made by households.

Where does this leave us in terms of policy implications? The key conclusion is that the economic gains from urbanization are significant, and urbanization should be embraced rather than resisted. Cities offer both short-term benefits by raising worker productivity and longer-term benefits in the form of more worker learning. One may be tempted to go further and attempt to 'foster agglomeration effects'. This temptation should nonetheless be resisted. We are too far from knowing enough about the sources of agglomeration to implement any meaningful policy in that direction.

Job and Firm Dynamics within Cities

So far, we have observed that a strong case can be made that developing cities provide both a significant one-off productivity increase to workers and a more sustained improvement in their skills, which can be then be taken elsewhere. Although an important development step, urbanization may not guarantee self-sustained growth over long periods of time. It is also unclear how the productive advantage of cities described above can be sustained. To understand what underlies this productive advantage, it is important to make the simple observation that urban workers hold jobs that allow them to be more productive. Although jobs are usually viewed as a veil when we model production in theoretical models, they matter in practice. Higher labor productivity in larger cities is not about doing the same thing as in smaller cities more efficiently. Instead, the productive advantage of cities is about doing different things and doing them differently. That is, to receive higher wages, workers need 'better jobs'. Firm dynamics are often the vector of these changes.

Examining several aspects of firm dynamics in cities—innovation, firm creation and growth, and factor allocation and reallocation across firms—will allow us to gain a better understanding of how the productive advantage of cities can be sustained (or not) over time. Doing so will also provide an important step toward understanding why and how cities can foster self-sustained growth.

Innovation

Starting with innovation, the first salient feature of the geography of innovative activity is that research and innovation is much more concentrated than production in most industries (Audretsch and Feldman 1996). Interestingly, this tendency seems particularly strong for industries that are more intensive in skilled labor and for research and development. It is also the case that a strong concentration of research and development often occurs in large metropolitan areas.

These location patterns for innovative activity are consistent with the notion that cities have a positive effect on innovation, just like they have on wages. More direct evidence can be found in Feldman and Audretsch (1999) and Carlino, Chatterjee, and Hunt (2007). To measure innovation, Feldman and Audretsch (1999) count all new product innovations in US metropolitan areas for a broad set of technologies and sectors in 1982. They find no evidence of urban scale effects but find that same-sector specialization is strongly negatively associated with innovation, whereas a diversity of employment in technologically related industries is strongly positively associated with innovation, as originally suggested by Jacobs (1969). They also find strong positive innovation effects associated with the presence of smaller establishments.

Using the number of patents per capita as the dependent variable, Carlino et al. (2007) find evidence of strong agglomeration effects for innovative activity. Their estimate of the elasticity of patenting per capita with respect to employment density is approximately 0.2. This is several times the estimates reported above for the corresponding elasticity of wages.¹⁵ Although patenting may be argued to be a poor proxy for innovation, Carlino and Hunt (2009) confirm these results when patents are weighted by their number of citations. Thus, larger cities innovate more on a per capita basis, and these innovations are no less influential than are those developed in smaller cities.

Although this evidence is highly suggestive that cities affect innovation, there is, to the best of my knowledge, no work that focuses on the effects of innovative activity on cities, such as the effects of local innovation on urban population growth. Regressing urban population growth on innovative activity would raise some obvious identification concerns. In addition, a simple theoretical argument suggests that the effect of innovation on urban growth need not be positive. Obviously, product innovation in the form of either an entirely new product or the capture of an established product from another location is expected to add to a city's

employment (Duranton 2007).¹⁶ Process innovation within a city can cut both ways. Employment increases with process innovation only if greater productive efficiency and lower prices lead to a more than proportional increase in demand. In the opposite case, process innovation implies a contraction of local employment. Remarkably, Carlino et al. (2007) show that Rochester, Buffalo, Cleveland, St. Louis, and Detroit, which are all in demographic decline, are also highly innovative cities. This finding suggests that, to some extent, the demise of these cities may be attributed to the fact that labor productivity increased much faster than demand in their industries.

Finally, innovative activity appears to change the nature of jobs in the cities where it takes place. As shown by Lin (2011), cities that patent more tend to have a greater proportion of what he labels 'new work', that is, jobs that did not exist a few years before. New work is also fostered by a greater proportion of educated workers and a diversity of industries, two other attributes of large cities.

To draw lessons for developing cities from these results about cities in developed economies, some caution is needed. Acemoglu, Aghion, and Zilibotti (2006) make a useful distinction between developed economies located at the technological frontier and developing countries within this frontier. The growth problem for developed economies is to push the frontier. For these economies, formal innovations and research and development play a crucial role. For developing countries, the problem is one of catch-up, where scientific advances and patenting play much less of a role. However, this does not mean that innovative activity, broadly construed, is irrelevant for those countries. To some extent, economic growth in developing countries is about firms' ability to produce new and better products and to produce them more efficiently. That is, firms in developing countries require product and process innovation, albeit in a way that is different from firms at the frontier. Being able to understand, adapt, and use knowledge developed in other countries is fundamental. In Colombia, for instance, the number of new patents is minimal, but a significant proportion of firms claims to be engaged in product and process innovation (Nieto Galindo 2007). Interestingly, innovation is also geographically concentrated. The departments of the 3 main cities in Colombia generate more than 70 percent of the innovations of the country, whereas they host less than 40 percent of the population. Hence, though the issue for developing countries is more about absorbing existing knowledge than generating completely new knowledge, large cities in developing countries should still have an important role to play in innovative activities by absorbing foreign knowledge and making sure it diffuses to the rest of the country.

To conclude on the links between innovation and cities, the extant literature supports the notion that cities affect the propensity to innovate either because of their sheer population size or because of the (diverse) structure of their production activities. The evidence about the effect of these innovations on the cities where they were developed is more complex. In particular, for a given city, being more innovative does not appear to mean higher growth in income per capita or even growth in population.

Entrepreneurship

Entrepreneurship is another possible reason why cities offer better jobs and host more productive firms. First, cities affect entrepreneurship in the same way they affect wages and innovation. In a comprehensive analysis of the determinants of employment in new manufacturing start-ups across US cities, [Glaeser and Kerr \(2009\)](#) generate a rich harvest of facts.¹⁷ The first is the existence of scale economies. As a city grows larger, employment in new start-ups in this city increases more than proportionately. Depending on their specification, [Glaeser and Kerr \(2009\)](#) find an elasticity of employment in new start-ups per capita with respect to city scale between 0.07 and 0.22. City population, city-industry employment, and sector effects explain approximately 80 percent of the variation in start-up employment across cities and sectors.

Consistent with a conjecture made initially by [Chinitz \(1961\)](#), [Glaeser and Kerr \(2009\)](#) also find that the presence of many small suppliers is strongly associated with employment growth in start-ups. In addition, they find evidence of mild Marshallian effects associated with labor market pooling and spillovers. Finally, city demographics, including their measure of 'entrepreneurial culture', have only limited explanatory power¹⁸ The 'Chinitz' finding about the importance of many small establishments is confirmed by [Rosenthal and Strange \(2010\)](#), who suggest that small establishments matter because they provide a greater diversity of specialized suppliers to local firms.

The analysis of [Glaeser and Kerr \(2009\)](#) has been recently replicated by [Ghani, Kerr, and O'Connell \(2011\)](#) for start-ups in formal manufacturing, informal manufacturing, and services in Indian districts. They find evidence of urban scale effects whereby the number of start-up increases more than proportionately with city population in services, though not in manufacturing. Similar to [Glaeser and Kerr \(2009\)](#) for the United States, the Indian evidence underscores the importance of small firms and broader measures of input-output linkages. Unlike in the United States, [Ghani et al. \(2011\)](#) also find that in India, district demographics (education in particular) matter. They also consider a number of variables not present in [Glaeser and Kerr \(2009\)](#). Importantly, their measure of district accessibility plays an important role similar to the stringency of labor laws, which, in India, varies across districts.

The other key feature related to the supply of entrepreneurs is that there is a strong local bias in entrepreneurship. Entrepreneurs tend to create their start-up in the place where they were born and/or where they have lived and worked before becoming entrepreneurs. This important fact was first documented by [Figueiredo, Guimarães, and Woodward \(2002\)](#) for Portugal and [Michelacci and Silva \(2007\)](#) for Italy and the United States. This finding has been further confirmed by several other studies in developed economies. [Figueiredo et al. \(2002\)](#) also show that when

entrepreneurs choose a new location, this choice is strongly governed by agglomeration economies and proximity to large cities.

After examining the urban determinants of entrepreneurship, we now turn to the effects of entrepreneurship on their cities. It has been shown repeatedly that entrepreneurship plays a key role in urban evolutions. The key fact here is that growth in a city and sector over a period of time is strongly correlated with the presence of small establishments in that city and sector at the beginning of the period. This fact was first documented by [Glaeser et al. \(1992\)](#) and has been confirmed for other countries and time periods by many other studies. In an interesting extension of this type of research, [Faberman \(2011\)](#) documents that the majority of the variation employment growth across US cities can be accounted for by the birth and expansion of young firms. Employment growth in US cities is also positively correlated with greater job churning.

As in many of the correlations discussed above, the strong link between small firms and employment growth raises a key identification concern about the direction of causality. However, this issue has been neglected by the literature until quite recently. This is perhaps because the standard regression in this literature uses growth over a period as dependent variable and establishment size *at the beginning of the period* as explanatory variable. However, using a pre-determined variable as the explanatory variable in a regression does not guarantee its exogeneity. Local entrepreneurs could enter in large numbers in a city and sector if they foresee strong future demand. It is only natural that expectations of future growth should trigger entry today. That is the nature of business.

As a first step toward the resolution of this identification problem, [Glaeser, Kerr, and Ponzetto \(2010\)](#) examine whether the presence of many small firms in a city and sector is driven by the demand for entrepreneurship or by its supply. To the extent that they can be captured by higher sales per worker, demand factors do not appear to matter. Their findings point instead to the importance of the supply of entrepreneurship. This indirect approach, however, does not entirely solve the causality issue. To address it head on, [Glaeser, Kerr, and Kerr \(2012\)](#) take an instrumental variable approach. Returning to [Chinitz's \(1961\)](#) initial comparison of Pittsburgh and New York, they use the idea that cities closer to mines have been influenced by large mining firms. In turn, large firms are expected to reduce entrepreneurship by providing attractive employment opportunities for highly skilled workers. Large firms may also breed a local culture of 'company men', which in turn reduces entrepreneurship. In the data, proximity to historical mines is associated with larger establishments today, even in completely unrelated sectors. Using this instrument, the authors estimate an even larger effect of entrepreneurship on city growth than the one measured directly from the data. Because a mining past can be associated with a general decline in manufacturing, [Glaeser, Kerr, and Kerr \(2012\)](#) replicate their main findings for cities outside the Rust Belt. These findings also hold when,

instead of focusing on overall employment, they only examine service sectors that are remotely tied to mining. Although these results require further confirmation and replication for developing countries, they support the notion that entrepreneurship is an important engine of city growth.

To sum up, extant evidence suggests that urban entrepreneurship is an important foundation of the productive advantage of cities. More specifically, the constant entry of new entrepreneurs appears to be a key mechanism that allows cities to sustain their greater productivity.

Factor Allocation and Reallocation

Finally, we take a broader view and turn to factor allocation and reallocation. Better factor allocation or factor reallocation in cities may be at the root of the productive advantage of cities. The literature that examines factor allocation and reallocation makes two important claims. The first is that a large fraction of productivity growth at the country level can be accounted for by the reallocation of factors from less productive to more productive firms. [Foster, Haltiwanger, and Krizan \(2001\)](#) for US manufacturing and [Foster, Haltiwanger, and Krizan \(2006\)](#) for US services show that exiting firms are less productive than continuing ones and that, conditional on survival, start-ups have higher productivity than more mature firms. Put differently, a large share of productivity growth can be accounted for by a churning process in which low productivity firms are replaced by new and more productive start-ups. As shown by [Foster, Haltiwanger, and Syverson \(2008\)](#), considering that start-ups have lower margins (and thus a lower apparent productivity when using standard approaches to the estimation of productivity) only strengthens these results. These important findings have been confirmed for many countries ([Bartelsman, Haltiwanger, and Scarpetta 2004](#)), including detailed studies using high-quality data from developing countries such as Colombia ([Eslava, Haltiwanger, Kugler, and Kugler 2004](#)).

The second important claim made by the reallocation literature is that ‘misallocation’ can account for a large share of existing productivity differences across countries. To understand this point better, consider the influential work of [Hsieh and Klenow \(2009\)](#). They first note that, in equilibrium, marginal products should be equalized across firms. If the demand for the varieties produced by firms has a constant elasticity of substitution, this implies an equalization of the product of their price multiplied by their ‘true productivity’ (which is the ability of firms to produce output from inputs). This (price times true productivity) product is what is estimated as ‘total factor productivity’ in most productivity exercises. We may call this quantity ‘apparent productivity’ instead.¹⁹ Obviously, firms’ apparent productivities are never equalized in real data. [Hsieh and Klenow \(2009\)](#) interpret this as evidence of factor misallocation. Using the highly dispersed distribution of manufacturing productivity

in China and India, they calculate extremely large potential costs from such misallocation. Acknowledging that a perfectly efficient allocation may be impossible, they compute that the productivity gains for manufacturing in China and India would still be approximately 50 percent if their level of misallocation could be reduced to that observed in the United States. Using a different approach that uses the covariance between size and productivity at the firm level to measure misallocation, [Bartelsman, Haltiwanger, and Scarpetta \(2013\)](#) find substantial differences between countries.²⁰ These differences in misallocation are correlated with the large existing differences in aggregate performance between countries and are predicted to explain a sizeable fraction of them.

To the best of my knowledge, there is no study in the spirit of the cross-country work of [Foster et al. \(2001\)](#) that attempts to relate greater churning/reallocation at the firm level and higher productivity growth at the urban level. However, there is a strong suspicion that larger cities should exhibit more churning because, as already argued, larger cities are more innovative, experience more entry and exit, and have a greater fraction of their workforce in ‘new work’. At the same time, there is no indication that this greater amount of churning in larger cities is associated with higher productivity growth in those cities, unlike what occurs at the country level.

We know little about productivity growth in cities. According to [Lin \(2011\)](#), the greater proportion of workers employed in new work in larger cities is not associated with faster productivity growth. In a rare study of the broader determinants of productivity growth in Italian cities, [Cingano and Schivardi \(2004\)](#) highlight the importance of both specialization and employment size. However, given that specialization and employment size are negatively correlated, their positive effects arguably cancel out. Hence, more churning does not appear to lead to faster productivity growth in cities.

To confirm this conclusion, note that workers are somewhat mobile across cities. Thus, more churning associated with faster productivity growth in larger cities should imply a divergence in the population growth rates. There is no evidence of such divergence.²¹ This lack of a result regarding the link between churning and productivity should not be taken as negative evidence against the reallocation literature. As argued in the next section, it is possible that reallocation does not take place only within cities but also across cities.

Turning to the second claim about misallocation, [Combes, Duranton, Gobillon, Puga, and Roux \(2012b\)](#) show that the distribution of firm productivity is unambiguously more dispersed in larger cities in France. In the framework of [Hsieh and Klenow \(2009\)](#), this can be interpreted as greater misallocation in larger cities. This seems difficult to believe. The evidence about static agglomeration effects discussed above is instead best interpreted as agglomeration economies leading to a better allocation of resources (in a broad sense) in larger cities. Performing the same productivity decomposition as [Bartelsman, Haltiwanger, and Scarpetta \(2013\)](#),

[Combes et al. \(2012b\)](#) find a similar covariance between establishment size and productivity in large and small cities, suggesting a similar level of efficiency in the allocation of factors to firms.

To sum up, the evidence about firm dynamics and cities presented in this section suggests an interesting tension. Larger cities are more innovative, more entrepreneurial, experience more churning and reallocation, and generally enjoy a greater ‘economic dynamism’. Although much of the formal evidence is from developed economies, observation and casual evidence suggests the same is true in developing countries. At the same time, large cities do not appear to enjoy most of the benefits associated with such dynamism because neither productivity nor population appears to increase faster in larger cities. To resolve this tension and understand why the greater economic dynamism of large cities does not translate into faster growth in income or in population, we need to consider large cities to be part of an urban system.

Urban Systems

To deepen our understanding of the effect of cities on growth, we now need to think about cities as small open economies that interact with other cities and rural areas. They are part of an ‘urban system’.

Forms of Urban Specialization

Starting with innovation, recall that larger cities offer many advantages for both product and process innovation. More specifically, as highlighted by [Jacobs \(1969\)](#), cities favor the circulation and cross-fertilization of ideas. This naturally leads to more product innovations and is consistent with the evidence of [Feldman and Audretsch \(1999\)](#) discussed above. For process innovation, [Duranton and Puga \(2001\)](#) underscore the greater availability of intermediate goods in large cities, which allows firms to proceed through trial and error at a faster pace. In short, the greater ability of larger cities to innovate may simply be another manifestation of agglomeration economies. The key difference with many static aspects of agglomeration economies discussed above is that with dynamic effects, co-location is not needed all the time. More precisely, spillovers may matter to develop an innovation, but after an innovation is developed, co-location is no longer needed. Quite the opposite, larger cities are more expensive places to produce. After the dynamic benefits from agglomeration have been exploited, it can make sense for firms to relocate. Often, the entire firm does not need to relocate because only the production of particular products is involved.

Patterns of establishment relocation in France are highly consistent with this type of product cycle. As shown by [Duranton and Puga \(2001\)](#), approximately

75 percent of French establishments that relocate do so from a city with above-median diversity to a city with below-median diversity and above-median specialization in the same sector. In addition, as documented by [Fujita and Ishii \(1998\)](#), large Japanese multinationals in the electronic sector produce their newest products in ‘trial’ plants near Tokyo and Osaka. Previous generations of products are produced in rural locations in Japan, other advanced Asian countries, and even less advanced Asian countries for products with a low degree of sophistication. Hence, as their products mature, firms still search for agglomeration economies but put greater weight on the benefits of specialization. Large cities act as nurseries for new goods and new products. Once mature, new goods and products are best produced in more specialized places.

There is no formal evidence about this issue, but observation suggests that in most developing countries, the nursery cities phenomena are not at play to the same extent as in developed economies.²² Although the largest cities in developing countries are the centers of innovation (understood in a broad sense to include the adoption of more advanced knowledge from other countries), there is little in terms of relocation of the production of mature products to secondary specialized cities. Instead, both more advanced and mature products are produced in the largest cities. This situation likely makes these cities larger than they should be and increases congestion. Mature products also end up being produced in the most expensive cities at a higher cost. Smaller cities may suffer even more from this because they are stuck with the production of the most backward products without receiving a constant inflow of new goods to produce from their metropolises.

In more advanced economies, cities also specialize by sector. There are countless examples of age-old specializations, including knives and blades in Sheffield or jewelry in Birmingham in the United Kingdom, as described by Alfred Marshall (1890). More systematic evidence about specialization in US cities is provided by [Black and Henderson \(2003\)](#). However, this tendency for cities to specialize, while still present in the data, has diminished over time, as documented by [Duranton and Puga \(2005\)](#). The same authors also document a rise in the functional specialization of US cities with the emergence of cities specialized into management type functions, whereas others specialize more into production activities.²³ This rise in functional specialization is rationalized by [Duranton and Puga \(2005\)](#) in a model where lower communication costs make it easier for firms to separate management from production. Because these activities benefit from very different types of agglomeration economies, this separation is beneficial, provided that the cost of separating activities is low enough. In turn, this separation of activities reinforces the functional specialization of cities.

There is limited evidence about the sectoral specialization of cities in developing countries. [Ghani, Kerr, and Tewari \(2013b\)](#) examine patterns of specialization and diversity for manufacturing in Indian districts.²⁴ They show evidence of declining

specialization and rising diversification of Indian districts between 1989 and 2005. They also compare Indian districts with the US metropolitan areas that have the most manufacturing for which the levels of manufacturing employment are roughly the same. They find that Indian districts are somewhat more specialized and less diverse. [Duranton \(2014b\)](#), in contrast, finds increasing manufacturing specialization and decreasing manufacturing diversity in both Colombian municipalities and metropolitan areas over 1990 and 2005. Increasing manufacturing specialization, however, is counterbalanced by decreasing specialization and rising diversity in non-manufacturing sectors. Colombian municipalities and metropolitan areas are also less specialized and more diverse than US counties and metropolitan areas, respectively. It is also interesting to note that the share of manufacturing employment is unrelated to city population in Colombia, whereas it declines strongly with city population in the United States.

These multiple dimensions of specialization are part of well-functioning urban systems in more advanced countries. Additionally, the notion of cities being specialized by functions and activities is not static. [Duranton \(2007\)](#) argues that the process of continuous location and relocation of economic activity is a crucial aspect of the growth of those activities. To take a simple example, when George Eastman developed a new revolutionary technology in the photographic industry in Rochester, the industry relocated from New York to Rochester. Much later, as the technology developed by Eastman was superseded by the digital revolution, Rochester lost its status as the capital of the photographic industry. Beyond this illustrative example, more systematic evidence of such churning across cities is presented in [Duranton \(2007\)](#) for the US and France and in [Findeisen and Südekum \(2008\)](#) for Germany. Based on the case of Boston, [Glaeser \(2005\)](#) further argues that successful cities are those that are continuously able to reinvent themselves. The idea that different cities specialize into different functions and are able to change their specialization after negative shocks presupposes a fair amount of ‘mobility’ across cities. The first important dimension of mobility involves goods and services. It would make little sense for cities to narrowly specialize in an activity if its output could not be exported. Continuously changing patterns of specialization also require labor mobility.

Putting this all together, the evidence presented so far suggests a less advanced process of urban differentiation in developing countries than in more advanced economies. In turn, this lack of differentiation in urban functionality may limit the dynamism of cities in developing countries.

Urban Labor Markets in Developing Cities

In the rest of this section, we examine a number of urban factors that reduce both the efficiency of the urban system and the efficiency of cities directly.

The first key difference between cities in developing and more advanced countries involves the functioning of their labor market. In most developing countries, there is a well-known duality in the labor market that usually involves a large informal sector alongside the formal sector. Aside from its detrimental implications for workers in the informal sector, this duality hinders urban development in several ways. First, it has been accused of inducing too much migration toward the largest cities, where most of the formal sector is located.²⁵ Duality may also limit mobility across cities because jobs in the informal sector tend to be filled by word-of-mouth through social connections, which are lacking for newcomers. High barriers to ‘good’ jobs in the formal sector may also limit incentives for workers to improve their skills locally and thus limit the scope of agglomeration benefits.

To mitigate the effects of labor market duality, three broad types of policies are potentially available. The first is to improve the working of labor markets. Although this objective is certainly laudable, a discussion of this class of policies would go beyond the scope of this paper.

The second type of policy is to foster local job creation through ‘place-based’ policies. Such policies typically involve tax exemptions or subsidies associated with job creation within well- defined (and often tightly circumscribed) areas. These tools are frequently used to attempt to reduce the unemployment rate of the residents of poor areas in more advanced economies. Although the labor market failures in developed and developing countries differ and the scale at which such policies might be implemented in developing countries may be much broader than poor neighborhoods of ‘rich’ cities, there may be useful lessons to learn from the recent North American and European literature evaluating those policies.

