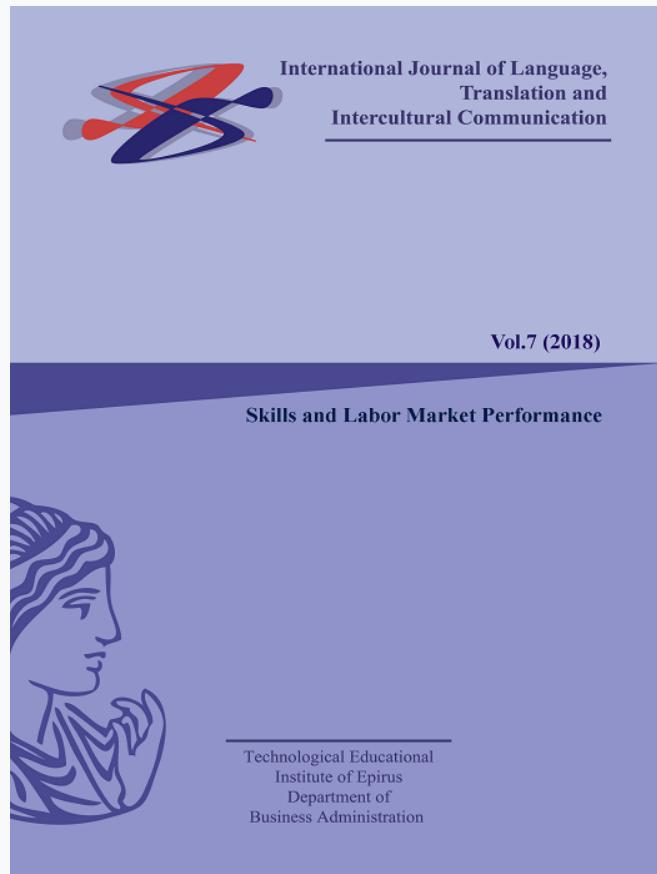


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**Job flows, returns to skill, and rent-sharing at the dawn of the new millennium: A firm-level inquiry from the BRICS**

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# Job flows, returns to skill, and rent-sharing at the dawn of the new millennium: A firm-level inquiry from the BRICS

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## Abstract

We present a firm-level inquiry on labour-demand characteristics in the BRICS economies, using standardized data from the World Bank Enterprise Surveys for the pre-crisis period of 2002-2003. The BRICS countries are the growth champions of that period, with numerous discussions on the effect of growth on inequality and the role of skills on labour-market performance. We examine employment, employment growth and its constituents, as well the returns to skill and the incidence of rent-sharing. We find that SMEs in the BRICS exhibit lower gross employment growth, compared to large firms. Large firms in Brazil, Russia and South Africa are responsible for most of the net job creation. In contrast, small and medium firms in China and India exhibit higher net job creation rates compared to large firms. Younger firms in Brazil, Russia and India generate higher net job creation figures, in contrast to China and South Africa, in which it is the large firms that generate more net new jobs. Foreign firms in China exhibit the highest net job creation, while in Brazil and India domestic firms create most of the new net employment. Private firms are responsible for most of the net job creation and job reallocation in all BRICS countries. The returns to skill are lower in SMEs and young firms, and we find evidence in favour of rent sharing, particularly in Brazil and India, by foreign and exporting firms, and by SMEs in China.

**Keywords:** Job flows, labour demand, labour performance, returns to skill, rent-sharing, SME, BRICS

**JEL Classification:** D22, F16, F23, J23, J31, L60, O57

## 1 Introduction

Recent world developments have put employment at the centre of the policy debate, creating a sense of urgency and reminding that jobs are the cornerstone of economic and social development<sup>1</sup> (World Bank, 2013). Through job creation and destruction within sectors, and reallocation across sectors and countries, jobs are at the root of aggregate productivity gains. The reallocation of labour across sectors can also contribute to growth closing gaps in productivity. Traditional analyses of the link between growth and job creation consider the degree to which employment affects overall economic activity. Understanding where jobs could come from in a particular country context is essential to concentrate efforts on encouraging efficient job creation. In some cases, the focus may be on specific products or on specific sectors, while in others it may be on economic units of a certain type. For instance, small and medium enterprises

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<sup>1</sup> The global financial crisis resulted in massive job losses and declining living standards in both emerging and industrial countries (ILO, 2012; World Bank, 2012).

may create more jobs than bigger ones. In yet other cases, location may be the most important consideration; for example, secondary cities may be less congested and have a more accessible pool of low-cost labour than major urban centres. Institutional characteristics of economic units may matter as well. For instance, state-owned enterprises tend to have a larger workforce than their private sector counterparts.

This study provides a descriptive analysis of employment characteristics in the BRICS<sup>2</sup>, focusing on the specifics of employment, employment growth, the wage structure and returns to skill, and rent-sharing. We are interested in the role of small and medium sized enterprises (hereafter *SMEs*, defined as companies employing fewer than 100 employees), the impact of foreign and government affiliation and exporting activity, *inter alia*, in shaping employment outcomes. The BRICS economies have championed the global economy at the dawn of the new millennium, with consistently high growth rates, almost doubling their share of world GDP (de Vries et al., 2012) minor effects or early recovery from the recent financial crisis and widespread optimism about the future prospects (Grant Thornton, 2012)<sup>3</sup>. Overcoming the challenge of unemployment which many mature economies are faced with, businesses in the BRICS are faced with a shortage of skilled workers and an abundance of low average cost unskilled labour. Moreover, the countries have stemmed from quite heterogeneous institutional backgrounds and reform processes, following different growth models. It is thus of great interest to examine the employment characteristics of the five economies, in order to enhance the understanding of the specific country context. We utilize homogeneous data for the period 2002-2003 from the World Bank Investment Climate Surveys. Investment climate assessments help shed light in the diversity of employment characteristics depending on the sector, size, location and ownership structure of enterprises.

The results of this study reveal interesting patterns highlighting considerable sources of heterogeneity with respect to employment growth and net job creation, skilled labour demand and rent-sharing in the five economies. Specifically, despite recent claims of the contrary, SMEs in the BRICS exhibit lower employment growth, compared to large firms. The only notable exception is South Africa, where there are no major differences between SMEs and large firms. Large firms in Russia and South Africa are responsible for most of the net job creation, while the differences between SMEs and large firms with respect to net job creation are minimal in Brazil, and in favour of SMEs in India and China. Younger firms also have higher net job creation figures, again with the exception of South Africa where young and old firms have similar figures. Foreign firms in China exhibit the highest net job creation, while in Brazil and India domestic firms create most of the new net employment. There are no major differences with respect to foreign affiliation and net job creation in Russia and South Africa. Government firms have lower net job creation rates in all counties. SMEs do not pay lower wages but seem to pay lower benefits and have lower ratios of returns to skills. Finally, the results provide clear evidence on rent-sharing in Brazil and India, some evidence of rent-sharing in China, while rent-

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<sup>2</sup> The acronym BRICs, referring initially to Brazil, Russia, India and China only, dates back to 2001 and is attributed to the British economist working for investment bank Goldman Sachs, Jim O'Neill. Some years later, South Africa was included in the analyses, forming the BRICS acronym.

<sup>3</sup> The Grant Thornton (2012) report documents employment prospects in the BRIC economies as a whole remained robust, with net 45% of businesses increasing staff levels in 