Simply put, the general record of place-based policies is in doubt (Glaeser and Gottlieb 2008). Detailed evaluations of particular policies often reach negative conclusions. For the United States, Neumark and Kolko (2010) draw negative conclusions about the California enterprise zone program. Busso, Gregory, and Kline (2013) find evidence that the federal empowerment zone program boosted jobs locally, but they find no evidence of increased land values. Mayer, Mayneris, and Py (2011) also draw negative conclusions about the French urban employment zone program. Importantly, they find that the increase in employment within targeted areas is mainly accounted for by relocations from nearby areas. Similar displacement effects are found by Einiö and Overman (2011) for the United Kingdom. These authors also reach equally negative conclusions.²⁶ Overall, the evidence suggests that these policies may create more problems than they solve and mostly inefficiently relocate economic activity.

The third class of policies attempts to foster job creations in a particular locality by helping firms in a given sector. These policies are usually referred to as ‘cluster’ policies and follow the work of Michael Porter (1990). They often entail the development of subsidized supportive institutions and infrastructure using public subsidies

and various types of fiscal incentives. The review of the literature in [Duranton \(2011\)](#) draws negative conclusions about the benefits of cluster policies.

To conclude, there are serious problems with the functioning of local labor markets in developing cities. The evidence suggests that the main road ahead is to improve the functioning of labor markets everywhere and to avoid place-specific solutions.²⁷

Urban Land Markets in Developing Cities

The second key difference between cities in developing and more advanced countries involves the functioning of their land market. Similar to labor markets, land markets in developing cities are characterized by a duality between land used with appropriate property titles and leases and squatted land. Following a conjecture by [De Soto \(2000\)](#), recent empirical research has focused on the effects of the lack of effective, formal property titles that could prevent residents of squatter settlements from using their house as collateral. Informal land markets may thus be a major barrier to enterprise development. The empirical evidence about the relaxation of credit constraints associated with ‘titling’ policies is weak. Recent work points instead to increases in labor supply ([Field 2007](#)) and to the adoption of more middle-class values and attitudes ([Di Tella, Galliani, and Schargrotsky 2007](#)). Although this evidence about titling policies is relatively optimistic about the merits of such policies, the existing literature focuses nearly exclusively on residential land. The extent of land illegality for commercial land (from illegal street vendors to squatter manufacturing) is poorly measured, and the solutions are not well developed.²⁸

Roads and Infrastructure Linking Developing Cities

The third key difference between cities in developing and more advanced countries involves infrastructure, particularly road infrastructure. Two strands of research need to be distinguished here. The first finds its roots in international trade and focuses on the estimation of the effect of ‘market potential’ variables. The market potential of a city is usually computed as the sum of the income (or population) of other cities weighted by their inverse distance to the city under consideration. Assuming transportation costs and other trade frictions associated with distance, many models of international and inter-regional trade generate the prediction that a location’s income and wages will be determined by its market access ([Krugman 1991](#); [Krugman and Venables 1995](#); [Head and Mayer 2004](#)). The literature offers strong empirical support regarding the importance of market access for cities in developing countries. Using two different approaches, [Lall, Koo, and Chakravorty \(2003\)](#) and [Lall, Shalizi, and Deichmann \(2004b\)](#) underscore the importance of market access in India. Strong effects of market access are also found in Brazil ([Lall,](#)

Funderburg, and Yepes 2004a; da Mata, Deichmann, Henderson, Lall, and Wang 2007) and Indonesia (Deichmann, Kaiser, Lall, and Shalizi 2005; Amiti and Cameron 2007). This within-country evidence is complemented by the literature that examines the importance of market access at the country level (Redding and Venables 2004; Head and Mayer 2011).²⁹

The second strand of literature focuses more closely on the effects of infrastructure. Baum-Snow's (2007) pioneering work finds that the construction of the interstate highway system was a major impetus behind the suburbanization of US cities. Duranton and Turner (2012) also find that more kilometers of interstate highways in US metropolitan areas in the early 1980s led to faster population growth over the next 20 years.³⁰

These results are confirmed by Holl and Viladecans-Marsal (2011) for Spain. For rural areas in the United States, Chandra and Thompson (2000) and Michaels (2008) find that new highways lead to a displacement of economic activity toward the counties served by these new highways and an increase in the demand for skills. For US metropolitan areas, Duranton, Morrow, and Turner (2014) find that highways lead to a greater specialization into 'heavy sectors', for which transportation costs are higher. That is, having more highways in a metropolitan area increases the weight of its exports but not its value.³¹

This type of approach is also being applied to developing countries. In a remarkable piece of work, Donaldson (2014) documents the effects of the construction of India's railroad network by its colonial power. He shows that railroads increased trade and reduced price differences across regions. Even more importantly, railroads increased real incomes and welfare. To minimize identification problems, he compares the network that was built with other networks that were considered but never developed. In related work on modern India, Ghani, Goswami, and Kerr (2012) show that a major upgrade of India's main highways had positive effects on the productivity and entry of plants in districts close to improved highways. In a slightly different vein, Jedwab and Moradi (2011) document that railway lines built by the British colonial power in Ghana for the exploitation of inland mines had a large effect on agricultural production of the main export crop, cocoa, which was more easily shipped to the coast. In turn, agricultural development bolstered urbanization. These effects are still present today as districts close to these rail lines are more developed.

In line with some of the arguments advanced above about the importance of transportation infrastructure for the decentralization of manufacturing activity away from large metropolises, Baum-Snow et al. (2013) underscore the importance of railroads in the decentralization of manufacturing production in China.³² Rothenberg (2011) shows similar effects regarding highways in Indonesia.

Storeygard (2011) provides evidence about the importance of inter-city transportation costs for inland African cities. Using new roads data for Africa and satellite

data ('lights at night') to estimate economic activity, he assesses the effect of higher transportation costs. To circumvent the endogeneity of transportation costs (roads may be built to access growing cities), he uses arguably exogenous variations in oil prices. He finds an elasticity of economic activity with respect to transportation costs of approximately -0.2 .

All of these findings are suggestive of the profound and long-lasting effects of major transportation infrastructure. However, it is necessary to remember that major transportation networks are extremely costly investments.

Urban Favoritism

The last key difference between cities in developing and more advanced countries involves the effects of the favoritism by governments toward the largest cities. Although the reasons for primate city favoritism are debated (Ades and Glaeser 1995; Henderson 2005), there is little doubt that such favoritism occurs in many different ways. As argued in Duranton (2008), primate city favoritism harms the favored primate city by making it larger than it should be. It also harms smaller cities, which are, in effect, heavily taxed. The gap that is created between the primate city and other cities may also have negative dynamic effects because, for most educated workers, there is nowhere to go except to stay in this primate city. As a result, this may reduce the circulation of knowledge across cities. Reducing primate city favoritism and providing smaller cities with better local public goods (including education and health) is certainly a part of any solution.

Conclusions

For individual workers, cities in developing countries appear to bring significant benefits, in both the short run and the long run. However, when taking a broader look, the urban system of developing countries appears to involve far less functional differentiation across cities than in more advanced economies. This differentiation, with different cities playing different roles in the urban system, is important for the process of growth and development to proceed smoothly. Larger cities innovate and manage, whereas smaller cities often produce a narrow range of goods. Having larger cities do everything, as they often do in developing countries, reduces their dynamism and holds back small cities.

A variety of policies can be envisioned to solve this problem. The four most promising areas are general policies to improve the functioning of labor markets, ending primate city favoritism, favoring labor mobility (or, at least, not hindering it), and the development of major infrastructure to connect cities.

Notes

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1. Closely related to this is the issue of how the overall concentration of economic activity may increase and then decrease during the process of development, as first conjectured by [Williamson \(1965\)](#). See [Henderson \(2005\)](#) or [Kim \(2008\)](#) for further discussions.

2. The main exception is [Henderson \(2003\)](#), who finds negative effects of urban primacy on economic growth. See also [Brühlhart and Sbergami \(2009\)](#) for a perspective closer to [Williamson \(1965\)](#). For a critical review of cross-country growth regressions, see [Durlauf, Johnson, and Temple \(2005\)](#).

3. With competitive wage setting, we expect a higher coefficient on city population when wages are used as the dependent variable relative to regressions with total factor productivity. This is because higher productivity implies a more intensive use of capital, which further raises the marginal product of labor and thus wages. Confirming this, there is mild evidence of higher agglomeration coefficients when wage is used as dependent variable instead of firm productivity ([Melo et al. 2009](#)).

4. However, one must be careful not to use employment density with small sub-city units. In some countries, the densest parts of cities are also those that host the least-skilled jobs and pay the lowest wages. This would certainly include parts of Washington, DC and downtown Baltimore.

5. Again, it would be preferable to compare the same workers across the cities that they have chosen and those that they have not chosen. In the absence of randomized experiments, this is not possible. [Greenstone, Hornbeck, and Moretti's \(2010\)](#) quasi-experiment on 'million dollar plants' comes closest to this ideal for firms' location choices.

6. It is necessary to be careful: imposing worker effects improves the quality of the estimation but is not a perfect solution because it assumes that mobility is exogenous.

7. Considering mobility explicitly in this type of work is extremely challenging. First, individuals have a large number of discrete locations from which to choose. This raises serious computational problems. Second, an instrument is required that would explain location choices but not wages. It is unclear whether there is any variable that explains location but is otherwise uncorrelated with wages. The only serious attempt to address this problem thus far has taken place within the structural estimation of a pre-imposed model ([Baum-Snow and Pavan 2012](#)).

8. To make this discussion more concrete, consider, for instance, shipbuilding and fishing. These two industries co-agglomerate along the coasts in the US and the UK. The fishing industry also buys a large amount from shipbuilding. It would nonetheless be far-fetched to interpret this link solely as evidence for the importance of local input-output linkages because the co-location of these two industries is also largely explained by their need to be on a coast.

9. However, the general tendency for more skilled workers to be over-represented in larger cities is only somewhat modest in advanced economies. [Behrens et al. \(2014\)](#) estimate the elasticity of college graduates with respect to city population to be approximately 7 percent.

10. There are some unresolved tensions between the 'agglomeration' literature and the 'human capital externality' literature. The key variable of interest (city size or average education) of each body of literature is typically ignored (missing) in the other. In addition, the city size literature argues that agglomeration economies are higher for more educated workers, whereas the human capital externality literature finds that less educated workers benefit more from being surrounded by more highly educated workers. Given the positive correlation between city population size and average education, it would be desirable to reconcile these two findings within a consistent framework.

11. Again, the fact that mobility is endogenous limits the validity of this strategy.
12. Looking at the pecuniary costs of French cities depending on their size, [Combes, Duranton, and Gobillon \(2012a\)](#) find a cost elasticity slightly larger than the agglomeration elasticity, suggesting that the net benefits of city size are close to being flat. Conducting a similar exercise for Colombian cities yields comparable results.
13. Of course, there could be some inefficiency inducing households to inefficiently move to cities, as suggested long ago by [Harris and Todaro \(1970\)](#). However, the literature has never found much support for this type of behavior (see [Lall, Selod, and Shalizi \(2006\)](#) and [Duranton \(2008\)](#) for reviews and discussions).
14. A reasonable case can be made that restrictive practices on the land market and the failure to redistribute these rents properly is inefficient and constitutes an obstacle to urban growth.
15. Interestingly, [Carlino et al. \(2007\)](#) also find that this elasticity of innovation with respect to employment density or population size is not constant across the urban hierarchy. Patenting per capita appears to peak at approximately 5,700 jobs per square kilometer or a city population size slightly below a million.
16. Strong evidence linking product innovation to subsequent employment growth is nonetheless still missing. [Kerr \(2010\)](#) documents that a ‘breakthrough’ innovation in a city leads to a wave of subsequent innovations. This increase in ‘follow-up’ innovative activity is particularly strong in research fields where foreign-born scientists are more numerous. This is arguably linked to the greater mobility of foreign-born vs. native scientists.
17. It is well known that the analysis of entrepreneurship is plagued by fundamental measurement problems. Self-employment captures most entrepreneurs, but unfortunately, it also captures many other workers who are not ‘true’ entrepreneurs. Using small firms is problematic for similar reasons. The entry of new establishments is also a highly imperfect measure, but for different reasons because it often measures establishments affiliated with an already established firm. To avoid these problems, one can focus on the more restrictive notion of new (independent) start-ups, which may be weighted by their employment.
18. Capturing the notion of ‘entrepreneurial culture’ is extremely difficult. For each sector, [Glaeser and Kerr \(2009\)](#) use the number of start-ups in other sectors. They find no association between start-ups in a sector and start-ups in other sectors of the same city after conditioning out other city variables.
19. To be more specific, true productivity is typically unobserved because one cannot easily condition out prices. Firm productivity studies do not measure the true ability of firms to generate output from inputs but rather their ability to generate value added.
20. Most models of market structure predict that more productive firms should be larger. The strength of the correlation between firm size and firm productivity should thus be indicative of how efficiently labor and capital are allocated. This exercise is known as the Olley-Pakes productivity decomposition ([Olley and Pakes 1996](#)).
21. If anything, the population growth rate of larger cities is lower. There is also evidence that more educated cities grow faster (see [Duranton and Puga \(2013\)](#) for a broader discussion of urban growth patterns).
22. Korea has been successful in this transition toward more differentiated cities ([Henderson et al. 2001](#)). Progress in other developing countries seems more uneven.
23. Further evidence is provided in [Aarland, Davis, Henderson, and Ono \(2007\)](#) and other related works by Vernon Henderson and Yukako Ono.
24. Although they are negatively correlated, diversity and specialization are not exact opposites. A city can be specialized if it has a sector with many times its national share of employment; it can, at the same time, be diversified if the rest of its employment mimics the national distribution of employment across sectors.
25. See the large literature initiated by [Harris and Todaro \(1970\)](#). See also [Lall et al. \(2006\)](#) and [Duranton \(2008\)](#) for critical assessments and discussions of policy misunderstandings of the Harris-Todaro framework.

26. Although there is a long tradition of evaluation of such programs in the literature, this recent wave of work is methodologically much sounder than earlier work. Most importantly, these recent studies are able to find more meaningful control groups to control for the endogeneity of the treatment. They are also able to work with the high level of spatial resolution that those studies require.

27. This does not imply that every aspect of labor market regulation should be uniform. The minimum wage, for instance, could differ across cities to reflect differences in productivity and in the cost of living.

28. This is not to say, of course, that issues surrounding residential squatting are perfectly understood. Parallel to the work cited above, recent works have investigated the political economy of squatting in developing cities (Feler and Henderson 2011) and modelled the micro-functioning of squatter settlements and eviction (Brueckner and Selod 2009).

29. The urban literature often considers a nominal measure of market access (city income weighted by inverse distance). Theoretical models highlight that what should matter is the 'real market access', which accounts for the price indices in each location. A large city nearby may not be an attractive market for local producers if the prices in that city are low. Unfortunately, local prices are unobserved. The trade literature has developed a number of ways to circumvent this problem (Redding and Venables 2004; Head and Mayer 2004).

30. Duranton and Turner (2012) estimate a 20-year elasticity of city population with respect to highway kilometers of approximately 0.15. Such an elasticity is enough to make roads a major determinant of urban growth, as suggested by most theoretical models of cities. However, in terms of cost-benefit analysis, this elasticity is low when one wants to justify the constructions of more highways in US metropolitan areas.

31. What distinguishes this recent wave of work on the effects of infrastructure relative to previous work is its attention to identification issues. Regressing an urban outcome, such as suburbanization in the case of Baum-Snow (2007), on the presence of highways may fall foul of the fact that both variables are simultaneously determined. For instance, highways may have been built to accompany the movement of downtown residents to the suburbs. To solve this problem, Baum-Snow (2007) develops an ingenious instrumental variable strategy that rests on the fact that US highways were originally planned for a set of different purposes. This type of strategy is further developed by Duranton and Turner (2012) who look at urban growth in the US.

32. Baum-Snow et al. (2013) also examine roads and confirm for China the findings of Baum-Snow (2007) regarding the importance of roads for residential decentralization. They find no effect of roads on the location of manufacturing activity, which may not be surprising given the reliance of Chinese manufacturing on rail. Banerjee, Duflo, and Qian (2009) provide further evidence about the effect of transportation on the development of China. See also Faber (2013).

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Does FDI Bring Good Jobs to Host Countries?

Beata S. Javorcik

Are jobs created by foreign investors good jobs? The evidence reviewed in this article is consistent with the view that jobs created by foreign direct investment (FDI) are good jobs, both from the worker's and the country's perspective. From the worker's perspective, this is because such jobs are likely to pay higher wages than jobs in domestic firms, at least in developing countries, and because foreign employers tend to offer more training than local firms do. From the country's perspective, jobs in foreign affiliates are good jobs because FDI inflows boost the aggregate productivity of the host country. JEL codes: F21, F23, F61, F66

One of the reasons why policy makers in developing and developed countries strive to attract foreign direct investment (FDI) is to create new jobs in their economies. But are the jobs created by multinational enterprises good jobs? Some jobs do more for development than others because of their greater contribution to poverty reduction and, perhaps more importantly, because of their knowledge externalities. If we accept this premise, then developing countries should not only focus on job creation but should also strive to create good jobs. From the worker's perspective, a good job is a job that leads to a higher standard of living—that is, a job that provides higher earnings, greater potential for growth in earnings and higher satisfaction. From the country's perspective, good jobs are jobs whose productivity is above the country's average, jobs with greater productive externalities, and jobs with potential for productivity growth. In this paper, we adopt these two perspectives to examine whether jobs created as a result of FDI inflows can be considered good jobs.¹ First, we take the worker's perspective and review the literature on the impact of foreign ownership on wages, worker training and job stability. Second, we take the host country's perspective and review the evidence on knowledge externalities associated with FDI.

The Workers' Perspective

FDI and Wages

A large number of empirical studies find that foreign affiliates pay higher wages relative to domestic firms in both developed and developing countries. The wage differential between domestically- and foreign-owned firms ranges from approximately 10 to 70 percent, depending on the country considered (see the studies cited by [Heyman, Sjöholm, and Tingvall 2007](#)).² Several explanations have been proposed for why this may be the case. Foreign firms may pay a wage premium to prevent labor turnover that leads to knowledge spillovers and benefits their domestic competitors ([Fosfuri, Motta, and Ronde 2001](#)). Higher productivity and the resulting higher profitability of foreign affiliates may translate into higher wages because of rent-sharing arrangements between foreign firms and their employees ([Budd, Konings, and Slaughter 2005](#)). Higher wages paid by foreign affiliates may serve as compensation for a higher labor demand volatility in foreign plants ([Fabri, Haskel, and Slaughter 2003](#)) or for a higher foreign plant closure rate ([Bernard and Sjöholm 2003](#)). It is also possible that due to a lack of knowledge of the local labor market, foreign firms may find it difficult to identify and attract good workers without paying a wage premium ([Lipsey and Sjöholm 2004](#)). The higher wages paid by foreign affiliates may also be a result of cherry picking, in which foreign companies acquire domestic firms with above-average human capital ([Almeida 2007](#)). Finally, higher wages may be a reflection of unobservable worker characteristics, such as higher ability or greater motivation.

A formal argument for the foreign direct investment (FDI) wage premium in developing countries has been proposed by [Egger and Kreickemeier \(2013\)](#). The authors develop a general equilibrium two-country model with heterogeneous producers and rent sharing at the firm level due to the fairness preferences of workers.³ There are two sources of an FDI wage premium in the model. First, because multinational firms are more productive, they earn higher profits and therefore pay higher wages. The second effect is a firm-level wage effect: because rent sharing relates to a firm's global profits, a multinational pays higher wages than an otherwise identical firm that does not choose multinational status. In a setting with identical countries, the multinational wage premium disappears once firm characteristics, such as productivity, are controlled for because all firms above a certain productivity threshold will choose to become multinational. In a setting with asymmetric countries, the threshold productivity level necessary to become multinational is higher for multinationals headquartered in the less advanced economy—a finding that is consistent with the stylized fact that most FDI flows from more advanced to less advanced countries. Therefore, in the less advanced economy, foreign multinationals and purely national firms with identical productivity levels coexist.

These multinationals pay higher wages than their otherwise identical national competitors because they have higher global profits, which they share with their workforce in both countries. Thus, the FDI wage premium exists only in less advanced countries.

Examining the causal effect of foreign ownership on wages is quite challenging due to the demanding data requirements. Ideally, to establish the causal effect of foreign acquisitions on wages, one would like to trace the pay of individual workers who are continuously employed in firms that change ownership and control for unobservable worker heterogeneity as well as firm heterogeneity.⁴

The recent availability of linked employer-employee data has allowed researchers to make progress in this area. The broad message that emerges from these studies is that although the FDI wage premium appears to be small or even negative in industrialized countries, it is positive in emerging markets.

One of the first studies of this type is by [Heyman, Sjöholm, and Tingvall \(2007\)](#), who use matched employer-employee data from Sweden for the second half of the 1990s. In their most demanding specification, they use propensity score matching to create a control group for the sample of Swedish firms that underwent foreign acquisitions.⁵ Then, they employ the difference-in-difference estimator to examine whether the wages of individual workers have changed as a result of foreign acquisitions. Most importantly, they are able to control for individual fixed effects. Because they restrict their sample to workers who remain in the same firm for the entire period of observation of the firm, they obtain within-individual and within-firm estimates. This means that they control for both time-invariant individual- and firm-specific effects, thus accounting for a systematic sorting of individuals across firms. Once they do so, the small foreign ownership premium found in less demanding specifications becomes negative and equal to -2 percent. In their data, foreign ownership is defined as the majority (more than 50 percent) of a firm's votes being foreign owned. This means that in the analysis, a change from foreign ownership of 49 percent to more than 50 percent would be defined as a foreign acquisition. Presumably, we would not expect to see large wage effects of such an ownership change, which would suggest that their findings should be treated as a lower bound.

[Almeida \(2007\)](#) considers matched employer-employee data from Portugal from the 1990s and uses a conventional cut-off of 10 percent to define foreign ownership. Unfortunately, due to the poor quality of worker identifiers, she is unable to control for unobservable worker heterogeneity. However, she is able to keep the composition of the workforce fixed before and after the acquisition and to examine the evolution of the average wage at the firm level. When she considers only manufacturing firms, she finds that following foreign acquisition, average wages increase by 2.2 percent for low-educated workers (with no more than nine years of schooling) and by 4.3 percent for highly educated workers (with more than nine years of

schooling). In both cases, these changes are expressed relative to the average wages paid by domestic firms in the same time period. Almeida hypothesizes that the difference in the wage adjustment between the two groups can be explained in the following way. If, after the acquisition, total profits increase and highly educated workers have greater bargaining power (due to the accumulation of firm specification skills), their wage adjustment may be higher. However, somewhat surprisingly, there is no statistically significant wage adjustment following foreign acquisition when the sample includes services industries. No explanation is provided for why this may be the case.

Hijzen et al. (2013) rely on linked employer-employee data from Brazil, Germany, Portugal, and the United Kingdom. Similar to Heyman, Sjöholm, and Tingvall (2007), they define foreign acquisitions as a change from having no or less than 50 percent foreign ownership to more than 50 percent of assets being foreign owned. In their most stringent specification, they use propensity score matching at the firm-worker level.⁶ The matching procedure is conducted separately for a combination of year, manufacturing vs. services, and skill group (unskilled, semi-skilled, skilled) and is combined with a difference-in-differences approach. The average estimated effect is equal to approximately 3 percent in Germany and 6 percent in Brazil. Both estimates are significant only at the 10 percent level. The lack of statistically significant effects for the United Kingdom and Portugal may be due to smaller samples (9,348 and 923 matched workers, respectively).

Earle, Telegdy, and Antal (2013) benefit from a very long panel encompassing 4,926 foreign acquisitions in Hungary. They also rely on linked employer-employee data that capture a random sample of approximately 6.6 percent of production workers and 10 percent of non-production workers in the firms considered. They employ a majority ownership definition of FDI, though they report that a 10 percent definition would change the results only slightly. The acquisitions they study nearly always involve large changes in ownership share; 70 percent of acquisitions occur in firms whose pre-acquisition foreign share is zero. Their propensity score matching is conducted at the firm level, and matches are restricted to the same industry-year cell. When worker fixed effects are included and the analysis is restricted to incumbent workers, the estimated FDI premium is approximately 4.5 percent.⁷ The authors find positive effects for all education, experience, and gender groups, occupations, and wage quantiles. Interestingly, subsequent divestment to domestic owners largely reverses the estimated effects.

In sum, the results from the existing literature are in line with the theoretical predictions of Egger and Kreickemeier (2013). There is evidence of a positive FDI wage premium of between 4.5 and 6 percent in emerging markets (Hungary and Brazil), whereas the results from advanced economies are mixed, ranging from a small positive premium to either no significant effect or even an FDI wage discount.

It has been postulated that as a result of knowledge brought by foreign investors to the host country, the marginal productivity of workers in foreign affiliates should be higher than in domestic firms. If this productivity advantage is significant, equilibrium wages should rise in response to increases in FDI. In other words, an overall shift in the aggregate labor demand curve could lead to upward pressure on wages for both domestic and foreign firms. This would be a pecuniary spillover. Alternatively, there could be spillovers due to human capital accumulation. The entry of multinationals brings new knowledge, which is then absorbed by domestic workers, increasing the domestic stock of human capital and making the local labor force permanently more productive. Although there is evidence in the United States of wage spillovers from domestic to foreign firms, in Mexico and Venezuela, FDI is associated with higher wages only in foreign affiliates. There is no evidence of wage spillovers leading to higher wages for domestic firms in these countries (Aitken, Harrison, and Lipsey 1996).

FDI and Worker Training

From the worker's perspective, employment in a foreign affiliate may be more rewarding than employment in a local firm if the former offers more opportunities for training and professional development. The existing evidence supports this view. For instance, Filer, Schneider, and Svejnar (1995) find that foreign-owned firms in the Czech Republic spent 4.6 times more than domestic firms did on hiring and training. A study focusing on Malaysia also shows that foreign-owned firms provide more training to their workers than do domestic enterprises (World Bank 1997). Anecdotal evidence additionally suggests that foreign affiliates tend to have a more meritocratic culture that makes them more appealing employers, particularly for female workers, in more traditional societies such as Japan (The Economist 2011).

FDI and Job Stability

Workers tend to value stable jobs. Evidence for the United States and Indonesia suggests that multinational firms are less likely to shut down than are domestic firms. This pattern is due to their larger size and superior productivity relative to domestic firms. However, after accounting for the fact that multinationals are typically larger and more productive, they are more likely to shut down than are domestic firms. These findings are based on figures from the United States from the late 1980s and 1990s examined by Bernard and Jensen (2007) and Indonesian data covering the 1975–89 period analyzed by Bernard and Sjöholm (2003). However, more recent data from Indonesia spanning the 1988–96 period indicate that multinational firms are less likely to shut down than are comparable domestic enterprises (Harrison and Scorse 2010). Harrison and Scorse attribute the difference between their findings and the results of Bernard and Sjöholm to the fact that prior to 1990,

the number of foreign-owned enterprises in Indonesia was small; consequently, a few plants could lead to large rates of entry and exit.

The Host Country's Perspective

From the host country's perspective, good jobs are jobs with above-average productivity, jobs with potential for productivity growth, and jobs that result in knowledge externalities. This section presents arguments for why jobs in foreign affiliates tend to meet these criteria. It begins by arguing that multinationals are producers of knowledge. Then, this section presents evidence suggesting that multinationals transfer knowledge to their foreign affiliates. Finally, the section reviews evidence of FDI spillovers.

Multinationals as Producers of Knowledge

Engaging in FDI is costly because of the need to set up new productive facilities. Moreover, foreign affiliates are disadvantaged relative to indigenous competitors in the host country due to the lack of familiarity with the local rules and regulations and consumers' preferences. Therefore, only the most productive firms or, to use [Dunning's \(1988\)](#) term, firms that possess "ownership advantages" are able to successfully compete in foreign markets. According to Dunning, these ownership advantages can take the form of new technologies, know-how or management techniques, and well-established brand names. These intangible assets, developed in headquarters, can easily be transferred to foreign subsidiaries, and their productivity is independent of the number of facilities in which they are employed. The existence of ownership advantages is reconfirmed in the recent theory of heterogeneous firms, which suggests that only the most productive establishments can afford the extra cost of setting up production facilities in a foreign country and predicts that multinationals come from the upper part of the productivity distribution of firms in their country of origin ([Helpman, Melitz, and Yeaple 2004](#)).

Consistent with the existence of ownership advantages, the data confirm that multinationals are heavily involved in the creation of new knowledge through their engagement in research and development (R&D) activities. In 2002, 700 firms, 98 percent of which were multinational corporations, accounted for 46 percent of the world's total R&D expenditure and 69 percent of the world's business R&D. Given that there existed approximately 70,000 multinational corporations in the world at that time, this is a conservative estimate. In 2003, the gross domestic expenditure on R&D of 3.84 billion dollars by the eight new members of the European Union⁸ was equal to approximately half of the R&D expenditure of Ford Motor (6.84 billion), Pfizer (6.5 billion), DaimlerChrysler (6.4 billion) and Siemens (6.3 billion)

during the same year and was comparable to the R&D budget of Intel (3.98 billion), Sony (3.77 billion), Honda and Ericsson (3.72 billion each) (UNCTAD 2005). More than 80 percent of global royalty payments for international transfers of technology in 1995 were made from foreign subsidiaries to their parent firms (UNCTAD 1997).

The prevailing view that R&D activities are undertaken only in headquarters of multinational corporations is no longer valid. According to UNCTAD's survey of the world's largest R&D investors conducted in 2004–5, the average respondent spent 28 percent of its 2003 R&D budget abroad, including in-house expenditure by foreign affiliates and extramural spending on R&D contracted to other countries (UNCTAD 2005). The shift of R&D activities abroad has been driven by the need to adapt products to the host country conditions and by cost saving.

The above arguments suggest that FDI can serve as a channel of knowledge transfer across international borders.

Evidence of the Productivity Advantage of Foreign Affiliates

Establishing a causal relationship between foreign ownership and the productivity of foreign affiliates is challenging because of selection bias. The superior performance of foreign affiliates documented by many studies (e.g., Aitken and Harrison 1999; Javorcik 2004) may simply reflect cherry picking of the best-performing local producers as foreign acquisition targets, or it may be a result of greenfield investments (i.e., newly set up plants) occurring in the most productive industrial niches rather than being due to productivity advantages brought by foreign ownership per se.

The handful of studies that examine the causal relationship between foreign ownership and firm performance produce mixed results. Harris and Robinson (2003) use data from the United Kingdom and find that foreigners acquire the best-performing domestic firms and that foreign ownership does not lead, in general, to improved performance of the acquisition targets. In contrast, Conyon et al. (2002) conclude that acquisitions have a positive effect on the labor productivity of acquired firms in the United Kingdom. A similar conclusion is reached by Girma and Görg (2007), who study food and electronics sectors in the United Kingdom, and Griffith (1999), who considers the British car industry.

The lack of consistent findings in studies focusing on industrialized countries mirrors the pattern found by studies of wage effects. It is also not surprising given that the productivity gap between multinationals and their acquisition targets is most likely not as large in the United Kingdom. One would expect the gap to be larger in the case of developing countries; thus, one would anticipate larger productivity effects of foreign acquisitions.

The only study focusing on a developing country, by Arnold and Javorcik (2009a), is based on Indonesian plant-level data from the Manufacturing Census covering the 1983–2001 period and confirms that a change from domestic to

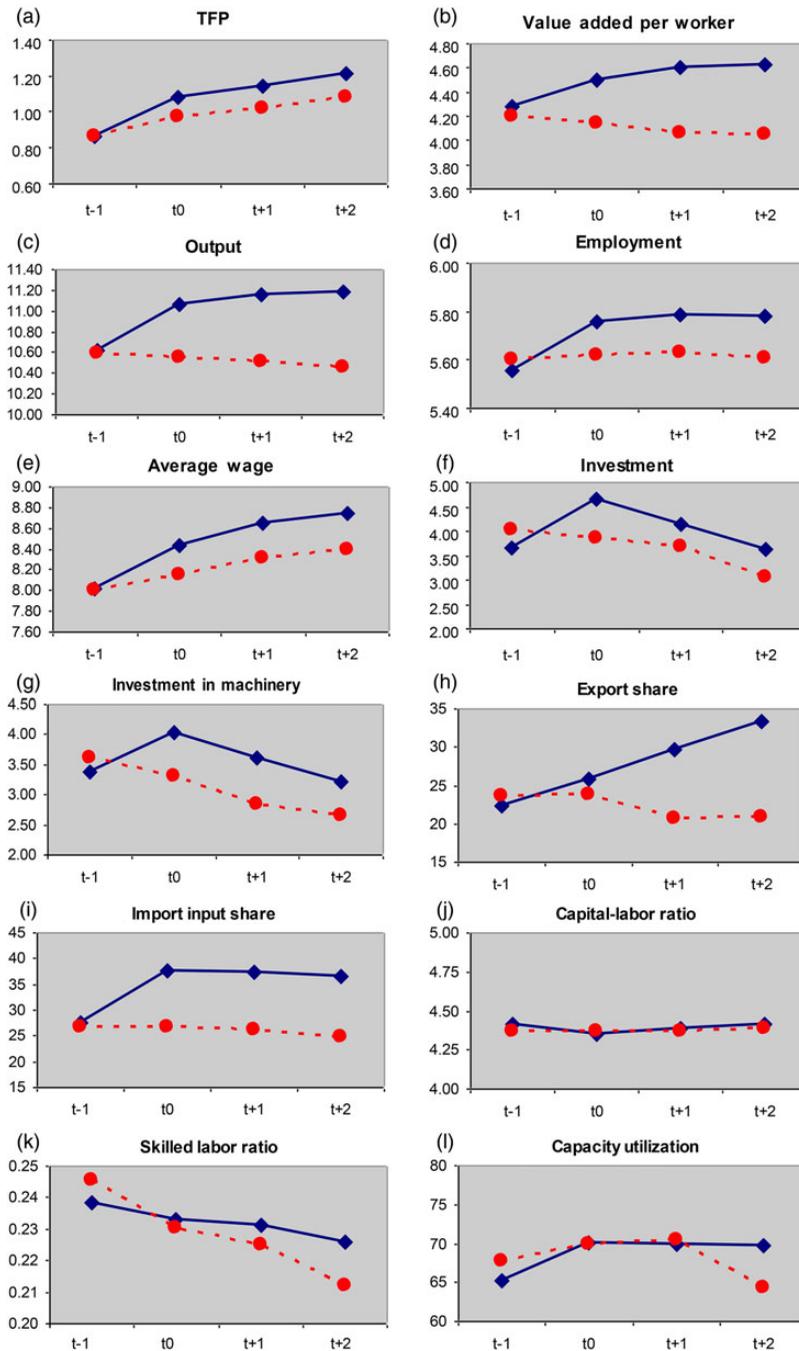
foreign ownership leads to improved performance. The study combines propensity score matching (within industry-year cells) with a difference-in-differences approach. The results suggest an increase in plant productivity reaching approximately 13.5 percent in the third year under foreign ownership. These productivity improvements occur simultaneously with increases in investment in machinery and equipment, employment, wages and output, suggesting an on-going restructuring process. Plants that receive foreign investment also become more integrated into the global economy by exporting a larger share of their output and sourcing a larger share of their inputs from abroad (figure 1). These patterns are consistent with acquired plants receiving a transfer of technologies embodied in machinery and equipment as well as in imported inputs.

Proprietary technologies constitute only part of multinationals' ownership advantages. Tacit knowledge, know-how, management techniques, and marketing strategies may be equally important drivers of the success of multinationals. The transfer of these intangible assets can be very valuable to FDI recipients in developing countries. Arnold and Javorcik's research is suggestive of such a transfer. While their results show that foreign ownership does not induce increases in the skill intensity of the labor force (defined as the share of white collar workers in total employment) or the capital-labor ratio, it leads to higher labor productivity (and total factor productivity).

Several explanations are consistent with the observed patterns. It is likely that new foreign owners introduce organizational and managerial changes that make the production process more efficient by reducing waste, lowering the percentage of faulty product and using labor more effectively.⁹ It is also possible that although foreign owners do not alter the skill composition of labor, they are able to attract more experienced and better-motivated employees. They may also substitute expatriate staff for local managers and introduce pay scales linked to performance. This would be in line with the earlier observation that acquired plants hire a large number of new workers and increase the average wage. Finally, foreign owners may invest more in staff training, which is consistent with the evidence mentioned earlier. Another possibility is that the use of higher-quality inputs or more suitable parts and components translates into higher productivity, which is consistent with the observed increase in the use of imported inputs in the aftermath of foreign acquisition.¹⁰

The productivity effects of foreign acquisitions are not limited to the manufacturing sector. A study by [Arnold, Javorcik, and Mattoo \(2011\)](#) finds that the foreign acquisitions of Czech service providers resulted in large changes in the labor productivity and sales of the acquired firms. These findings are consistent with foreign services providers bringing new technologies and know-how to the Czech Republic and providing services with greater appeal to Czech consumers.

Figure 1. Comparing performance of acquired and control plants over time



Notes: The solid line denotes the treated group (acquired plants). The dashed line represents the control group. t0 denotes the year of foreign acquisition.

Source: Arnold and Javorcik (2009b).

The findings of econometric studies are consistent with the conclusions of the case study literature. In a survey of case studies from around the world, Moran (2007) provides many examples of knowledge, know-how, and technology transfer from parent companies to foreign affiliates. However, he also argues that in distorted environments where host governments impose local content, joint venture or technology transfer requirements, foreign affiliates are less likely to receive such transfers.

In sum, the existing evidence is supportive of knowledge transfer occurring between headquarters and foreign affiliates, at least in the context of developing countries. In turn, this means that foreign affiliates have the potential to become sources of knowledge externalities.

FDI Externalities

Conceptually, one can distinguish two types of externalities associated with FDI. The most important type from the host country's perspective is *knowledge spillovers*, which occur when knowledge created by a multinational enterprise is used by an indigenous firm and the indigenous firm does not (fully) compensate the multinational enterprise. Typically, this happens through the demonstration effect (indigenous firms obtain knowledge about new products, technologies, marketing and management strategies or business opportunities in foreign markets by observing the actions of foreign affiliates), movement of labor (indigenous firms hire workers trained by multinationals) or the transfer of knowledge from foreign affiliates to their suppliers or customers (provided affiliates are not compensated for the transfer). The second type of externality comprises *pecuniary externalities*, which take place through firm-to-firm interactions and occur through prices in a properly functioning market. For instance, if the entry of foreign affiliates into downstream sectors creates increased demand for inputs, it may create incentives for indigenous firms to invest in product upgrading, cost-saving technologies or increased capacity, all of which may lead to better performance. The entry of foreign affiliates may also change the market structure and increase the level of competition in a manner similar, for instance, to trade liberalization leading to competitive externalities.

Econometric studies of *intra-industry* spillovers from FDI are usually unable to distinguish between the various spillover channels. A typical study relates the total factor productivity of indigenous firms to some proxies for FDI presence in the same industry. This means that the empirical results capture both knowledge spillovers and competitive externalities. As noted by Aitken and Harrison (1999), if the increase in competition leads to local firms losing part of their market share and spreading their fixed cost over a smaller market, a negative correlation may be found between FDI presence and the performance of indigenous firms in the short and medium run. In the long run, the weakest performers exit, which then reverses the sign of the correlation. Thus, the conclusions of empirical studies about intra-

industry spillovers from FDI depend on whether knowledge spillovers dominate competitive externalities or vice versa. This depends on the host country's characteristics and the type of FDI it receives.

A study by [Aitken and Harrison \(1999\)](#) based on a panel of more than 4,000 Venezuelan plants between 1976 and 1989 finds that FDI inflows lead to negative spillover effects. The authors first show that increases in foreign equity participation are correlated with increases in total factor productivity in recipient plants with fewer than 50 employees but not in other plants. Then, they find that increases in FDI presence negatively affect the total factor productivity of domestic firms in the same industry. Their interpretation of the latter finding is that the expansion of foreign affiliates reduces the market share of local producers, forcing them to spread their fixed cost over a smaller volume of production, which results in lower observed total factor productivity.

The patterns observed by Aitken and Harrison can be explained by the host country's conditions. As noted by [Moran \(2007\)](#), their finding that only some plants benefit directly from an increase in foreign ownership suggests that FDI in Venezuela presented limited potential for productivity spillovers. Moran argues that this situation was due to heavy restrictions imposed by the government on foreign investors, which included strict joint venture and local content requirements. Further, foreign investors were forbidden to exercise confidentiality and the exclusive use of trade secrets in their mandatory joint ventures, which lowered their incentives for technology transfer. During the time period considered in the study, Venezuela was pursuing an import substitution strategy; thus, indigenous producers were not exposed to significant competition from abroad. This situation may explain why FDI inflows could have had a large negative effect on the market shares of indigenous producers.

The findings of Aitken and Harrison contrast sharply with the results obtained by [Haskel, Pereira, and Slaughter \(2007\)](#), who find evidence consistent with positive intra-industry FDI spillovers in the United Kingdom. Using a plant-level panel covering the manufacturing sector from 1973 through 1992, they find that a 10 percentage-point increase in foreign presence in a United Kingdom industry raised the total factor productivity of that industry's domestic plants by approximately 0.5 percent. They also show that spillover effects were larger for lower-performing plants.

In contrast to Venezuela, foreign affiliates operating in Britain exhibited higher value added per worker relative to indigenous firms in the same industry. They were also responsible for a large share of R&D effort undertaken in the United Kingdom ([Griffith, Redding, and Simpson 2004](#)). This finding suggests that foreign affiliates in Britain had the potential to become a source of knowledge spillovers. The sophistication of the British firms and the openness of the country to international trade also suggest that competition externalities were unlikely to be large in the United

Kingdom. The observation that lower performers benefited more from spillovers is consistent with the sophistication of the British manufacturing sector and thus the limited room for learning.

The inability of the empirical literature to distinguish between knowledge spillovers and competitive externalities explains why surveys of the literature on intra-industry spillovers conclude that the existing results are mixed (Görg and Strobl 2001; Saggi 2002; Görg and Greenaway 2004; Smeets 2008). However, some progress has been made on this front. A novel and interesting approach to examining intra-industry spillovers is adopted by Kee (2010) who is able to identify business relationships between Malaysian garment producers and their suppliers of intermediate inputs. Her results are consistent with Malaysian firms becoming more productive as a result of sharing suppliers with foreign affiliates.

Three studies explicitly focus on spillovers that occur through the movement of labor. Görg and Strobl (2005) employ Ghanaian data that indicate whether the owner of a domestic firm has previous experience working for a foreign affiliate and relate this information to firm-level productivity. Their results suggest that firms that are run by owners who worked for multinationals in the same industry immediately prior to opening their own firm are more productive than other domestic firms. Balsvik (2011) documents extensive labor mobility flows from multinationals to non-multinationals in Norwegian manufacturing during the 1990s. During this period, 14,400 workers moved from multinationals to non-multinationals. By the year 2000, 28 percent of workers employed in non-multinationals had previously been employed in multinationals. Balsvik shows a robust and significant positive correlation between the share of workers with multinational experience and the productivity of non-multinationals. This finding is consistent with spillovers through labor mobility. Workers with multinational experience contribute 20 percent more to the productivity of their plant than do workers without such experience, even after controlling for differences in unobservable worker characteristics. The difference between the private returns to mobility and the productivity effect at the plant level suggests that this type of labor mobility represents a knowledge externality. The same issue is examined by Poole (2013), though in a somewhat different manner. Poole also uses matched employer-employee data, but she focuses on Brazil and studies wage spillovers. She estimates wage equations for incumbent workers in domestic firms and finds that their wages are positively affected by the share of workers with prior work experience from multinationals.

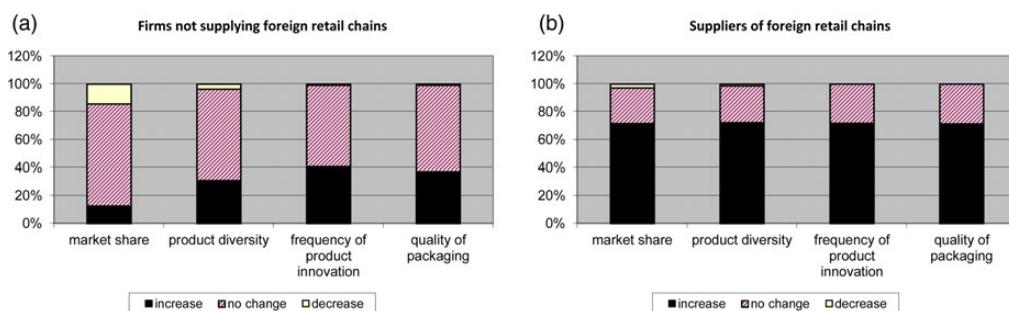
Another set of studies examines knowledge spillovers from FDI pertaining to export markets. Based on panel data on 2,104 Mexican manufacturing plants from the 1986–90 period, Aitken, Hanson and Harrison (1997) demonstrate that the presence of exporting multinationals in the same region reduces the costs of exporting for Mexican firms. No such externalities are found for exporting firms in general. Using detailed Chinese trade statistics that identify the type of exporters

and their location, Chen and Swenson (2008) find that the presence of foreign affiliates in the same sector is associated with more and higher unit value trade transactions by Chinese firms. Using the same data set, Swenson (2007) shows that the positive association between the presence of foreign affiliates and new export connections by private Chinese exporters may be driven by information spillovers.

The conclusions of the literature on *inter-industry* effects are more clear-cut. Using firm-level panel data from Lithuania covering the period 1996–2000, Javorcik (2004) finds evidence suggesting that FDI presence boosts the productivity of supplying industries, but not the industries in which foreign affiliates operate. She argues that although multinationals have an incentive to prevent knowledge from leaking to their local competitors, they may also have an incentive to provide assistance to their local suppliers in upstream sectors. A one-standard-deviation increase in foreign presence in the sourcing sectors is associated with a 15 percent rise in the productivity of Lithuanian firms in the supplying industry. The productivity effect is found to originate from investments with joint foreign and domestic ownership but not from fully owned foreign affiliates, which is consistent with the evidence of a larger amount of local sourcing undertaken by jointly owned projects. The conclusion with respect to spillovers from fully versus partially owned foreign affiliates is further confirmed by Javorcik and Spatareanu (2008) in the context of Romania. Evidence of positive spillovers through backward linkages is also found in Indonesia by Blalock and Gertler (2008) and in China by Liu (2008) and Du, Harrison, and Jefferson (2011).¹¹ Typically, the studies of *inter-industry* spillovers from FDI do not distinguish between pecuniary spillovers and knowledge spillovers. An exception is Javorcik (2004), who made some progress toward this goal by controlling for the demand from foreign affiliates based in downstream sectors.

Almost all studies of *inter-industry* effects rely on industry-specific measures of foreign presences in downstream sectors. There are, however, two studies that explicitly identify suppliers of multinationals operating in their country and thus test *directly* whether suppliers are more productive than non-suppliers. Chung, Mitchell, and Yeung (2003) examine this question in the context of the American automotive component industry in the 1980s. They find that Japanese FDI into automotive assembly was associated with overall productivity improvements in the US auto component industry. Somewhat surprisingly, their results indicate that Japanese assemblers tended to purchase components from *less productive* US suppliers and that the productivity growth of US suppliers affiliated with Japanese assemblers was not greater than that of other non-affiliated US suppliers. Javorcik and Spatareanu (2009a) use data from the Czech Republic to make an explicit distinction between *self-selection* (i.e., the possibility that more productive firms become suppliers to foreign affiliates) and the *learning* effect (i.e., the productivity benefits that accrue to suppliers from their interactions with affiliates). They find evidence consistent with

Figure 2. Impact of entry of foreign retailers on Romanian firms



Source: Author's calculations based on data from Javorcik and Li (2013).

both high productivity firms having a higher probability of supplying affiliates and suppliers learning from their relationships with affiliates.

The studies mentioned so far focus primarily on manufacturing sectors, but FDI inflows into the retail sector can also generate knowledge externalities and pecuniary spillovers. A case study by Javorcik, Keller, and Tybout (2008) finds that the entry of Wal-Mart into Mexico facilitated the modernization of the retail sector and stimulated fundamental changes in the relationship between retailers and suppliers of soaps, detergents, and surfactants. The entry of Wal-Mart pushed high-cost suppliers out of business, benefited surviving producers by providing access to a larger market and prompted suppliers to introduce more innovations. Survey evidence from Romania confirms that firms that supplied foreign supermarket chains were more likely to innovate, diversify their production and improve the quality of packaging than firms that did not serve foreign retailers (figure 2). An econometric analysis based on Romanian firm-level data also finds that the expansion of global retail chains led to a significant increase in the total factor productivity in the supplying industries. A 10 percent increase in the number of foreign chains' outlets was associated with a 2.4 to 2.6 percent boost to the TFP in the supplying industries. The decomposition of the aggregate productivity in the supplying industries suggests that the boost to performance was driven by both within-firm improvements and between-firm reallocation (Javorcik and Li 2013).

Conclusions and Policy Implications

The evidence reviewed in this study is consistent with the view that jobs created by FDI are good jobs, both from the worker's and the country's perspective. From the worker's perspective, this is because such jobs are likely to pay higher wages than

jobs in indigenous firms, at least in developing countries, and because foreign employers tend to offer more training than local firms do. From the country's perspective, jobs in foreign affiliates are good jobs because FDI inflows tend to increase the aggregate productivity of the host country. This occurs through the entry of foreign affiliates with superior productivity (which extends the right-hand-side tail of the productivity distribution), exit of the least productive domestic firms due to competition externalities (truncation of the left-hand-side tail of the distribution) and a (partial) rightward shift of the productivity distribution as a result of knowledge spillovers. The latter effect is mostly driven by spillovers resulting from contacts between multinationals and their local suppliers.

The existence of positive externalities associated with FDI may suggest that a government intervention aimed at increasing FDI inflows may be warranted. How much should governments be willing to spend to attract foreign investors? The only study that provides explicit guidance on this point is the paper by [Haskel, Pereira, and Slaughter \(2007\)](#), which was reviewed earlier. This study finds that presence of foreign affiliates is positively correlated with the productivity of indigenous firms in the same industry. The authors calculate that an extra job in a foreign affiliate leads to an annual output boost to all British plants in the same industry equal to £2,440 in 2000 prices. This implies that the maximum amount of subsidy should not exceed the discounted value of spillovers summed over all the years a foreign affiliate will operate. Thus, for instance, with a 5 percent discount year, a foreign affiliate operating for 10 years will produce benefits equal to £18,841 per job. In reality, however, it is difficult to ensure that a foreign affiliate that is awarded FDI incentives will remain in operation for a sufficient number of years to warrant the subsidy. Moreover, it is not clear that the investment in question would not have happened in the absence of incentives. On a positive note, the study focuses only on *intra-industry* spillovers and ignores *inter-industry* spillovers, which may be larger in magnitude.

A less costly course of action may be to engage in investment promotion activities other than FDI subsidies. The main purpose of investment promotion is to reduce the costs of FDI by providing information on business conditions and opportunities in the host economy and by helping foreign investors address bureaucratic procedures. Investment promotion activities encompass advertising, investment seminars, participation in trade shows, direct marketing efforts, facilitating visits from prospective investors, matching prospective investors with local partners, helping to obtain permits and approvals, preparing project proposals, conducting feasibility studies and servicing investors whose projects have already become operational. Because obtaining information on investment opportunities in developing countries tends to be more difficult than gathering data on industrialized economies, investment promotion should be particularly effective in a developing country context.

The existing evidence from [Harding and Javorcik \(2011\)](#) suggests that investment promotion is a cost-efficient way of attracting FDI to developing countries. Based on

data on investment promotion efforts in 124 countries and figures on inflows of US FDI, Harding and Javorcik find that sectors designated as a priority for investment promotion purposes receive more than twice as much FDI as do non-priority sectors. Although the magnitude of the effect may seem large, it is not implausible. If one considers only positive flows of US FDI to developing countries, the median sector-level flow was equal to US\$11 million in 2004. Therefore, the estimated effect of investment promotion translates into an additional annual inflow of US\$17 million for the median sector-country combination. With regard to the costs of investment promotion, on average, an investment promotion agency spent US\$90,000 per sector targeted in 2004. Hence, a dollar spent on investment promotion corresponds to US\$189 of FDI inflows. Alternatively, the results indicate that priority sectors experience a 68 percent increase in affiliate employment compared with non-targeted sectors. This implies an additional 1,159 jobs for the average sector, or US\$78 per job created (in 2004 dollars).

These back-of-the-envelope cost-benefit calculations should be treated with caution. On the one hand, Harding and Javorcik's analysis considers only flows of FDI from the United States. As investment promotion is likely to have a similar impact on investors from other source countries, and their analysis underestimates the benefits of investment promotion activities. On the other hand, there may be other factors that contribute to the success of investment promotion and whose costs they do not consider (for instance, access to accelerated bureaucratic procedures for targeted sectors). Finally, the analysis captures the average, not the marginal, effect. In other words, it does not suggest that a large increase in investment promotion spending in countries that are already engaged in such a practice will lead to huge increases in FDI inflows. Instead, the authors interpret their results as suggesting that countries that are not involved in investment promotion may benefit from such activities.

Harding and Javorcik also find that investment promotion appears to be particularly effective in countries where obtaining information is more difficult and countries with more cumbersome bureaucratic procedures. These results indicate that the provision of information about the host country as well as assistance with red tape are the key aspects of investment promotion. There is no evidence that offering fiscal or financial incentives is effective for attracting FDI.

Of course, it is not enough to set up an investment promotion agency and expect a huge boom in FDI inflows. Successful investment promotion requires professionalism, effort and a commitment to customer service. It requires maintaining an up-to-date, attractive, and user-friendly website that includes relevant and useful information that an investor requires during the site selection process. Providing the necessary data to support this decision process can make a difference. As shown by [Harding and Javorcik \(2013\)](#), a higher quality of investment promotion agencies translates into higher FDI inflows. In the past decade, a country with an agency

awarded a quality score of 60 percent (on a 0–100 percent scale, as assessed by the Global Investment Promotion Benchmarking initiative of the World Bank Group) received, on average, 25 percent higher FDI inflows than did a country whose agency obtained a score of 45 percent (controlling for country-specific characteristics).

Once FDI enters a country, governments may wish to maximize the productivity benefits associated with FDI by assisting local firms in becoming suppliers to foreign affiliates. Econometric evidence from the Czech Republic suggests that less credit constrained firms are more likely to become suppliers to foreign affiliates (Javorcik and Spatareanu 2009b). This finding is consistent with the survey evidence from the same country indicating that foreign firms often require their prospective suppliers to make improvements prior to signing a contract (Javorcik 2008). It is also in line with the cross-country evidence suggesting that FDI stimulates economic growth in host countries with well-developed financial markets (Alfaro et al. 2004). Thus, authorities may wish to consider extending subsidized credit to prospective suppliers of foreign affiliates. Another possible policy intervention involves establishing supplier development programs that bring together local firms and foreign affiliates to help local firms meet the expectations of foreign customers.

Notes

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1. The *2013 World Development Report* (WDR) offers other examples of jobs with a broader positive impact on the society. For instance, the employment of women can result in improvements in their children's educational attainment and health. The availability of jobs that are suitable for women can increase parents' incentives to invest in girls' education. Jobs requiring that require interactions with other ethnic, social, or religious groups may contribute to building social cohesion. In turbulent environments, employment opportunities for young people can provide alternatives to violence and help restore peace. The WDR also gives provides examples of bad jobs. These are jobs that exploit workers, expose them to dangerous environments, or threaten their physical and mental well-being. These may also be jobs producing that produce negative externalities. For example, although jobs supported through transfers or privilege are lucrative to their holders, they undermine opportunities for others to find remunerative employment. Similarly, jobs that damage the environment put take a toll on the society.

2. The foreign wage premium decreases once firm characteristics, such as size, are controlled for (Harrison and Rodriguez-Clare 2010). However, a larger size of foreign affiliates may be a reflection of their superior productivity and thus a direct effect of their ownership status *per se* (see Arnold and Javorcik 2009).

3. Rent sharing implies that workers' wages are related to the employer's ability to pay.

4. Firm-level studies are unable to separate the effect of the wage changes of continuing workers from the impact of the changing composition of the labor force. If foreign acquisitions result in

increased reliance on skilled labor, they will automatically lead to an increase in the average wage and a firm-level foreign wage premium.

5. In other words, for each future acquisition target they find another (control) firm similar in terms of observable characteristics that will not be acquired by foreign interests. The underlying assumption is that the performance of the control firm is an accurate reflection of how the acquired firm would have performed in the absence of the ownership change.

6. Firm controls include industry and region fixed effects, log employment and its square and the average wage, whereas worker controls encompass wages, gender, age, age squared, and tenure.

7. The authors caution the reader that nearly half of workers with both pre- and post-acquisition observations have only a single observation either pre- or post-acquisition. Thus, these results most likely suffer from attenuation bias.

8. The group includes the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia. Because the 2003 figures were not available for Lithuania and Slovenia, the 2002 data were used for these countries.

9. A relevant example of organizational changes introduced by a foreign investor in its Chinese affiliate is presented in [Sutton \(2005\)](#) and cited by [Arnold and Javorcik \(2009\)](#). According to the interviewed engineer, what mattered was not the obvious alternation to the physical plant but rather inducing a shift in work practices. This shift involved a move away from traditional notions of inspection at the end of the production line to a system in which each operator along the line searched for defects in each item as it arrived and as it departed. The idea of such constant monitoring was partly intended to avoid adding value to defective units. More importantly, this system allowed for the quick identification and rectification of the sources of defects.

10. A lower percentage of faulty inputs may translate into a lower share of final products that must be rejected at the quality control stage.

11. For additional studies, see the literature review by [Görg and Greenaway \(2004\)](#) and [Smeets \(2008\)](#).

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Pathways from Jobs to Social Cohesion

Frank-Borge Wietzke

There is growing recognition that access to good jobs is an important driver of social cohesion. Although the economic dimensions of labor market outcomes are relatively well documented, evidence on the link between social cohesion and jobs is still surprisingly scarce. This paper, based on an earlier background report for the WDR 2013, presents empirical evidence for pathways between labor market outcomes and social cohesion. The findings indicate that formal employment is associated with a range of social outcomes and behaviors that are typically associated with higher levels of social cohesion. However, there are also indications that this relationship varies across dimensions of social wellbeing. In particular, social interactions and political activism among those in regular employment can either improve the quality of aggregate institutions or deepen existing social divides. labor markets, social cohesion, subjective wellbeing. JEL codes: I31, J01, O15

There is growing recognition that access to good jobs is an important driver of social cohesion. The World Bank's 2013 World Development Report on Jobs discusses the link between jobs and social cohesion as one of the three central pillars of its multidimensional framework, in addition to living standards and productivity (World Bank 2013, henceforth WDR). In a similar vein, the OECD, in its recent flagship report on social cohesion, argues that labor market outcomes are critical determinants of social stability, both because they influence the level and distribution of labor earnings and because jobs are critical loci of social interactions (OECD 2011).

Although the economic dimensions of labor market outcomes are relatively well documented, evidence on the connection between jobs and social cohesion is still surprisingly scarce. Sociologists have traditionally discussed social cohesion as a wider concept that is related, but in no way limited to class and status divides grounded in occupational categories (Norton and de Haan 2012). Recent research on social cohesion by economists has also focused on wider societal outcomes, such

as levels of trust, civic attitudes, or the quality of political institutions (Knack and Keefer 1995, 1997; Easterly and Levine 1997; Rodrik 1999; Easterly et al. 2006). However, few of these studies have specifically analyzed how behaviors and interactions that relate to social cohesion vary along with people's employment situations.

This paper, based on an earlier background report for the WDR 2013 on Jobs (Wietzke and McLeod 2012), seeks to fill this gap by discussing possible pathways between jobs and social cohesion. Following the WDR and the OECD recent report on the subject, I distinguish between a narrower and a broader definition of social cohesion. The narrower definition focuses on the capacity of societies and groups to peacefully manage possible collective action problems (WDR 2013, 127ff; Woolcock 2011). This involves a concern with subjective outcomes, such as trust and wellbeing, as well as 'bridging' professional relations that enable individuals and groups to communicate and collaborate across potentially divisive social and ethnic lines. The wider definition includes notions of social inclusion and mobility (OECD 2011; Club de Madrid 2009). This definition addresses concerns about social and political institutions that limit equal participation in the labor market (Silver 1994; Hills et al. 2007). The two definitions are linked because a fair distribution of social and economic opportunities is often identified as a primary source of peaceful relations between relevant social groups in modern capitalist societies (de Barros et al. 2009; Collier et al. 2003).

This paper integrates recent cross-disciplinary literature on these different dimensions of social cohesion in three steps. After a brief review of earlier writing on labor markets and social cohesion, I first discuss social barriers that limit the access to and mobility within the labor market. Following the long tradition of sociological and economic research on the subject, I focus on obstacles to mobility that are related to class and social background and on group-level and neighborhood interactions that are often linked to experiences of social exclusion and the breakdown of peaceful group relations.

In the next step, I discuss the potentially transformative functions of jobs. The WDR and the OECD's report on social cohesion both note that jobs can contribute to social cohesion by generating social relationships and identities across potentially divisive social and ethnic boundaries (WDR 2013, 126ff; OECD 2011, 154). The workplace and markets often offer opportunities for social interactions that extend beyond narrow voluntary contacts in people's neighborhoods or civic associations (Kilroy 2012; Mutz and Mondak 2006). Jobs can also contribute to important non-monetary dimensions of social development that are increasingly targeted by policy makers, such as life satisfaction or social and institutional spillovers (OECD 2011; WDR 2013, 85f). I focus on differences in life satisfaction across individuals of different employment status and on possible wellbeing spillovers that reduce differences between groups with uneven attachment to the labor market.

The last step discusses possible political threats to social cohesion. Political scientists and economists have traditionally been concerned that collective action problems and resulting lower levels of political organization among the unemployed may lead to very deep political differences across groups in the labor market (Lindbeck and Snower 2002; Olson 1982). These differences may lead to more permanent divides if groups with better attachment to the labor market use their superior social and political contacts to promote policies of worker protection over costlier employment policies that facilitate the entry of outsiders into the labor markets (King and Rueda 2008; Rueda 2005, 2006). From a social cohesion perspective, this raises a challenge for policy makers to implement policies that protect the interests of both labor market ‘insiders’ and ‘outsiders’.¹ Only integrated policies that directly address the root causes of uneven skills distribution and mobility prospects are likely to reap the full benefits of the potential transformative functions of jobs.

The review finds relatively convincing evidence for many of the postulated pathways between social cohesion and labor markets. For instance, research on intergenerational mobility suggests that parents’ occupational background is of decreasing importance as a determinant of economic opportunity (though there are contrasting results for other dimensions of family background, such as education or income). Similarly, ethnographic and survey research on work-related interactions provides strong illustrative examples that shared interests and interactions in the workplace can help bridge social divides.

However, there is less evidence that these separate effects combine to produce more cohesive societies at an aggregate level. Typically, the transitions from individual work-related experiences to the quality of aggregate social relations are mediated by a multitude of wider social and economic influences. These results suggest that from a social cohesion perspective, individual work-related experiences are most likely best studied in conjunction with aggregate social wellbeing outcomes and institutions. A purely micro-level analysis based on the individual wellbeing effects of jobs alone may overlook aggregate outcomes and interactions that are crucial for understanding why some societies manage to maintain high levels of social cohesion and others do not.

A related lesson is the relatively tentative nature of much of the evidence on the outcomes of social relations around jobs. Research on the economic consequences of jobs traditionally struggles with well-known selection problems as better-skilled or more motivated people may select into better jobs. These problems are typically magnified in the analyses of social interactions and network effects that tend to dominate the recent debate literature on jobs and social cohesion. To this point, relatively few studies have been able to address these endogeneity issues conclusively. Therefore, the review closes on a cautiously optimistic note: although there are strong indications that jobs can have the postulated positive consequences for social cohesion, a more careful analysis is required to substantiate these claims with robust evidence.

Previous Debates on Labor Markets and Social Cohesion

Previous scholarship has taken various approaches to the interaction between social cohesion and labor markets. First, what I call the ‘social atomization’ view has focused on the processes of labor market stratification and social segregation that undermine individual opportunities and mobility experiences. This view highlights the potentially divisive effects of increased professional specialization and the division of labor. Other contributions emphasize the potentially positive consequences of work-related interactions and identities, including the type of ‘bridging’ social relationships that are now emphasized in policy debates on social cohesion and jobs as well as political and institutional solutions for conflict resolution, which are often linked to more inclusive labor market and social protection policies.

Sociological research on work relations has traditionally been dominated by the social atomization view. Marx famously predicted that workers who were solely in command of their labor would inevitably rise to secure a larger share of the economic surplus. Marx’s ideas of societies that are divided between economically determined classes continue to play an important role in the work of some contemporary analysts of capitalist relations and politics (Wright 1979, 1997). Durkheim and Weber, often considered the founders of ‘modern sociology’, also struggled with the question of how functionally integrated societies could maintain their internal coherence through the capitalist transformation. Weber (1978), in particular, noted that the rise of capitalist relations would undermine traditional socio-political orders, replacing them with new orders of social stratification and rational-legalistic systems of bureaucratic rule (for an overview of classical sociological literature, see Norton and de Haan 2012).

More recent sociological work has elaborated the atomization argument against the background of increased international economic integration and rising wage inequalities (Norton and De Haan 2012). A large body of literature on ‘social exclusion’ in Europe has argued that macro-economic transformations, such as slowing economic growth and a shift away from manual work, would diminish the economic opportunities of lower-skilled workers and undermine formal and informal systems of solidarity (Silver 1994; Castells 1996; Paugam 1996; Byrne 1999; Hills et al. 2002; Alphonse et al. 2008). In the United States and Latin America, similar arguments have been made in the context of growing trends toward residential and racial segregation around deprived inner-city neighborhoods (Wilson 1987; Borjas 1995; Anderson 1999; Caldeira 2000; Katzman et al. 2004; Loury 2002).

More positive arguments about the consequences of jobs have emerged in the context of recent research on social interactions and networks. The large literature on social capital that began to dominate international debates on social development in the 1990s has traditionally considered the link between jobs and social outcomes to be a two-way relationship. People’s access to jobs (and other economic and

social outcomes) is determined by their social background and by their network of friends and contacts (Granovetter 1973, 1974; Bourdieu 1984, 1986; Coleman 1988). However, contacts and interactions in the workplace can also generate trust and 'bridging' social ties that help people collaborate across potentially divisive ethnic and social boundaries (Woolcock and Narayan 2000; Varshney 2002; Kilroy 2012; WDR 2013, 126ff).

Cross-country studies have suggested that these types of social relations can contribute to improved outcomes at the aggregate level. Key proxies of peaceful social relations, such as average levels of self-reported trust, or 'civic attitudes', are typically robustly and positively correlated with national growth rates and stability (Putnam 1993; Knack and Keefer 1997; Woolcock and Narayan 2000; Delhey and Newton 2003; Easterly et al. 2006).² The instrumental variables used in these studies further suggest that the extent of trust, civiness, or social capital in a society is related to initial levels of fractionalization between ethnic groups and to historical inequalities and middle class sizes (Easterly and Levine 1997; Knack and Keefer 1997; Rodrik 1999; Easterly 2001; Rothstein and Uslaner 2005; Easterly et al. 2006; Larsen 2007).

Though these studies do not typically account directly for labor market outcomes, some evidence on the link between jobs and social cohesion can be obtained from research on social and labor market policies. In political science, a large comparative body of literature on welfare state regimes and capital-labor relations argues that higher levels of equality and social cohesion in countries such as Sweden or Denmark are explained by historically less confrontational relations between workers and employers. These successes have been attributed to more effective institutions for the mediation of employers' and workers' interests and to more generous social protection policies that redistribute the benefits of growth between winners and losers of economic reform (Esping-Andersen 1990; Lindert 2004; Rothstein and Uslaner 2005; Larsen 2007; Iversen and Soskice 2009; Huber and Stephens 2012).³ More recently, a widely noted contribution by Acemoglu et al. (2012) describes variations in social cohesion and labor relations as equilibrium outcomes of the international division of labor. According to the authors, Scandinavian societies are able to maintain their more 'cuddly' forms of capitalism by free-riding on technological innovations generated by nations (such as the United States or the United Kingdom) with more liberal and competitive labor markets.

However, as this review illustrates, the flip side of these more collaborative arrangements is that advanced levels of welfare state development and worker protection can co-exist with very deep divides within the working-age population. On the one hand, collective bargaining over work conditions and social policies can lead to higher levels of social cohesion if institutions and policies are put in place to share the benefits of economic growth, even with groups that have weaker links to the labor market. On the other hand, the negotiation of employment conditions can

result in deep divides if those in protected positions prioritize their interests in job security over the broader goal of ensuring wide participation in the labor market.

Links between Jobs and Social Cohesion Discussed in this Paper

Though the literature has documented many potential connections between labor markets and social cohesion, systematic evidence on these interactions is often surprisingly scarce. Detailed links between individual-level work histories and macro-economic labor market trends are obviously difficult to establish. Most studies of social development have thus treated labor market dynamics as an influence that operates in the background without rigorous exploration of their precise effects on social outcomes. Similarly, at the micro level, many recent advances in research design that enable analysts to identify the causal effects of work on household economic welfare have not yet translated into the dimensions of interest in the context of social cohesion. For example, panel surveys, which provide increasingly robust information about the role of jobs for individual trajectories into and out of poverty, only infrequently report social indicators such as trust or social and political activities. This situation has made it difficult to link work-related experiences to individual behaviors and attitudes that are normally associated with higher levels of social cohesion.

In light of these limitations, the evidence for this paper primarily comes from research that has explored narrower aspects of the relationships between jobs and social cohesion. In sociology and economics, there is now a large and increasingly rigorous body of scholarship that provides estimates of social and economic barriers to social inclusion and mobility in and around labor markets. Other survey-based and ethnographic research has analyzed how the widely used indicators of social cohesion, such as trust, civic associations, and subjective wellbeing, vary along with employment status. Although these studies do not typically permit claims that work *causes* differences in social outcomes, they provide a first indication of how experiences and behaviors related to social cohesion differ across relevant groups in the labor market.

For the purpose of this review, a useful starting point is a simplified framework of the interaction between social and political institutions and labor market outcomes (Figure 1). Starting from the ‘social atomization’ view in sociology, I first discuss the social processes that influence selection into the labor market. The evidence reviewed here concentrates on the rich interdisciplinary literature on occupational and earnings mobility and on group- and location-specific influences, such as residential and social segregation. These processes relate primarily to the broader inclusion-centered definition of social cohesion used in this paper. However, there are also theoretical reasons to argue that unfair social barriers to work can facilitate conflict and the breakdown of peaceful group relations.

Figure 1. Pathways discussed in the paper



The next section discusses the potential positive consequences of jobs for social cohesion. Drawing on literature on social capital, I argue that once people are in work, associations and interactions made in and around the workplace can contribute to social cohesion by forging ties across otherwise divisive social or ethnic barriers. I discuss these outcomes using survey- and ethnography-based studies of social associations and relations of trust shared by members of the work force and evidence on the relevance of these experiences for inter-group and inter-ethnic relations. Other positive effects of jobs reviewed in the article include work-related life satisfaction. Among policy makers, subjective wellbeing is increasingly considered to be a central indicator for non-monetary dimensions of economic and social development (OECD 2011, 55ff; Dolan and Metcalfe 2012). I discuss differences in subjective wellbeing between the employed and unemployed as well as possible social interactions and spillovers that influence the likelihood that experiences of joblessness will translate into conflict.

The third step seeks to identify the consequences of labor market segmentation and work-related interactions for the negotiation of employment and social policies. Following the literature on ‘insider politics’, I focus on the possibility that people in more secure jobs use their superior social relations to advance their own interests of worker protection. The evidence reviewed includes micro-level data on the political

attitudes and preferences of the employed and unemployed as well as a comparative analysis of labor market policies. The section concludes by discussing social protection and employment policies that help overcome deeper social barriers to equal participation in the labor market.

Social Institutions and Unequal Access to Jobs

Within the framework outlined above, the first link is from social institutions to jobs. In the language of economics, this link works primarily through the uneven selection of individuals into different sections of the labor market. Some workers, because of their disadvantaged background, face a lower likelihood of permanent employment or upward mobility in the labor market. The key mechanisms involved are class- or identity-related inequalities in human capital endowments and career trajectories as well as identities and behaviors associated with group- and location-based processes of social segregation.

Occupational Mobility

From the social atomization perspective of classical sociology, there is a long tradition of linking class background to individual mobility experiences. In particular, the Weberian tradition in sociology has related class and status background to differences in individual 'life chances'. These status-related opportunities are manifest in the skills and human capital that different status groups bring to the labor market and in the broadly similar earning expectations, levels of security, chances of advancement, and relations of control and autonomy that are observable within certain categories of occupations (Erikson and Goldthorpe 1992; Breen and Rottman 1995; Grusky and Weeden 2006, 2007). Conceptually, this association between class-related endowments and individual outcomes works in similar ways as in the growing economic literature on opportunity equality (Sen 1985; Roemer 1998; Bourguignon 2006): 'In both cases emphasis is placed on the opportunities that a given set of endowments affords, thus leaving open the possibility that such opportunities may be exercised or realized in different ways (depending on preferences or "luck")' (Grusky and Kanbur 2006, 17).⁴

Economists, though they are typically less concerned with notions of class, also recognize that socially inscribed status roles and identities can influence social and economic outcomes. Akerlof and Kranton (2000) have argued that social identities, including how people view themselves and others, can have an important effect on individual behaviors and opportunities. They suggest that the incorporation of socially prescribed identities and behaviors into the utility function helps explain a range of outcomes that contribute to inequality and stratification, such as gender

discrimination or the economics of social exclusion and poverty. [Loury \(2002\)](#) has argued in the context of racial inequality that stereotypes about Afro-Americans not only influence employers' attitudes toward black applicants but also alter the behavior and expectations of Afro-American workers themselves. These arguments receive some support from experimental studies, which show that members of disadvantaged groups generally perform less well when they are primed about relevant social identities ([Steele and Aronson 1995](#); [Steele 1997](#)).

The strongest evidence about the role of social background for occupational opportunities is found in the cross-disciplinary literature on intergenerational mobility. In sociology, there is a large and diverse body of literature for industrialized countries that documents often substantial parent-child correlations along ordinal social status categories or discrete occupational classes (see, for example, [Blau and Duncan 1967](#); [Featherman and Hauser 1978](#); [Grusky and Di Prete 1990](#); for earlier reviews of this literature, see [Bertaux and Thompson 1997](#); [Morgan et al. 2006](#)). Because one's parental background is not freely chosen, these studies can argue with relatively strong credibility that systematic correlations between father-son pairs reflect an unfair disadvantage associated with family circumstances. In economics, there are equally large bodies of research on economic mobility and opportunity equality. These studies variably document family-related differences in the education and human capital of children and young workers (for overviews, see [World Bank 2006](#); [Bourguignon et al. 2007a, 2007b](#)) and in the earnings expectations of young workers ([Roemer 2002](#); [Ferreira and Veloso 2003](#); [Bowles et al. 2005](#); [Azevedo and Bouillon 2009](#)).

Analysts have made important progress in overcoming methodological objections to the study of intergenerational mobility. For example, concerns that changing incomes over the life cycle introduce measurement error in the estimation of father-son correlations are now routinely addressed in the literature on earnings mobility ([Ferreira and Veloso 2006](#); [Azevedo and Bouillon 2009](#)).⁵ However, for a variety of reasons, the mobility literature still faces some limitations in documenting specific links between labor markets and individual opportunities. Sociologists have often treated occupational class as a mostly nominal construct, with less attention paid to the operationalization and empirical tests of the concept.⁶ This approach has contributed to the segmentation of the field, which often makes it difficult to compare and evaluate results across studies ([Grusky and Kanbur 2006](#); [Morgan et al. 2006](#)). Economists, in contrast, have typically studied questions of status and social mobility in the broader dimension of income. This more general framework provides only limited insights into mobility trajectories for specific occupational classes ([Bowles et al. 2005](#); for exceptions, see [Bossuroy and Cogneau 2008](#); [WDR 2013, 136](#)).⁷

Another problem is the difficulty of linking individual mobility experiences to aggregate labor market developments. In advanced economies such as the United

States, a number of longer-term studies have suggested that the importance of class-based advantage decreased during the period of relatively steady post-war growth (Featherman and Hauser 1978) and diminished even in the more volatile decades of the 1970s and 1980s (Hout 1988; Grusky and Di Pretre 1990). These studies also suggest that returns to experience and schooling increased during the same period for men, but less so for women. However, these claims are usually not based on systematic analysis of the interaction between individual mobility trajectories and specific labor market dynamics or policies. Outside advanced economies, the evidence is even more limited because the data series on mobility trajectories are typically too short to permit meaningful comparisons with macro-economic changes (Azevedo and Bouillon 2009).

A more general concern for the purpose of this paper is that it is often not clear how unfair limitations to individual mobility influence the more narrowly defined aspects of social cohesion, such as inter-group relations. On the one hand, it is notable that countries with less conflictual social relations, such as the Nordic nations or Canada, typically emerge in international comparisons as the societies with the highest levels of mobility (Azevedo and Bouillon 2009, Figure 2). Evidence and theoretical reasoning from developed and developing countries further suggests that low prospects for upward mobility increase the risk of crime or violent conflict (see below and Collier et al. 2003) and that populations generally object more strongly to perceived inequalities in opportunity equality than to inequalities in outcomes (Gaviria 2007).

On the other hand, casual observation suggests that there are many instances in which societies can maintain high levels of social stability, even in the face of very persistent disadvantages for certain groups. For example, people who feel that they are currently disadvantaged may express strong support for existing institutional arrangements if they perceive (mistakenly or correctly) strong chances for their own future upward mobility (Hirschman 1973; Piketty 1995; Benabou and Ok 2001). In other cases, individual responses to limited mobility prospects are influenced by other social interactions and contexts. These additional influences are only incompletely captured by purely household-specific estimates of intergenerational mobility and thus require more complex analysis that also takes into account the presence of intervening social institutions. The following paragraphs and the section on subjective wellbeing below discuss more evidence on these contextual influences.

Social Segregation

Although social limits to occupational mobility have been seen as the primary threat to social cohesion in the earlier sociological literature, more recent contributions have focused on the processes of social and residential segregation. Typically, these studies make more direct claims about the breakdown of peaceful group relations than the literature on occupational mobility. The sociologist Wilson

observed in the late 1980s that the concentration of impoverished disadvantaged black families in deprived inner-city neighborhoods in the United States increasingly led to a breakdown of social ties and interactions across ethnic and status divides (Wilson 1987). According to Wilson, these segregation processes helped perpetuate racial and economic inequalities because they led to a loss of social role models, social isolation, and a tendency for inner-city youth to engage in ‘deviant’ behavior, such as school dropping out, joblessness, or drug abuse.⁸

Subsequent research illustrated how these experiences of social isolation undermine social relations and cohesion. For example, a study that followed youths in poor urban neighborhoods in Ecuador over time found that those involved with violent gangs had joined ‘because they were searching for the support, trust, and cohesion—social capital—that they maintained their families did not provide, as well as because of the lack of opportunities in the local context’ (Moser 2009, as cited in WDR 2013, 132f). Similar evidence has been presented for youths in the United States, where a street code based on demonstrations of individual strength and the ability to ‘command respect’ from others emerged as ‘a cultural adaptation to a profound lack of faith in the police and the judicial system’ (Anderson 1999, 34).

Processes of residential and social segregation involve social transformations that reach well beyond the economic processes typically studied in the context of labor market analysis.⁹ Notwithstanding this broader focus, there are some indications that social segregation has direct impacts on labor market outcomes. In developed economies, a number of studies have illustrated that living in deprived neighborhoods is associated with much more frequent and more extended experiences of unemployment and education and earnings (Borjas 1995; Cutler and Glaeser 1997; van Ham and Manley 2010).¹⁰ In Latin America, a large body of literature argues that rising unemployment rates and the widespread loss of manufacturing jobs in the formal sector during the structural adjustment of the 1980s and 1990s contributed to social and residential segregation, with consequences similar to those described for developed countries (Caldeira 2000; Fadda et al. 2000; Baker 2001; Katzman et al. 2004; Katzman and Retamoso 2007).¹¹

In other developing regions, the rich literature on community development and social capital also suggests that social interactions and associations can vary across entire communities in ways that directly influence individual economic and professional prospects. Individuals in better-connected communities are often embedded in the type of ‘bridging’ social relations that provide access to insurance, information on jobs and commercial opportunities, or mutual learning (see below; Udry and Conley 2004; Minten and Barrett 2008; Vasilaky 2010). This is in contrast to poorer communities, where social associations tend to be of the ‘strong’ or ‘binding type’ (in other words, they tend to undermine individual initiative and rarely provide contacts for jobs or insurance outside the immediate community; Woolcock and Narayan 2000; Barrett 2005).

However, although this literature often provides compelling illustrations of the social costs of the spatial concentration of poverty, it typically cannot show that segregation has negative impacts beyond individual- or household-level sources of disadvantage. In particular, the causal identification of the consequences of local peer group interactions has been very difficult due to the possibility of self-selection of disadvantaged and lower-skilled households into impoverished communities and networks (Aaronsen 1998; Evans et al. 1992). Other problems concern the difficulty of distinguishing effects of peer group interactions from other contextual influences that are shared by all members of a local group or community (Manski 1993, 2000; Durlauf and Young 2001; Durlauf 2006).

To date, the most robust evidence is provided by studies that use government interventions into residential choices as ‘quasi-experiments’ to identify the effect of neighborhoods on individual outcomes. A recent study of a Swedish government program that randomly assigned refugees to areas with different degrees of job availability found that individuals placed in areas with fewer work opportunities had lower employment levels, which often persisted almost a decade after the intervention (Aslund et al. 2010). The authors find that doubling the number of jobs in the initial location is associated with a 2.9-percentage-point higher employment probability nine years after the program. Evaluations of the widely cited US-based ‘Moving to Opportunity Program’ showed that families from deprived inner-city neighborhoods who were randomly allocated vouchers to move to non-poor census tracts had lower adult unemployment rates (Rosenbaum and Harris 2001, 338), reduced adolescent arrests for violent crimes (Ludwig et al. 2001),¹² and a lower prevalence of injuries or personal crimes after the intervention (Katz et al. 2001).

However, it is important to note that the evidence available so far is limited to families that used the vouchers, making it difficult to extrapolate findings to the broader population of the poor (Durlauf 2006, 161). Moreover, the results from these quasi-experiments are not always fully consistent. For example, another study of the Moving to Opportunity Program by Katz et al. (2001) found no effect on adult employment rates, earnings, or welfare usage, although there were other positive effects on health and behavioral outcomes for children and adults. Overall, the literature should be read as providing suggestive evidence that processes of residential segregation add to inequalities and exclusion in and around the labor market. However, in most cases, more rigorous research is needed to identify the robustness and precise magnitude of these impacts.

The Transitional Role of Jobs

The second link under the framework in Figure 1 involves pathways from jobs to social cohesion. Once people are in work, jobs can play an important transformative

function for social development outcomes. The next paragraphs discuss these transformative functions by reviewing the evidence on the impact of work-place interactions on 'bridging' social relationships. In addition, I examine the association between jobs and subjective wellbeing and the social and policy contexts that influence this link.

Jobs and Social Interactions

There is rich anecdotal evidence from the literature on political partisanship and ethnic conflict that interactions in the workplace can bridge social divides. These arguments are typically based on the idea that the atomizing effects of social identities and segregation are less severe in the workplace than in the choice of neighborhoods or social associations (Mutz and Mondak 2006, 141; Kilroy 2012). Because people typically have fewer opportunities to choose their co-workers and because business relations are often entered due to economic necessity, jobs can provide the opportunity to encounter people of very different ethnic and social backgrounds (WDR 2013, 126).

The strongest potential to overcome social barriers in and around jobs may arise from the type of social and civic associations highlighted in the literature on social capital (Granovetter 1973, 1974; Woolcock and Narayan 2000). An analysis of a large sample of responses from the World Values Survey data by Wietzke and McLeod (2012) finds that across countries at different income levels, those in work and more autonomous jobs generally participate in more associations.¹³ Related survey analysis also provides support for the hypothesis that workplaces involve greater exposure to people of dissimilar perspectives or race than do family relations or social activities (see Mutz and Martin 2001 and Mutz and Mondak 2006 for the United States and Kilroy 2011 for Trinidad and Tobago). Several of these studies also show the positive effects of workplace interactions on political tolerance and dialogue (Banaszak and Leighley 1991; Mutz and Mondak 2006). However the results from these articles should only be considered indicative because they are based on simple cross-sectional correlations that cannot account for the possible selection of more socially enterprising individuals into better jobs and social networks. Another more robust analysis of Indonesian survey data that tracked people's level of community participation over time found that men and women who became unemployed between 2000 and 2007 were less likely to be involved in community activities (controlling for personal attributes). In some locations, this result was observed in spite of a general increase in community activities, indicating that individual and household effects of unemployment can influence personal social outcomes independent of social and community contexts (Giles et al. 2012).¹⁴

Anecdotal evidence and ethnographic studies suggest that professional and commercial interactions can reduce the risk of conflicts between groups that usually

entertain tense relations (Dani et al. 1999; Pickering 2006; Kilroy 2012). A widely cited study by Varshney (2002) finds that the economic interdependence of Muslims and Hindus through business organizations, trade unions, political parties, and professional associations helped avert outbreaks of ethnic violence in some Indian cities, whereas ethnic riots were more frequent in less interdependent cities. Survey research from Bosnia and Herzegovina and the former Yugoslav Republic of Macedonia found that the workplace constituted the most important area for inter-ethnic cooperation, ahead of neighborhoods and local social associations (Dani et al. 1999; Pickering 2006; WDR 2013, 15). Other examples of business relations between Greeks and Turks during the war in Cyprus or smuggling between Kosovo-Serbs and Kosovo-Albanians suggest that professional interests can trump ethnic antagonisms, even in the most hostile political environments (Kilroy 2012, 9).¹⁵

While most of these examples are individually compelling, the evidence reviewed here comes with several caveats. Although participation in professional interactions may not be entirely voluntary, the majority of studies reviewed here do not address the possibility of selection bias. For example, in the majority of papers reviewed, it is not possible to determine whether the reported positive consequences of professional interactions are truly the result of work-related associations or whether particularly trusting or ‘socially enterprising’ individuals have selected into relevant networks.

At a more fundamental level, the literature on work-related interactions typically fails to address the possibility that wider societal benefits of work-related interactions are undermined by more basic processes of social stratification and segregation. If access to jobs is highly unequal, the positive effects of work-based contacts are likely to differ across groups with uneven attachment to the labor market. Whether these positive effects are shared evenly across groups depends on the extent of interdependencies between groups with higher and lower levels of labor market participation. In the worst case, work-related interactions may deepen divides between labor market insiders and outsiders without positive consequences for the distribution of opportunities or the extent of social segregation (see below).

Another problem is that it is not always clear whether social relations formed in the workplace really have the potential to alter the nature of social relations to the extent argued in the literature. Social identities are usually multifaceted, and professional roles are complemented by multiple other sources of identification.¹⁶ Whether identities and collaborative attitudes formed in the workplace spill over into these alternative social domains is questionable (Kilroy 2012). A related difficulty is that it is often unclear whether trusting relationships and friendships created at work cause people to modify attitudes toward the entire group to which their colleagues belong. Studies that ask respondents about their levels of trust do not typically distinguish between generalized trust and views toward specific

groups. This makes it much more difficult to assess whether and to what extent feelings of trust and association generated in the work place spill over into more peaceful group interactions at the aggregate level (Delhey et al. 2011; Kilroy 2012).

Jobs and Subjective Wellbeing

Another increasingly widely investigated dimension of social development in the recent policy literature is subjective wellbeing (henceforth SWB; see also OECD 2011, 55ff; Dolan and Metcalfe 2012). Earlier psychological research suggests that job satisfaction and financial security related to regular employment can be an important source of wellbeing (for an overview, see Diener et al. 1999, 293). These psychological outcomes also typically emerge as important correlates of other dimensions of social cohesion in individual and cross-national research. For example, personal self-esteem, trust, and social capital are usually strongly associated to SWB in international survey data (Kahneman 1999; Helliwell and Putnam 2004; Rothstein and Uslaner 2005; Larsen 2007).

From the perspective of this review, SWB is particularly useful for summarizing the non-economic costs of uneven participation in the labor market. In high-income countries, there is a large body of literature that documents the often considerable differences in life satisfaction among the employed, the unemployed, and people in temporary jobs. One of the earliest studies on the subject found that the experience of joblessness in Britain ‘depressed well-being more than any other single characteristic, including important negative ones such as divorce and separation’ (Clark and Oswald 1994). Subsequent research also shows that these effects are typically robust to the inclusion of controls for income. This finding supports the often-noted claim that unemployment also affects individual wellbeing through non-monetary channels, such as the loss of positive psychological rewards from work or the sense of exclusion from work-related interactions (for overviews and evidence, see Darity and Goldsmith 1996; Di Tella et al. 2001, 2003; Frey 2008). There are also fairly robust indications for this part of the world that the causal link flows from unemployment to SWB. For instance, research conducted on German panel data suggests that the same individuals experience considerable reductions in life satisfaction when they lose their jobs (Winkelmann and Winkelmann 1998; Frey 2008, 47). Dawson and Veliziotis (2013) use a similar panel design for the United Kingdom and find large differences in self-reported wellbeing between permanent and temporary employees that appear to be explained by less satisfaction with job security for the latter group.

Outside the group of advanced industrial societies, the trends are largely consistent in emerging economies with more evolved labor markets. Estimates on a pooled sample of survey respondents from Latin America show a clear and unambiguous effect of unemployment on reported life satisfaction, even when a range of

personal and household attributes are accounted for ([Graham and Pettinato 2002](#); [Graham 2008](#)). However, these findings are based on simple correlations. More robust evidence has been presented for Russia by [Eggers et al. \(2006\)](#). They find that the effect of personal unemployment on life satisfaction is four times worse than experiencing a divorce. Because this study is based on longitudinal data, it can also account for initial levels of life satisfaction, thus mitigating some concerns about unobserved personal characteristics that often plague cross-sectional survey analyses of SWB.

Despite the relative robustness of these effects at the individual level, there are many and often little understood contextual influences that can affect how individual experiences of work and unemployment translate into social cohesion outcomes at the aggregate level. A well-known result from the cross-country literature on life satisfaction is that average SWB does not improve with marginal increases in income once a certain level of material wellbeing has been attained ([Easterlin 1974](#); [Easterlin et al. 2010](#); [Inglehart and Welzel 2005](#)). This finding suggests that the described non-economic effects of unemployment in countries with more formalized labor markets may not apply in the same way in lower-income nations with endemic poverty and a high incidence of informal and subsistence labor. For example, the aforementioned correlation analysis of World Values Survey data by [Wietzke and McLeod \(2012\)](#) finds that the negative wellbeing effect of unemployment drops quite considerably as one moves from high- and middle-income nations to lower-income countries, accounting for the usual range of controls regularly used in the literature (such as income, education, age, or family status).¹⁷ These results are consistent with a large body of economic research that suggests that the primary channel out of poverty in low-income nations is a transition from informal or agricultural work into more rewarding forms of wage employment (for overviews, see; [Azevedo et al. 2012](#); WDR 2013).

Beyond these economic influences, social contexts also matter. There is relatively strong evidence that the social interactions and segregation processes described above also influence how individuals perceive experiences of unemployment. Work by [Stutzer and Lalive \(2004\)](#) finds that the unemployed suffer greater losses to wellbeing in communities that display lower levels of tolerance toward welfare recipients.¹⁸ At the same time, several other studies suggest that the relative wellbeing losses of unemployment tend to be lower in segregated communities with higher unemployment (this holds for the United Kingdom, see [Clark and Oswald 1994](#); for Russia, see [Eggers et al. 2006](#)).¹⁹ Although these processes remain little understood, they indicate that the social interactions associated with extreme segregation also mediate how individual experiences in and around the labor market translate into personal social preferences. In some cases, extreme segregation and the concentration of peer-group interactions within relatively harmonious communities can actually limit the social comparisons across social and status groups that are

normally expected to increase the likelihood of conflict. However, these outcomes are clearly not desirable because they are accompanied by deep latent group divides.

Other research suggests that the levels of wellbeing of the unemployed may be affected by spillovers and institutional and policy contexts. For example, cross-country comparisons by Wietzke (2012) show that nations with relatively protected labor markets and large relative wellbeing differences between the employed and unemployed often have higher absolute levels of life satisfaction for those not in work.²⁰ In a similar vein, a descriptive analysis of wellbeing levels by Di Tella et al. (2003) documents that although increases in unemployment benefits in Europe from 1975 to 1992 did not narrow the differences in reported happiness between the unemployed and the employed, absolute levels of wellbeing rose for both groups (Di Tella et al. 2003).²¹ These results suggest that social and policy-induced wellbeing spillovers could explain why even countries with relatively large differences between labor market groups often experience high levels of social stability over time (provided the consequences for absolute wellbeing are sufficiently strong to 'offset' the negative consequences of social comparisons). However, these are early results, and more detailed and rigorous analysis is needed to better understand the social mechanisms and interactions involved.

Insider – Outsider Politics

In light of the preceding discussion, a central question for the link between jobs and social cohesion is how societies create the environments for positive interactions and spillovers that improve the wellbeing of all groups in society. Economic and labor market institutions clearly matter in this context. Economic theory suggests that societies with more inclusive institutions are generally better able to absorb conflicts between winners and losers of economic and political transformations (Fernandez and Rodrik 1991; Alesina and Drazen 1991). This finding is supported by several empirical studies documenting that societies with stronger institutions and better inter-group relations experience fewer and shorter economic crises (Rodrik 1999; Easterly et al. 2006) or crises that are, at least, not more severe than in otherwise comparable countries (Forteza and Rama 2006).²² These more stable conditions have obvious advantages for all groups of society that will benefit from the absence of economic insecurity and volatility.

The flip side is that many of the positive consequences of work-based interactions can deepen social differences if they interact with existing economic divides and segregation processes. Political scientists and economists have long been concerned that collective action problems and the resulting lower levels of political organization among the unemployed facilitate the emergence of policies that favor the

interests of labor market ‘insiders’ over those of ‘outsiders’ (see, for instance, [Olson 1982](#); [Lindbeck and Snower 2002](#); [Rueda 2005, 2006](#)).²³

These ‘insider’ politics can be reinforced if the described positive effects of work-related interactions interact with existing segregation processes. Psychological rewards and social capital associated with workplace interactions may only benefit those who already have better economic opportunities. This phenomenon not only increases differences between the employed and unemployed but also potentially undermines successful collective action across groups with uneven access to the labor market.

Micro data provide some indicative support for these processes. The aforementioned correlation analysis by [Wietzke and McLeod \(2012\)](#) indicates that people who derive positive experiences and self-esteem from their work are more likely to engage constructively with public institutions. The authors document that those in work are more likely to participate in demonstrations or to sign petitions. These results hold across a wide sample of nations, even though the estimates are less robust in lower-income countries. People in higher-quality jobs also tend to be more politically active in all sub-samples, except in low-income countries.

Other contributions suggest that lower levels of political activism among the unemployed also accompany political attitudes that can undermine support for political institutions. A cross-country correlation analysis of World Value Survey data by [Altindag and Mocan \(2010\)](#) documents that the unemployed tend to hold more negative views about democracy and stronger preferences for rogue leaders.²⁴ The authors also find that high and sustained rates of unemployment undermine collective trust in democracy. The results are based on simple cross-sectional correlations only. However, the findings are broadly consistent with earlier research on electoral behavior, which suggests that support for incumbent representatives declines with deteriorating personal economic conditions ([Markus 1988](#); [Nannestad and Paldam 1997](#)) and weaker macro-economic outlooks in a constituency ([Kramer 1971](#); [Stigler 1973](#)).

There are indications that these uneven levels of political engagement also accompany the insider-outsider differences over labor market policies that are often discussed in the political economy literature. Contrary to conventional political economy models, which tend to assume that labor and social democratic movements share a common concern with unemployment, workers are often deeply divided over labor market policies. Survey responses by labor market outsiders, who are defined by the insecurity of their work contracts, indicate a stronger preferences for employment generating ‘active’ labor market policies, such as public employment centers and administration, labor market training, or subsidized employment. This is in contrast to labor market insiders, defined by the security of their contracts, who tend to prefer stronger measures of worker protection and lower tax spending on employment policies ([Rueda 2005, 2006](#)).²⁵ Other studies based on larger

samples of countries suggest that lower-skilled members of the work force tend to report stronger support for government redistribution (Blanchflower and Freeman 1997; Corneo and Gruner 2002; Cramer and Kaufman 2011; Haggard et al. 2013).

Cross-country comparisons of labor market policies suggest that these differences in behaviors and political preferences are reflected in actual political outcomes. Even among social democratic or labor-dominated governments, there are well documented examples of policies that favor the protection of the interests of labor market insiders over active employment-generating policies (Rueda 2005, 2006; Shayo 2009). These outcomes are attributed to higher levels of political activism and stronger aversion to costlier employment-generating policies among the former group (Rueda 2005, 2006). In addition, outsider-friendly policies often fail to materialize because of the existence of social associations and alliances outside of the labor market.²⁶

In the literature on social exclusion, similar arguments have been made about social policies toward low-skilled, temporary workers. In particular ‘workfare’ programs designed to restrict access to social benefits and to push recipients into the labor market are often blamed for the perpetuation of precarious low-paid work relations because these interventions have the potential to interrupt individual employment histories and skills acquisition (McKnight 2002; King and Rueda 2008, 279). This can result in a ‘reserve army’ of workers in low-cost, flexible, and temporary jobs who meet the low-cost labor needs of the economy but do not enjoy the prospects for upward mobility of more advantaged groups (Byrne 1999; King and Rueda 2008).

The practical lessons that result from these observations usually return full circle to the root causes of low inclusion and mobility in the labor market. Constructive long-term strategies should limit the risk of individuals entering low-paid and insecure work or help low-skilled temporary workers move from low-paying and often subsidized jobs into standard forms of employment (McKnight 2002, 117; King and Rueda 2008; OECD 2011). Other effective interventions seek to offset the limits to upward mobility by ensuring higher minimum skills standards and better educational services for children from disadvantaged backgrounds (McKnight 2002, 117).

Conclusion

Policy makers increasingly recognize that well-functioning labor markets are an important precondition for peaceful social relations (WDR 2013; OECD 2011). However, until now, there has been surprisingly little comparative analysis of how jobs influence personal experiences and interactions around social cohesion. This article has sought to fill this gap by reviewing international evidence on the link between jobs and individual wellbeing and behaviors.

The literature reviewed suggests that the relationship between jobs and social cohesion is best studied as a two-way relationship. On the one hand, there is

relatively robust evidence that social institutions and identities related to class or family background can limit opportunities and mobility in the labor market. This can undermine social cohesion by weakening social inclusion and increasing inequalities in the distribution of the benefits of work. On the other hand, there are many reasons to suspect that jobs can have the positive transformative consequences for social relations that have been postulated in recent high-profile policy publications on social cohesion. In particular, jobs emerge as important correlates of a range of outcomes that are typically associated with social cohesion, such as subjective wellbeing, social associations, or personal levels of social and political activism.

Despite the many individually compelling examples of how jobs can influence social cohesion, this review has revealed at least two caveats that undermine the optimism about the transformative role of jobs that is implicit in reports such as the WDR. The first is the complexity of the social processes and institutions that determine how individual work-related experiences translate into interactions and spillovers between groups with uneven attachment to the labor market. In particular, highly segmented labor markets increase the risk that work-related interactions and collective action may exacerbate divides between labor market ‘insiders’ and ‘outsiders’. Although some of the social institutions behind these social barriers are probably more difficult to change, other responses will require more complex interventions that reach beyond the narrowly defined labor market reforms to address more fundamental differences in the distribution of skills and social advantages.

The other caveat is the relatively tentative nature of much of the evidence on which claims of the positive effects of jobs are based. Rigorous analysis of the social interactions to which many of the positive effects of work are attributed is notoriously difficult because of the potential selection problems and other contextual influences involved. These problems are amplified because many of the advances in the design of studies and surveys that are used to document the positive effects of work on economic outcomes have not (yet) spilled over into the analysis of non-monetary dimensions of jobs. Against this background, future analytical progress will depend, to a large extent, on the more routine integration of social cohesion indicators in the monitoring of labor market outcomes. In other contexts, more complex research designs will be required that integrate careful political economy analysis at the aggregate level with detailed study of individual-level interactions in the workplace and other relevant social contexts.

Notes

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1. Workers and employees in protected long-term contracts are typically defined as ‘insiders’; individuals in non-permanent jobs are defined as ‘outsiders’. However, the literature is divided over the precise definitions (Lindbeck and Snower 2002).

2. Evidence for social capital is less consistent. Delhey and Newton (2003) and Knack and Keefer (1997) find no positive effects of the density of social associations on economic development.

3. Theoretical models have variably explained these outcomes to partisan politics and class-related distributive bargaining between capital and labor (Korpi 1983; Esping-Andersen 1990; Lindert 2004; Huber and Stephens 2012) or to the functional responses of employers to changing demands for skills and security (Hall and Soskice 2001).

4. Grusky and Kanbur (2006) go on to note that a class-analytical lens may help to resolve many analytical challenges of poverty and inequality analysis that have arisen in the wake of the recent literature on capabilities and multidimensional wellbeing, including the possibility of summarizing multiple personal attributes in a single measure of social or occupational class (Grusky and Weeden 2007).

5. More precisely, this is typically done by estimating least-squares regression of sons’ earnings on fathers’ earnings controlling for the ages of both generations or by constructing measures of permanent income for fathers and sons (Ferreira and Veloso 2006; Azevedo and Bouillon 2009).

6. There are, of course, exceptions. See, for instance, Ganzeboom and Treiman (1996).

7. This happens mostly for operational reasons. However, it may also have to do with the traditional preference of economists for income-based measures of inequality (Grusky and Kanbur 2006).

8. Wilson’s work on urban poverty triggered a large cross-disciplinary literature on the social consequences of residential segregation. This research has provided additional qualitative case studies and quantitative evaluations of the effects of social isolation on social relations, education, and the economic opportunities of residents of deprived neighborhoods (see below; Evans et al. 1992; Borjas 1995; Anderson 1999; Durlauf and Young 2001; Loury 2002). The literature on social exclusion has also associated the breakdown of social relations with processes of residential segregation.

9. In the language of class analysis, concerns about social segregation often accompany a shift in focus from conventional class categories based on occupational categorization alone to alternative social attributes, such as low education, dysfunctional family structures, and social exclusion (this is generally summarized under the broader term ‘underclass’; see, for example, Grusky and Kanbur 2006, 14).

10. Most of these studies document neighbourhood effects in interactions with racial inequalities.

11. Other case studies document community-level social costs of economic downsizing in more recent time periods. See, for example, Dudwick (2012) and WDR (2013, 132f).

12. Ludwig et al. (2001) found a reduction in arrest rates of 30 to 50 percent.

13. As with SWB, the effect of unemployment gradually declines from high- to low-income countries, but it is still borderline significant in the poorest nations. Similar results are reported for job quality and autonomy.

14. Note, however, that this study could not account for possible time-variant personal attributes that may simultaneously influence respondents’ employment status and their social relations. Examples are illness or other short-term economic shocks.

15. Economists have long recognized that economic interdependence lowers the likelihood of conflict (for an overview, see Kilroy 2012).

16. Moreover, work-related identities are of decreasing importance in many advanced industrial societies (Grusky and Kanbur 2006).

17. The authors also find that an index that summarizes people’s self-assessments of their work as involving manual or cognitive and routine or creative tasks and their degree of independence at work does not predict life satisfaction in low-income countries.

18. The authors approximate these norms through local support for a national referendum about the reduction of unemployment benefits. The study accounts for possible local interactions between labor market outcomes and work norms with the help of regional fixed effects.

19. This may also involve the fact that high unemployment rates tend to reduce the subjective well-being of people with and without work simultaneously (Di Tella et al. 2001; Eggers et al. 2006).

20. Although it is based on non-experimental data, this study mitigates endogeneity concerns through instrumental variable estimates and by linking personal wellbeing to national policy contexts that are not under the control of individual respondents. Wietzke and McLeod (2012) also find that absolute levels of wellbeing of the unemployed follow similar cross-sectional trends when mapped against an index of the stringency of labor laws, though there are clear and stable differences compared with those out of work. They also speculate that weaker social protection policies and high unemployment often lead to a heightened sense of insecurity among the unemployed *as well as* those in work.

21. The authors hypothesize that this result has to do with the reduction of the financial risks of unemployment for people in and out of work.

22. The recent review of literature on labor regulations conducted for the WDR 2013 concludes that, outside of extreme scenarios of excessive regulation or de-regulation, the efficiency enhancing and undermining effects of labor market institutions can be found side by side (Freeman 2008, 2009; OECD 2011; World Bank 2013, 26).

23. Reviews of labor market policies provide some indications that this is indeed the case. In most countries, labor market regulations disproportionately benefit young males to the detriment of other more vulnerable groups (Lindbeck and Snower 2002; OECD 2011; WDR 2013). Similar evidence is found by Heckman and Pages (2000) for Latin America, where job security provisions are comparatively costly (OECD 2011, 162), and by Botero et al. (2004) at the cross-national level.

24. However, Wietzke and McLeod (2012) find no systematic associations between employment status and self-expressed confidence in the government and democratic institutions.

25. These results are based on the 1996 Eurobarometer survey.

26. In particular, religious beliefs, rural background, and nationalistic identities have been shown to reduce political positioning around work or status lines (Kaufman 2009; Shayo 2009; Haggard et al. 2013). Insider-outsider differences are often reduced when the vulnerability of labor market insiders increases due to regulatory reform or rising unemployment rates (Iversen and Soskice 2001; Rueda 2006, 388f).

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Labor Market Regulations: What do we know about their Impacts in Developing Countries?

Gordon Betcherman

Labor market regulation is a high-profile, and often contentious, area of public policy. Although these regulations have been studied most extensively in developed countries, there is a growing body of literature on their effects in developing countries. This paper reviews that literature and focuses on the impacts of two important types of labor market regulation, minimum wages and employment protection legislation (EPL), on employment, earnings, and productivity. Strong and opposing views exist regarding the costs and benefits of these regulations, but the results of this review suggest that their impacts are generally smaller than the heat of the debates would suggest. Efficiency effects are found sometimes, but not always, and the effects can be in either direction and are usually modest. The distributional impacts of both minimum wage and employment protection legislation are clearer, with two effects predominating: an equalizing effect among covered workers, but with groups such as youth, women, and the less skilled disproportionately outside the coverage and its benefits. Although the overall conclusion is one of modest effects in most cases, the policy implication is not that these regulations do not matter. On the one hand, both minimum wages and EPL can affect distributional objectives. On the other hand, these regulations can generate undesirable economic or social impacts if they are established or operate in ways that exacerbate the labor market imperfections that they were designed to address. JEL codes: J08, J38, J58, J88

Labor market regulation is a contentious area of public policy debate in many developing countries. To inform this debate, this paper reviews the evidence on the impacts of two important types of labor market regulation: minimum wages and employment protection legislation (EPL). This paper aims to make two contributions to

the existing literature. First, particular attention is paid to research findings in the context of developing countries; less is known about these countries than is known about developed countries. Second, this review attempts to bridge two segmented bodies of literature, one based on competitive labor market models and the other based on the role of institutions, that have dominated research and policy debate in this field.

Labor market regulations determine *inter alia* what types of employment contracts are permissible, set boundaries for wages and benefits, hours, and working conditions, proscribe certain employment practices, and can provide social protection for workers. The rationale for these regulations can be attributed to various labor market imperfections: imperfect information, uneven market power (between employers and workers), discrimination, and inadequacies of the market to provide insurance for employment-related risks. Societies almost always introduce labor market regulations to protect workers or to redistribute income to them. However, there may be efficiency considerations because institutions can affect the functioning of the labor market and the productivity of firms.

Regulations constitute an important part of the institutional framework around the labor market, which can also include rules for trade unions and collective bargaining, unemployment insurance, active labor market programs, and equity legislation. In the three decades following World War II, a “modern” institutional framework was completed in developed countries, although approaches differed significantly, especially between Anglo-Saxon countries and continental Europe. Developing countries introduced similar institutions that were often patterned after their colonizers’ laws and traditions (Botero et al. 2004). By the 1980s, debates over labor market regulations and other institutions began to intensify as employment performance began to diverge across developed countries. In particular, the strong record of job creation and low unemployment in the United States relative to much of Europe raised questions about whether Europe’s more stringent labor regulations, more powerful unions, more extensive collective bargaining, and more generous unemployment insurance regimes might be contributing factors.

Since then, accelerating globalization and technological change have exposed countries at all stages of development to greater competition and more structural change and have raised the stakes for identifying the optimal institutional framework for the labor market (Hayter 2011). Throughout this period, the body of empirical evidence on the impacts of labor market institutions has continued to grow. Research in the 1990s, which was largely based on cross-country regressions in the developed world, typically found that strong protective legislation and generous unemployment insurance slowed job growth and increased unemployment. These conclusions motivated the influential OECD (1994) Jobs Study, which took a largely deregulation stance, recommending flexible rules for protecting employment and setting wages and hours as well as unemployment and welfare systems that

minimized work disincentives. A parallel body of evidence did not yet exist for developing countries, but the dominant policy message was similar: although institutions might be introduced with good intentions and theoretically had a role in addressing market failures, in practice, they often had unintended negative consequences in terms of both efficiency and equity (World Bank 1990, 1995).

This is not the end of the story, however. As methods have improved and as better data have become available since the mid-1990s, the impacts of many labor market regulations and institutions seem to have become less—not more—clear. Indeed, in its assessment of labor market developments since the Job Strategy, the OECD (2006) was more equivocal about almost all of its recommendations than it had been 12 years earlier. Moreover, in the wake of the global recession, the stubbornly high unemployment rates in the U.S. and other less-regulated countries weakened the *prima facie* case for deregulation and less intervention in the labor market. The case for a “single peak” of superior labor market performance (e.g., deregulation, “light” institutions) has been supplanted by arguments for “dual” or even “multiple” peaks, where comparable levels of performance can be reached using various regulatory and institutional combinations (Eichhorst et al. 2008).

Where does this situation leave us in assessing labor market regulations, especially in the context of developing countries?

First, debates remain hotly contested and are driven by two fundamentally opposed intuitions. These are what Freeman (1993) once called “institutionalism” (institutions can reduce inequality and cut transaction costs, thereby enhancing productivity) and “distortionism” (institutions impede economic efficiency and can have perverse equity effects). The theoretical starting points, the research methods, and even what constitutes the evidence often differ between the two literatures. Each is limited in its own way. The institutionalist research often downplays the value of sound empirical analysis that challenges its assumptions. The distortionist research tends to be ahistorical, clinically measuring the impacts of institutions without appreciating that they have evolved through a social and political process as part of a given society’s social contract.

Second, whether the situations of developed countries apply to developing countries remains an open question. Labor regulations were designed for wage and salary work and presume widespread compliance, either voluntarily or through the enforcement capacity of the state (or trade unions). Both assumptions are obviously shakier in developing countries than in more developed ones. Employment forms are more diverse, with large shares of workers in non-wage activities such as self-employment and family enterprise work. Even many wage employees are in the informal sector. The nature of employment, coupled with limited administrative and enforcement capacities, raises questions about how labor market regulations actually function in developing countries and, thus, how the regulatory framework should look.

Given all of these questions about how labor markets should be regulated in developing countries, what can be learned from the growing empirical evidence on the effects of minimum wages and employment protection legislation in these settings? This paper focuses on the effects on employment, earnings, and productivity. Efficiency effects, as revealed through employment and productivity, are found sometimes, but not always. The effects can be in either direction and are usually modest. Distributional impacts of both minimum wages and employment protection legislation are clearer, with two effects predominating: an equalizing effect among covered workers, with groups such as youth, women, and the less skilled disproportionately outside the coverage and its benefits. Although the overall conclusion is one of modest effects in most cases, the policy implication is not that these regulations do not matter. On the one hand, as noted, both minimum wage and EPL can affect distributional objectives. On the other hand, these regulations can generate undesirable economic or social impacts if they are established or operate in ways that exacerbate the labor market imperfections that they were designed to address.

The remainder of this paper is organized as follows. Methodological points that should be considered in assessing the impacts of labor market regulation are raised in the next section. The two following sections review the empirical evidence on the impacts of minimum wage and employment protection rules. In these sections, we begin with the main findings from the extensive literature in the developed countries and then focus on what is now known from the less advanced, but growing, body of research in developing countries. In the final section, conclusions are drawn, and policy implications are discussed.

Some Notes on Methodology

Qualitative analysis of labor regulations (and other institutions) has been important historically, especially among researchers with an institutionalist perspective. However, the literature is now dominated by quantitative analysis, typically using econometric techniques to isolate the impacts of regulation. Studies have been limited to a narrow set of economic impacts, including employment, unemployment, earnings, job and labor turnover, and productivity. Although it is reasonable to expect that labor regulations might also have effects on social variables such as inclusion and fairness, these relationships have not been directly analyzed.¹

The first generation of quantitative research was based almost exclusively on reduced-form models that used aggregate data to explain the cross-country variation in outcomes by differences in national labor market institutions. This approach remains prevalent, but it increasingly shares the stage with a second generation of research that uses longitudinal micro-data to estimate fixed-effects models that isolate the variation in outcomes in a single jurisdiction over a period during which regulatory change has occurred.

Regardless of the method, reliably isolating the impacts of labor market regulations is complicated by challenges that researchers face in terms of identification, measurement, and modelling and interpretation.

Identification issues result from both the endogeneity of labor market institutions and the interactions between them. The endogeneity problem stems from the fact that institutions themselves are not exogenous variables but reflect the legal and cultural fabric of the societies in which they have evolved (Botero et al. 2004; Algan and Cahuc 2006; Aghion et al. 2010; Alesina et al. 2010). This situation can make it difficult to attribute variations in outcomes to the institutions themselves. This is especially problematic when analysis is based on cross-country aggregate data. Although single-country panels avoid this source of misidentification, they are not immune from endogeneity issues stemming from time-based sources. For example, certain institutional changes that are likely to be introduced at a particular point in the business cycle may be associated with outcomes that may be due to the cyclical factors themselves. Interactions between different labor regulations and institutions add to the identification challenge. Countries typically have packages of interdependent rules and institutions (e.g., the lightly regulated Anglo-Saxon model and the Northern European flexicurity model). The impact of a rise in the minimum wage, for example, might be intrinsically different in countries with different labor market models. The existence of packages of regulations and institutions raises a legitimate question about whether the real policy-relevant task for researchers should be to study the impact of different models rather than individual features. Thus far, however, there has been very little serious empirical analysis of overall packages.²

Measurement issues stem from the fact that it is difficult to quantify many regulations. Measuring minimum wages is relatively straightforward, although this measurement can be complicated when countries have multiple minimum wages (by sub-national jurisdiction, industry, occupation, or age). In contrast, employment protection rules are less easily reduced to numerical values. Analysts have developed various EPL indices that have extended the possibilities for quantitative analysis. However, these are not without controversy regarding what they actually measure and how well they do so.³ In any event, both EPL indices and minimum wages are problematic in a *de facto* sense because they cannot easily incorporate enforcement or adjudication, which can be critical to capturing real effects of laws and policies (Bertola, Boeri, and Cazes 2000). This gap between law and practice is especially relevant in the case of developing countries with large informal sectors and limited administrative and judicial capacity. There are examples of studies that attempt to incorporate the application of regulations and policies into the analysis of the impacts of institutions (e.g., Boeri and Jimeno 2005; Micco and Pagés 2006; Almeida and Carneiro 2009). However, these studies are very few in number.

There are also a number of challenges related to the *structure and scope of models* and the *interpretation* of results. First, models tend not to accommodate the

possibility that the impacts of regulations may be non-linear. It may well be that the effects of minimum wages or job security rules are different at the tails of the distribution (i.e., very high or protective or very low or unregulated) than they are around the mean. Second, models have tended to focus on short-run effects with less consideration of long-run implications. However, there is a growing body of evidence of persistence in labor market outcomes, which can be affected by regulations and other institutions. Third, much of the research concentrates on whether specific regulations have statistically significant effects on outcomes and does not consider the magnitude of the effect (i.e., paying attention to significance tests more than the size of the coefficient). The magnitude of the effect is clearly important for assessing trade-offs in making policy.

This literature review conducted for this paper considered the quality of the evidence presented in the various studies and how well the methodological challenges noted above were addressed. Studies that did not meet the conventionally held standards of sound empirical analysis, which are a valid measure of the policy variable and model specifications that control for other potential explanatory factors, were excluded. Both cross-country and single-country panel studies were included if they met these standards. It is fair to say that, on balance, the research community is more skeptical of cross-country analysis because of the endogeneity issue. However, given the importance of some of these studies (especially those conducted by the OECD), they were included in the review unless they had some evident methodological flaw. Evidence on developing countries largely comes from single-country panel studies. Although there are a few studies with special features to address some of the methodological challenges, the literature reviewed here is fairly homogeneous in terms of research design. In the future, new insights could be gained by research innovations such as those proposed by [Freeman \(2005\)](#) and [Heckman \(2007\)](#).⁴

Minimum Wages

Most countries have some form of minimum wage, although the institutional arrangements may vary. Although minimum wages are most often established through laws or regulations, in some countries, minimum wages are set through a bargaining process involving employers and unions. A single national rate is most common, but many countries have sub-national, regional, industrial, or occupational rates. In some countries, sub-minimum wages exist for certain groups, such as teenagers or trainees. Some types of workers may be completely excluded; agricultural and domestic labor are common examples. Moreover, minimum wage rules are not designed to cover the self-employed or family enterprise workers. In developing countries with large informal sectors, the reach of minimum wage regulations may be quite limited even among wage employees because of non-compliance.

Minimum wages are controversial, reflecting [Freeman's \(1993\)](#) institutionalist-distortionist divide. The institutionalist perspective provides the rationale for minimum wage policies: to counter exploitation by providing all workers with a “fair” wage and, more generally, serving as an anti-poverty policy ([Eyraud and Saget 2008](#)). The distortionist perspective emphasizes the negative employment effects when the minimum wage prices low-productivity workers out of the (formal) labor market.

The level at which the minimum wage is set is critical and can vary considerably, especially in developing countries. The [ILO \(2013\)](#) recently estimated the ratio between the minimum wage and the median wage of workers covered by minimum wages for 11 developing countries and found that this measure ranges from above 1.0 in South Africa, Philippines, and Indonesia to approximately 0.4 in Mali, Vietnam, and Mexico. In developed countries, in contrast, the ratio tends to be lower and has less cross-country variation – from approximately 0.35 to 0.60.

Impacts on Employment

The impact on employment has been the overwhelming focus of minimum wage studies. Research conducted through the 1980s was primarily based on U.S. time-series data and typically found negative employment impacts. The consensus emerging from that research was that the elasticity of teenage employment with respect to the minimum was in the -0.1 to -0.3 range (i.e., a 10% increase in the minimum wage reduced teenage employment by 1%–3%) ([Brown et al. 1983](#)). However, beginning in the early 1990s, a wave of studies led to serious questioning of this view. This “new minimum wage research” used new data sources and research designs that were typically based on exploiting the widening differentials between U.S. state minimum wages. The most influential of these studies were the Card-Krueger-Katz investigations, which found some positive employment effects of minimum wages.⁵ More recent research that extends the analysis of state differentials also disputes the earlier consensus, concluding that modest increases in the minimum wage have no detectable impact on teenage employment in the U.S. ([Dube et al. 2010](#); [Allegretto et al. 2011](#)).

Although this “new minimum wage research” research has been influential, it has also been criticized on methodological grounds, most notably by [Neumark and Wascher \(2007\)](#), with a critique of the more recent research in [Neumark et al. \(2013\)](#). These reviews find that the weight of the evidence – when impacts are measured properly – still supports the negative employment conclusion, with magnitudes similar to the consensus estimates of [Brown et al. \(1983\)](#).

In any event, there is no question that economists are now more divided about the employment effects of minimum wages, at least in developed countries, than they once were.⁶ If there is a consensus view now, it is likely similar to the conclusion drawn by the OECD in its reexamination of the Job Strategy: “the considerable

number of studies [that] have found that the adverse impact of minimum wages on employment is modest or non-existent” (2006: 86).

What about developing countries? Here, dynamics are more complicated because of the existence of a formal sector where the minimum wage applies and an informal sector where it does not. Therefore, according to conventional wisdom, the expected effects of a rise in the minimum wage in developing countries would be a decrease in employment in the formal sector and, because of an increase in the supply of labor due to workers displaced from the formal sector, reduced wages and increased employment in the informal sector.⁷

Research on the impacts of the minimum wage in developing countries largely comes from Latin America, although there are now a few studies in Southeast Asia, East Asia, Central Europe, and Sub-Saharan Africa. The evidence is heavily based on single-country studies that estimate effects due to within-country differences where multiple minimum wages exist or effects over time resulting from changes in the national minimum wage. Researchers have focused on impact levels, but there has been no attention to effects on employment dynamics, such as whether minimum wages have an effect on the way that labor markets respond to shocks or the speed of labor reallocation.

The clear majority of developing-country studies find some adverse employment effects, but this is not always the case. Where significant effects are found, they are most often modest. Examples of research that finds negative employment effects of increases in the minimum wage include studies for Brazil (Lemos 2004; Fajnzylber 2001; Neumark et al. 2006); Colombia (Bell 1997; Maloney and Nunez Mendez 2004; Arango and Pachon 2004); Trinidad and Tobago (Strobl and Walsh 2003); Indonesia (Rama 2001; SMERU 2001; Alatas and Cameron 2003; Del Carpio et al. 2012); Costa Rica (Gindling and Terrell 2007); Nicaragua (Alaniz et al. 2011); and Hungary (Kertesi and Kollo 2003).⁸ However, there are a few examples of studies that find no employment impact (e.g., Bell 1997 for Mexico; Lemos 2009 for Brazil). Some studies are now being conducted on the employment impacts of minimum wages in China, with results suggesting that increases in the minimum wage have had a negative effect in the more prosperous eastern provinces but not in the western region (Ni et al. 2011; Fang and Lin 2013).

Not surprisingly, researchers tend to find that employment effects are generally more significant at the segment of the wage distribution where the minimum wage actually “bites”. For example, in their study of Nicaragua, Alaniz et al. (2011) find that a 10% increase in the minimum wage is associated with a 5% greater probability that a worker earning within 20% of the minimum wage will not be employed in the formal sector, compared with 3% for formal sector workers overall. A negative employment effect can extend beyond workers earning around the minimum wage, but it tends to dissipate as one moves up the wage distribution.

As a result, the employment effects of minimum wage are most evident for those types of workers who tend to have lower wages. A number of studies have found that youth or teenage employment is reduced by minimum wage increases (e.g., [SMERU 2001](#); [Montenegro and Pagés 2003](#) for Chile; [Arango and Pachon 2004](#); [Muravyev and Oshchepkov 2013](#) for Russia). The employment of women has been found to decrease, in several cases, as a result of minimum wage increases (e.g., [Feliciano 1998](#) for Mexico; [Arango and Pachon 2004](#)), although [Montenegro and Pagés \(2003\)](#) identified a shift in employment toward women in Chile. Where researchers have examined the employment impacts of minimum wage increases on the less skilled, they typically find negative effects (e.g., [SMERU 2001](#); [Montenegro and Pagés 2003](#); [Kertesi and Kollo 2003](#); [Arango and Pachon 2004](#); [Bhorat et al. 2012](#) for agricultural workers in South Africa). In general, workers in small firms are most likely to be affected by employment losses due to increases in the minimum wage ([Rama 2001](#); [Kertesi and Kollo 2003](#); [Del Carpio et al. 2012](#)).

We would expect to find that the compositional impact of minimum wage increases would be a shift in employment from the formal sector to the informal sector. Some studies do find a decrease in formal employment and an increase in informal employment (e.g., [Maloney and Nunez Mendez 2004](#); [Jones 1998](#) for Ghana; [Muravyev and Oshchepkov 2013](#)). However, this is not always the case. [Gindling and Terrell \(2007\)](#) find negative employment impacts in the formal sector but no effect on informality in Costa Rica, and [Fajnzylber \(2001\)](#) actually finds a stronger negative employment effect of increased minimum wages in Brazil on wage workers in the informal sector than in the formal sector. How could such a finding be possible? [Fajnzylber \(2001\)](#) notes that this finding is consistent with informal workers moving into the formal sector because minimum wage increases make it more attractive. Alternately, informal workers may leave the labor force if other household members earn more because of the increase. Although neither possibility is formally tested in the paper, these hypotheses illustrate that minimum wage dynamics are more complicated than conventional competitive or dualist theories would suggest.

In the final analysis, the empirical literature indicates that, in most cases, low-wage employment is reduced when the minimum wage is increased. However, the magnitude of that reduction is often small. An important question, posed by [Brown \(1999\)](#), is why these effects tend to be so modest. It is possible that the actual effects are more substantial than researchers have generally been able to detect. For example, in almost all studies, the labor demand variable is measured by employment. However, hours would be a more complete measure because employers can adjust to higher minimum wages through the number of jobs as well as through working time. It is also possible that the typical short-term time horizon for minimum wage research misses effects that increase over time. Indeed, research in

Canada and the U.S. has found significantly stronger lagged than contemporaneous negative employment effects (Baker et al. 1999; Neumark and Nizalova 2007).

Assuming, however, that employment effects are generally as modest as the research suggests, two potential explanations could be considered. One explanation that is especially relevant in developing countries is non-compliance because of large informal sectors and weak enforcement in the formal sector.

The second possible explanation involves the level at which minimum wages are usually set. Where significant negative employment effects have been observed, the minimum wage tends to be quite high or out of line with economic conditions. In Nicaragua, for example, formal sector employment suffered when the minimum wage was set at 86% of the median wage (Alaniz et al. 2011). Colombia experienced negative employment effects after a substantial minimum wage increase in the late 1990s when labor demand was weak (Kucera and Roncolato 2008). Examples such as these notwithstanding, it is more typical, as Freeman (2010) noted, that policy-makers are aware of the potential harm of very high minimum wages, so they tend to set them at a reasonable level, roughly in line with prevailing market wages for unskilled workers.

Impacts on Earnings

Virtually all studies that estimate the wage effect find, not surprisingly, that formal-sector wages rise with higher minimums. As expected, the positive impact is strongest around the minimum wage, persisting somewhat above the minimum because wage relationships are maintained and diminishing as one moves further up the wage distribution (e.g., Gindling and Terrell 1995; Fajnzylber 2001; Maloney and Nunez Mendes 2004).⁹

More surprising is the observation that increases in the minimum wage often raise, rather than depress, wages in the informal sector. This finding is most common in studies of Latin American countries (e.g., Foguel et al. 2001 for Brazil; Fajnzylber 2001; Maloney and Nunez Mendes 2004; Banaante 2004 for Peru; Gindling and Terrell 2004; Lemos 2004 and 2009). It has usually been attributed to the "*Efeito Farol*", or "lighthouse effect", whereby the minimum wage is seen as a benchmark wage for unskilled labor throughout the economy, including the informal sector where it is not binding.

The empirical research is also consistent in demonstrating that the minimum wage compresses wage distributions and reduces earnings inequality. For example, Lemos (2004, 2009) and Fajnzylber (2001) find wage compression in Brazil as a result of minimum wage increases. Gindling and Terrell (1995) and Banaante (2004) report similar findings for Costa Rica and Peru because positive wage impacts are strongest for low-wage workers. However, in their review of minimum wages in the Latin America and Caribbean region, Kristensen and Cunningham (2006) note that the effects of the minimum wage on the distribution of wages

depends on where the minimum wage is set. When it is set at a relatively low level, it compresses the distribution. When it is set at a higher level, it can widen distributions by primarily benefiting higher-wage workers.

An important question concerns the role of minimum wages in the long-run increases in earnings inequality that have been observed in many countries. In a recent cross-country analysis of inequality, the [OECD \(2011\)](#) has estimated that policies and institutions accounted for the largest share in the increase in the 9th/1st earnings decile ratio, more than technological change and much more than globalization. Declining real minimum wages are one of the institutional changes driving this inequality. This finding has been established for developed countries for a number of years (e.g., [DiNardo, Fortin, and Lemieux 1996](#) for the U.S.). This is not a topic that has been researched extensively in developing countries. One exception is a study by [Bosch and Manacorda \(2010\)](#), who find that the steep decline in the real minimum wage accounted for a substantial part of the growth in inequality in urban Mexico between 1989 and 2001.

Do the equalizing effects of minimum wages translate into poverty reduction? Advocates often present minimum wage increases as an anti-poverty tool. However, some economists are more skeptical, partly because of disemployment effects but even more because of the targeting of minimum wage rules (i.e., many workers covered by minimum wage legislation are not in poor households, whereas the poorest households often do not have members in the formal sector covered by minimum wage rules). In a theoretical exposition, [Fields and Kanbur \(2007\)](#) show that the poverty impacts of the minimum wage are indeterminate and depend on the degree of poverty aversion, the elasticity of labor demand, the relationship between the minimum wage and the poverty line, and the extent of income sharing within the household.

The empirical evidence on the minimum wage-poverty relationship in developing countries comes from Latin America. The conclusions vary. Some find that increases in the minimum wage reduce poverty (e.g., [Morley 1995](#); [Lustig and McLeod 1997](#)). [Gindling and Terrell \(2006\)](#), using micro-data for Honduras, estimate that a 10% increase in the minimum wage reduced the likelihood of extreme poverty by 1.8% and poverty by 1% in that country. A study by [Alaniz et al. \(2011\)](#) on Nicaragua has also found a positive relationship between the minimum wage and the incidence of poverty, but only when the household head was affected. In contrast, some studies find no connection between minimum wages and poverty reduction (e.g., [Neumark et al. 2006](#) for Brazil). Even where researchers do find such a link, they do not necessarily advocate minimum wages as an anti-poverty tool. [Lustig and McLeod \(1997\)](#) note that their results should not be seen “as a flat endorsement of minimum wages as a cost effective policy to reduce poverty” because of potential negative employment and growth effects, particularly in the long run.

Nonetheless, they argue that reducing minimum wages in developing countries will hurt the poor, at least in the short run.

Impacts on Productivity

The effects of the minimum wage on productivity have been infrequently considered by researchers. [Bassanini and Venn \(2007\)](#), using aggregate cross-country data for 18 OECD countries from 1979–2003, estimated that a 10 percentage point increase in the minimum wage-to-median wage ratio was associated with an increase of between 1.7 and 2.0 percentage points in long-run labor productivity and multi-factor productivity levels. No estimates for developing countries could be found for this review.

There are two likely reasons for a positive productivity effect. The first is the substitution of more skilled for less skilled labor due to the decreased demand for unskilled labor as minimum wages rise. To the extent that employers make this substitution, productivity levels will rise without any change in employment levels. The second possible reason is that employers could make productivity-enhancing adjustments (e.g., increased investments in training or new technologies) in response to the higher labor costs due to increases in the minimum wage.¹⁰ As [Bassanini and Venn \(2007\)](#) note, these two reasons have very different implications. The substitution effect is essentially a shuffling of employment opportunities with undesirable distributional consequences. In contrast, increased training or technological innovation suggests real efficiency gains. Although the authors are unable to disentangle the effects of these two factors, they speculate that substitution may be a large part of the story. Unfortunately, pertinent evidence cannot be found from other studies that might provide more insight into the substitution versus training/technology hypotheses.

The only other evidence from the literature that is potentially relevant in assessing productivity effects relates to the impacts of minimum wages on the size structure of firms. To the extent that (lower-productivity) small firms are disproportionately affected compared to medium- and large- size firms, as shown in studies for Indonesia (e.g., [Rama 2001](#); [Alatas and Cameron 2003](#); [Del Carpio et al. 2012](#)), it is possible that minimum wage increases might lead to a reallocation of resources toward more productive (larger) enterprises.

Finally, it should be noted that any possible productivity effects need to be considered in conjunction with output effects due to changes in employment levels to evaluate the overall impact of minimum wages on economic production. This issue has not been addressed empirically in the literature.

Summary

The impacts of minimum wages are summarized in [Table 1](#).

Table 1. Summary of impacts of minimum wages

<i>Indicator</i>	<i>Findings</i>	<i>Comments</i>
Aggregate employment	Modest negative impact or insignificant impact.	Where the minimum wage set is important.
Employment for particular groups	Groups most likely to have negative impact are youth and low skilled.	A few studies show a positive employment effect.
Wages	Positive effect.	Effect strongest around minimum. Some evidence of positive effect in the informal sector.
Wage distribution	Reduces wage inequality.	Where the minimum wage set is important.
Poverty	Reduces poverty.	Some studies find no effect.
Productivity	Unclear.	No evidence for developing countries.

Employment Protection Rules

Employment protection legislation (EPL) refers to the rules governing the initiation and termination of employment contracts. EPL is fundamentally about determining the degree of job security, which it does in two ways: by restricting the ability of employers to hire workers on an explicitly non-permanent basis and by making dismissal costly. Governments introduce these rules to provide insurance for workers against the uncertainty of job loss and to ensure that employers meet a standard of social responsibility by assuring some commitment to employees (OECD 2004). However, EPL is controversial because of sharp differences in views about overall efficiency and distributional effects. Once again, these differences reflect the institutionalist-distortionist divide, with the former emphasizing the protection and security afforded to workers and the latter focusing on employment and efficiency losses and privileging “insiders” who are covered by these rules.

Different countries (and, sometimes, jurisdictions within countries) have different EPL arrangements. These are often characterized along a continuum ranging from protective to unregulated or rigid to flexible. At the more protective end of the scale, non-permanent employment contracts (temporary, fixed term) are restricted; limitations are placed on employer dismissal rights¹¹; compulsory severance payments are substantial; and administrative requirements for layoffs (e.g., advance notice, government approval) are significant. At the less regulated end, few restrictions exist with respect to non-permanent forms of contracting or employer dismissal rights, and the administrative and monetary costs of layoffs are minimal.

What determines the job security rules that a country adopts? Botero et al. (2004) analyze labor legislation in 85 countries and conclude that the level of development did not matter and the strongest determinant was the country’s legal

tradition. Generally, countries with civil law traditions have more extensive job security protections than common law countries. However, it may be that the determining factors also include more intangible variables. For example, [Algan and Cahuc \(2006\)](#) and [Aghion et al. \(2010\)](#) demonstrate that the level of trust and civic virtue inversely affect a society's demand for labor market regulation.

Although substantial differences exist across countries in terms of employment protection rules, there seems to be a convergence over time toward less restrictive EPL ([ILO 2012](#); [OECD 2013](#)). For reasons of political expediency, the first stage of this deregulation involved expanding the scope for temporary contracts rather than reducing job security for permanent employees. The inadvertent result of this stage was to increase the share of non-permanent employment and to intensify the phenomenon of “two-track” labor markets characterized by these (growing) precarious jobs and (shrinking) permanent jobs.¹² Given these undesirable consequences, more recent reforms have involved easing dismissal protections for permanent workers ([ILO 2012](#); [OECD 2013](#)).

Economic theory does not lead to clear predictions about the employment effects of EPL. Some models (e.g., [Bentolila and Bertola 1990](#)) show that more costly job security provisions should increase average employment within a given firm, whereas others (e.g., [Hopenhayn and Rogerson 1993](#)) demonstrate that they reduce employment on the extensive margin by lowering firm entry and job creation rates. However, theory predicts that stricter EPL should moderate employment fluctuations over the business cycle and should reduce turnover (e.g., [Bentolila and Bertola 1990](#)). Some models (e.g., [Kugler 2004](#)) show that job security rules create incentives for high-turnover firms to operate in the informal sector. Theoretical expectations about productivity effects are indeterminate ([OECD 2007a](#)). On the one hand, strict EPL could constrain the flow of workers into emerging high-productivity sectors and discourage technological change that is labor saving. On the other hand, because of commitment signals and expected tenure effects, strict EPL could increase worker effort and incentives to invest in human capital. At the same time, it could motivate productivity-enhancing investments to compensate for additional costs associated with job security rules.

Employment protection rules are not easily reduced to a single number, such as the minimum wage. Therefore, cross-country analysis typically relies on constructed indices that characterize a country's EPL in a single quantitative measure. The most widely used is the OECD EPL index, which assesses countries in terms of the strictness of their provisions for protecting permanent workers against individual dismissal, for collective dismissal requirements, and for regulations governing temporary forms of employment ([OECD 2013](#)). Other approaches estimate the monetary costs that an employer can be expected to incur in complying with job security regulations ([Heckman and Pagés 2004](#)), combine both indices and expected costs of compliance (e.g., [Botero et al. 2004](#)), or use qualitative assessments by managers

on the flexibility of hiring and firing arrangements (e.g., [DiTella and MacCulloch 2005](#); [Feldmann 2009](#)). Admittedly, all of these indicators have limitations in terms of rigor or their ability to capture the real impact of EPL “on the ground”, largely because of incomplete enforcement (see [Bertola, Boeri, and Cazes 2000](#)).

The empirical literature on the impacts of EPL reflects the preponderance of evidence from OECD countries. Although increasing, there is less analysis pertaining to developing countries, with most of the research on Latin America. For the most part, researchers have concentrated on the effects of EPL on employment levels and dynamics.

Impacts on Employment Levels

Studies on the employment impact of EPL are divided between those finding no significant effect and those finding a modest negative effect (i.e., higher unemployment and/or lower employment).¹³ Moreover, the results can be characterized as fragile in the sense that findings are often sensitive to model specification and the treatment of data ([Glyn et al. 2004](#); [Howell et al. 2007](#)). Researchers in different studies of a common set of countries have sometimes found different employment impacts. For example, using cross-sectional data for the 1980s and 1990s for Latin American and OECD countries, [Heckman and Pagés \(2000\)](#) find a negative employment effect of stricter job security rules. In a subsequent study (2004), they find no significant employment impact.

Much of the research in developed countries has tested the relationship between EPL (often using the OECD’s EPL index) and labor market outcomes by using cross-sectional national data. Interestingly, most of the earlier studies found a negative effect on employment and, in some cases, unemployment (e.g., [Scarpetta 1996](#); [Nickell 1997](#); [Elmeskov, Martin, and Scarpetta 1998](#); [Nickell and Layard 1999](#)). More recent studies using this approach have found no significant employment impact (e.g., [Baccaro and Rei 2005](#); [Bassanini and Duvall 2006](#)).

There has been some skepticism about whether cross-country regressions using aggregate data can accurately identify the impacts of EPL (and other labor market institutions). In recent years, a number of researchers have examined the effect of a regulatory change in a single country using panel data (household or firm) and time-series models. Some of this research has been conducted on developing countries. A collection of these studies was compiled for a number of Latin American and Caribbean countries in [Heckman and Pagés \(2004\)](#). The results were not conclusive, with some studies identifying a negative employment effect of job security rules (e.g., [Kugler 2004](#) for Colombia; [Saavedra and Torero 2004](#) for Peru; [Mondino and Montoya 2004](#) for Argentina) and others ([Paes de Barros and Corseuil 2004](#) for Brazil; [Downes, Mamingi, and Antoine 2004](#) for three Caribbean countries) finding no significant effect. Using a similar approach, [Petrin and Sivadsadan \(2006\)](#) find that

changes in EPL in Chile had no significant impact on employment. Using a sample of developed and developing countries, [Micco and Pagés \(2006\)](#) show that negative employment effects are concentrated in more volatile sectors. They also identify the driving force as a decline in the entry of new firms rather than decreased firm size.

Outside Latin America, there has been very little analysis of the employment impact of EPL in developing countries. The major exception is India, where a number of studies have been conducted (see Box 1).

Box 1: Does India's EPL have Harmful Effects?

India has a widely held reputation for restrictive job security rules that constrain output, productivity growth, and job creation while encouraging informality. Indeed, India's labor regulations are often considered one of the major obstacles limiting the country's progress, specifically by discouraging the creation of labor-intensive manufacturing jobs that have been to the key to the rapid development of other labor-abundant Asian countries. Emblematic of this view is [Panagariya's \(2008\)](#) assertion that the "most important factor that still holds back large firms from entering [labor-intensive] products is a set of draconian labour laws in India". Does the empirical evidence support this view?

When measured against other countries, India does offer substantial protection to regular workers against dismissal. For example, the [OECD \(2013\)](#) has applied its EPL index methodology to its 34 member countries and nine major emerging economies and rated India's rules for protecting permanent workers against dismissal as more stringent than all but one of the countries included.¹⁴ The legislation that is most relevant for dismissals is the Industrial Disputes Act (IDA), which governs procedures for layoffs and retrenchments and dispute resolution, among other things. The most controversial part of the IDA is Chapter VB, which imposes restrictions on the ability of firms to dismiss workers. Particular attention has been paid to amendments in 1976 and 1982 that required government approval for layoffs, retrenchments, and closures in the factory sector, initially for all firms with at least 300 employees and subsequently for firms with 100 workers.

Although the IDA is national legislation, states have the right to make amendments. This situation has led to variation within the country regarding the rigidity of India's EPL. Many researchers have exploited this variation to analyze the effects of job security rules. The starting point for this line of research was [Besley and Burgess \(2004\)](#), who reviewed amendments to IDA to classify states as pro-employer, pro-worker, or neutral in terms of their job security rules and then analyzed the effect of this classification on different economic outcomes. They found that states with pro-worker (more protective) reforms had lower output, investment, productivity, and employment growth in formal manufacturing than states with pro-employer (flexible) reforms. Although influential, [Besley and Burgess \(2004\)](#) were

criticized on various counts, most notably by [Bhattacharjea \(2006\)](#), who questioned the methodology for categorizing states and for ignoring important factors beyond IDA, such as other relevant laws and enforcement, which affect job security.

A number of subsequent studies have used the Besley-Burgess research strategy while responding to criticisms by adjusting the way in which state-level EPL is measured.¹⁵ Most studies that have used either the original index or a modified Besley-Burgess index have reached conclusions similar to Besley and Burgess. They have tended to find that states with more protective EPL have lower employment growth and slower labor adjustment in sectors covered by relevant legislation than states with more flexible rules (e.g., [Aghion et al. 2007](#); [OECD 2007b](#); [Adhvaryu et al. 2011](#)). Some studies have found an association between the strength of EPL and the size of the informal sector in manufacturing (e.g., [Ahsan and Pagés 2009](#); [Goldar and Aggarwal 2012](#)).¹⁶ Other studies have linked protective labor rules with lower productivity and output (e.g., [Aghion et al. 2007](#); [Ahsan and Pagés 2009](#); [Dougherty et al. 2011](#)). [Ahsan and Pagés \(2009\)](#) find that more protective EPL does not help workers in terms of a larger wage bill because any gains in wages are more than offset by employment losses. All of these negative outcomes tend to be most evident in labor-intensive industries ([Gupta et al. 2009](#); [Ahsan and Pagés 2009](#)). [Hasan and Jandoc \(2012\)](#) found that states with less flexible job security rules had a larger number of very small firms and fewer very large ones than states with flexible rules, but again only in labor-intensive sectors.

India's protective job security rules seem to have negative consequences. However, the more difficult question is how much of a barrier they really are to the country's economic development. For various reasons, some observers (typically within India) are skeptical of the view that these rules are a serious obstacle and that they should be a priority for reform. IDA and the state amendments that have been such a strong focus of the econometric research actually apply to only a very small organized manufacturing sector, so making EPL more flexible would hardly make a dent in addressing India's overall economic and employment challenges ([Bhattacharjea 2006](#)). Moreover, employers are able to use various strategies, such as relying on contract labor, capital substitution, and remaining small, to minimize the costs of the job security rules ([OECD 2007b](#)). Weak enforcement and employer tactics to avoid penalties are also important ([D'Souza 2010](#)). In fact, only a very small minority of firms (15%, according to Investment Climate Assessment) identify labor regulations as a major obstacle.

All of these points have some merit. Ultimately, electricity, tax administration, and corruption are likely to be more binding constraints to India's development than labor regulations. However, the stringent dismissal rules are an obstacle (if not the most important obstacle) to the process of creative destruction and, more specifically, to the expansion of labor-intensive manufacturing, in which India should have a comparative advantage. Strategies that employers are sometimes able to

adopt to bypass the rules only underline India's weak institutions. The empirical evidence leads to the conclusion that reforming the job security rules would not be a magic bullet but would be beneficial for the economy and its workers.

An important consideration in the context of developing countries concerns the differential effects of EPL on formal and informal employment. Conventional dual-sector theories predict that more costly job security rules would result in a shift from the formal to the informal sector. Studies that have examined this issue (almost exclusively in Latin America) do not lead to a clear conclusion. [Perry et al. \(2007, 121\)](#) conclude from the regional and country-level studies in [Heckman and Pagés \(2004\)](#) that “a credible case can be built that labor legislation had a substantial impact on the size of the formal sector”. However, taking a more critical look at this and other relevant research, [Kucera and Roncolato \(2008\)](#) find the evidence less conclusive, with results varying according to model specifications. Statistically significant findings are sometimes “borderline”, and there are several cases of no significant relationship.

More generally, the aggregate employment impacts of EPL can be affected by interactions with other labor market institutions. The union density and collective bargaining structure appear to be particularly relevant, at least in the OECD, although there is no consensus on exactly how these institutions influence the effects of EPL (e.g., [Elmeskov, Martin, and Scarpetta 1998](#); [Belot and van Ours 2000](#); [IMF 2003](#)). Although there is limited research on the subject in developing countries, interactions between institutions are evident from some studies. For example, [Ahsan and Pagés \(2009\)](#) find that the negative effects of EPL on employment are only important in Indian states where the costs of dispute resolution are high. Enforcement is another institutional feature that matters. [Almeida and Carneiro \(2009\)](#) show that across municipalities in Brazil, the negative effect of EPL depends on the strictness of enforcement.

The research has been quite consistent in identifying how the impacts of EPL vary for different types of workers. The effects are most favorable for those who are covered by job security rules, with prime-age males and the better educated overrepresented in this group. In contrast, the lower hiring rates associated with strong EPL may have a negative effect on those outside its protective umbrella (i.e., those who are not working or in non-covered jobs). Youth, women, and the less skilled are overrepresented in this group. [Montenegro and Pagés \(2003\)](#) found that the introduction of more protective rules in Chile had adverse effects for women relative to men, for youth relative to the more experienced, and for the less skilled relative to the skilled.

Thus, although strict EPL tends to create employment barriers for these groups, loosening these rules will not necessarily benefit these “outsiders” if reforms are only partial. Many countries, especially in the 1990s and early 2000s, attempted to remove these barriers by making temporary contracting less restrictive while

leaving permanent worker protections unchanged. The result was increases in precarious employment, especially for women, youth, and the less skilled (OECD 2004, 2006). Therefore, any overall employment gains for these groups may be offset by the increased likelihood that their employment will be in temporary rather than permanent jobs.

Impacts on Labor Market Dynamics

Job security rules have clear impacts on labor market dynamics. Empirical research confirms theoretical expectations that rules discouraging dismissals and temporary contracts lengthen durations in different labor market states (employment, unemployment, not in the labor force) and, accordingly, reduce flows between these states. A number of cross-country studies have shown that the strictness of EPL explains a significant part of country variation in job and worker flows (e.g., OECD 2004, 2010; Caballero et al. 2004; Micco and Pagés 2006; Haltiwanger, Scarpetta, and Schweiger 2008). Single-country studies using longitudinal data have come to similar conclusions. For example, Kugler (1999) found that the 1990 reduction in firing costs in Colombia increased the exit rate out of unemployment and employment and reduced average job tenure. Other studies in Latin America have linked reductions in EPL with lower average tenure and increased turnover (Saavedra and Torero 2004 for Peru; Hopenhayn 2004 for Argentina). Some studies have also shown that the strength of the relationship between EPL and labor market dynamics may depend on a country's rule of law. Cross-country analyses by Caballero et al. (2004) and Micco and Pagés (2006) find that the effect of EPL on job and worker flows is very important where the rule of law is strong and may largely disappear where the rule of law is weak. This is an important finding in the context of developing countries.

By affecting the process of job creation and destruction, employment protection legislation can have an impact on the way that labor markets adjust to external shocks, such as a recession or labor-saving technology. However, this relationship may be complicated. Whereas protective job security rules limit the ability of firms to lay off workers in the event of a shock, they may also increase unemployment by slowing the speed of firms' adjustment and extending the duration of jobless spells. Consistent with this phenomenon, empirical work in the OECD has found that stricter EPL may moderate the initial adverse effects of a shock but may subsequently contribute to its persistence (OECD 2006; Bassanini and Duvall 2006). Blanchard and Wolfers (2000) find that the second effect dominates, at least in Europe, concluding that strong job security rules increase the negative impact of shocks on unemployment. Examining the recent financial crisis, Bentolila et al. (2011) estimate that real differences in EPL (i.e., reflecting differences in enforcement) explain much of why the unemployment rate in France did not rise as much

as it did in Spain, where job security protections are stronger.¹⁷ Not all studies, however, support a negative relationship between strong EPL and adjustments to shocks. [Petrin and Sivadasan \(2006\)](#) find that 1991 and 1994 changes in Chile's EPL had no impact on the speed of adjustment. Additionally, [Eichhorst et al. \(2010\)](#), examining the way that different G20 countries adjusted to the recent financial crisis, find no systematic impact of different EPL levels.

Impacts on Earnings

Changes in EPL are mostly expected to affect employment, not wages. Accordingly, few studies have examined any earnings effects. The research that exists pertains to the distribution of wages and is essentially limited to developed countries. The most extensive analysis of this issue was conducted by the [OECD \(2011\)](#) in its recent study of inequality, which concluded that less strict EPL is associated with more wage dispersion.

Impacts on Productivity

Theoretical expectations about the productivity effects of job security rules are indeterminate. Empirical work, mostly limited to OECD countries, is somewhat inconclusive as well. Some researchers have identified a positive relationship between the level of EPL and productivity or productivity growth, although often with conditions. For example, analyzing OECD countries, [Belot, Boone, and van Ours \(2007\)](#) find that stricter EPL increased productivity, but only in environments where workers invested in firm-specific skills.¹⁸ [Nickell and Layard \(1999\)](#) and [Koeniger \(2005\)](#) identify positive relationships between EPL and both labor and multifactor productivity growth in OECD countries, although their results were generally weak and depended on model specifications. [Autor, Kerr, and Kugler \(2007\)](#) find that effectively stricter dismissal rules in some U.S. states (through exceptions to the at-will employment doctrine) were associated with a rise in labor productivity but a decrease in total factor productivity.

Other studies have found a negative relationship between the strictness of EPL and productivity. [Bassanini and Venn \(2007; OECD 2007a\)](#) and [Bassanini, Nunziata, and Venn \(2009\)](#) find that more protective job security for regular contracts reduced the annual growth rate for labor and multifactor productivity growth in OECD countries. However, their analyses do not find that restrictions on the use of temporary employment had any effect. In their analysis of 14 European countries, [Cingano et al. \(2010\)](#) find negative impacts of EPL on labor productivity, particularly in sectors with high rates of labor reallocation.

The very limited evidence for developing countries is also inconclusive. Analyzing a sample of both developed and developing countries, [Caballero et al. \(2004\)](#) find that increased employment protection has a significant negative impact on total

factor productivity growth (of approximately 1% annually) in countries with strong rule of law but no effect where the rule of law is weak (presumably, many developing countries). Using a similar sample of countries, [Micco and Pagés \(2006\)](#) conclude that stricter EPL does not robustly affect labor productivity, although it does affect output, primarily through a decline in firm entry.

These results reflect the diverse and often opposing ways in which EPL may affect productivity. By slowing labor reallocation, strict job security rules can limit the potential efficiency gains from the movement of workers from low- to high-productivity sectors and firms. Indeed, some researchers have established a link between strict EPL, reduced labor flows, and lower productivity (e.g., [Caballero et al. 2004](#)). However, productivity impacts are not always evident despite the clear dampening effect of job security rules on labor reallocation. [Martin and Scarpetta \(2012\)](#) note two possible reasons for this. First, a considerable amount of mobility in the labor market is “churning” and not reallocation from lower- to higher-productivity activities. Second, although firm entry and exit effects are important, productivity growth is largely driven by “within-firm” performance, at least among OECD countries.

Where positive productivity impacts have been found, this tends to be due to adjustments made by firms or workers in response to job security rules. For example, [Autor, Kerr, and Kugler \(2007\)](#) attribute higher labor productivity growth in states adopting stricter dismissal rules to capital and skills deepening on the part of firms. [Belot, Boone, and van Ours \(2007\)](#) link positive productivity impacts to more training resulting from longer expected tenure in high-EPL jurisdictions. Examining the U.S., Germany, India, the U.K., and France, [Acharya \(2010\)](#) finds that higher dismissal costs are positively related to innovation, which he attributes to the security this provides for employees to engage in risky activities. However, the relationship between job security and innovation is not straightforward: [Calmfors and Holmlund \(2000\)](#) find that high firing costs reduce employers’ incentives to introduce new technology.

Summary

The impacts of employment protection rules are summarized in [Table 2](#).

Conclusion

Setting labor market regulations is often a contentious area of policymaking. Ideally, empirical evidence on the impacts of these regulations could help settle these fundamentally ideological debates. Methodological and data challenges can be formidable, and coverage remains spotty outside Latin America. However, the available literature suggests some conclusions about how minimum wages and EPL affect labor market and productivity outcomes in developing countries.

Table 2. Summary of impacts of EPL

<i>Indicator</i>	<i>Findings</i>	<i>Comments</i>
Aggregate employment and unemployment	Either no impact or modest negative (positive) impact on employment (unemployment).	Both developed and developing countries (largely Latin America). Results tend not to be robust.
Employment for particular groups	Prime-age males positively affected. Youth, women, and low-skilled workers negatively affected.	“Partial” reforms for “two-track” labor markets lead to more precarious employment for these groups.
Labor market dynamics	Longer durations in employment, unemployment, and not in the labor force. Smaller flows between different labor market states.	
Adjustments to shocks	Increases negative impact of shocks.	Not all studies find this relationship.
Productivity	No consistent conclusion.	Evidence largely comes from developed countries.
Training	Positive effect.	Longer-duration employment associated with greater human capital investments.
Innovation	Unclear.	Very little evidence.
Reallocation of labor	Negative effect.	

Freeman (2000, 2005) concludes that labor market institutions have clear distributional effects but that efficiency effects are difficult to find. This paper suggests that he is largely correct with respect to minimum wages and employment protection rules in developing countries. These regulations reduce wage inequality for covered workers by narrowing wage differentials based on skill, gender, and age. However, their ultimate equalizing effect is diluted by the fact that the low skilled, the young, and women are less likely to be covered. To the extent that these institutions affect the composition of employment, they tend to be against these groups and in favor of prime-age males and the better educated.

Impacts on efficiency appear modest, with most studies showing no effect or small negative effects but some finding positive effects. EPL does not have a significant unidirectional impact on productivity. It seems that losses due to lower worker and job flows and the less-efficient reallocation of labor across firms and sectors because of job security rules are essentially cancelled out by institution-driven workplace gains due to the “voice” effect and longer tenures with greater investments in training and, perhaps, more innovation. Finally, a major question concerns the overall employment effects of minimum wages and EPL. On balance, the impact of these regulations tends to be either insignificant or modestly negative.

These conclusions do not mean that labor market regulations can never be costly in terms of productivity or employment losses or undesirable distributional

consequences. Minimum wage-setting and job security rules that interfere with the normal functioning of the labor market may reduce output or employment or may disadvantage certain groups. Although the potential impacts of such institutional failures are often mitigated in developing countries through low compliance, this is not a desirable approach because it does not address the underlying market imperfections that motivate the creation of institutions in the first place. A similar problem exists where regulation is minimal. This does not remedy information failures, asymmetric bargaining power, and inadequate risk management in the labor market.

The 2013 World Development Report on Jobs refers to these situations as the “cliffs”. Between these extremes, a “plateau” exists where rules enhancing and undermining efficiency operate side by side, and most of the effect is redistributive. The overall conclusion of this review is that regulations are often set in ways that place countries on a plateau, avoiding the consequences of being on one cliff or the other.¹⁹

Notes

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1. The *2013 World Development Report* ([World Bank 2012](#)) proposes that jobs affect not only living standards and productivity but also social cohesion. To the extent that labor policies have an impact on jobs, a complete assessment of labor regulations should include effects on social cohesion.

2. One example of this type of analysis is [Eichhorst et al. \(2010\)](#).

3. IFC’s Doing Business “employing workers” index, which covers EPL as well as other regulations, has been particularly controversial in terms of what it measures and its implications for policy. See [Berg and Cazes \(2007\)](#) for an early discussion. In response to criticisms, the World Bank Group created a consultative group to study the index. It has also been assessed in the [Independent Panel Review of Doing Business Report \(2013\)](#). Because of the controversies, the employing workers index is not currently included in the overall Doing Business country scoring and ranking.

4. [Freeman \(2005\)](#) proposes laboratory experiments and simulations of artificial agent modelling as well as the use of micro data. [Heckman \(2007\)](#) sees the next steps as expanding the database and using cost-based measures of institutions as well as more sophisticated modelling.

5. For a complete treatment of this research, including the particularly influential New Jersey-Pennsylvania fast food study, see [Card and Krueger \(1995\)](#).

6. Although the vast majority of U.S. economists accepted the proposition a generation ago that higher minimum wages led to lower employment, there has recently been less consensus ([Fuller and Geide-Stevenson 2003](#)).

7. This is admittedly a somewhat simplified depiction of dual labor markets in developing countries. As [Fields \(2005\)](#) explains, there are variations of this model, with different assumptions about wages and unemployment in the two sectors.

8. An interesting, but rarely studied, question is how the labor supply of other household members adjusts to job loss when it occurs. One exception is [Neumark et al. \(2006\)](#), who found that other household members increased their participation in the labor force.

9. There is essentially no evidence on whether non-wage benefits decrease because of these wage gains.

10. The increased training incentives may be counteracted by the reduced room for employers to shift (specific) training costs onto workers through wage shifting if the minimum wage has been increased. Overall, the evidence on the relationship between minimum wages and training is inconclusive ([OECD 2007a](#)).

11. Particularly relevant are the rules governing whether and how workers can be dismissed for “economic” reasons (e.g., due to shrinking markets or increasing competitiveness). This class of terminations stands in contrast to dismissals for “noneconomic” reasons such as job performance.

12. There is now a body of literature on this so-called “partial reform” and new proposals to unify “insider-outsider” labor markets, especially in southern Europe, where this phenomenon is most prevalent (e.g., [Bentolila et al. 2011](#) for Spain; [Boeri 2011](#) for Italy; [Cahuc and Kramarz 2004](#) for France).

13. It should be noted that employment and unemployment impacts are not always the same. Where job security has a negative impact on labor demand, employment will almost certainly decrease, but unemployment may not be affected if the decreased labor demand leads to a reduced labor supply.

14. It should be noted that India’s scores on permitting temporary contracts, which is the other component of the OECD EPL index, were around the OECD average.

15. Examples of modified state indices include [Ahsan and Pagés \(2009\)](#), [OECD \(2007b\)](#), [Dougherty \(2009\)](#), and [Gupta et al. \(2009\)](#).

16. [Ahsan and Pagés \(2009\)](#) distinguish between EPL rules that make labor adjustment more costly and those that increase the cost of dispute resolution. They find that the former effect is more important.

17. They find that with the actual French EPL practice and taking into account its indirect effect on reducing mismatch, Spanish unemployment would have increased by 45% less than it actually did (i.e., from 8% to 14% rather than to 19%) between 2008 and 2009 ([Bentolila et al. 2011](#)).

18. However, as one reviewer noted, there may be less incentive for firms to support firm-specific skills investment in a strong EPL regime because one motivation for this type of investment is to discourage turnover.

19. Some of the practical considerations in determining where the plateau ends and the cliffs begin are discussed in [Betcherman \(2014, forthcoming\)](#).

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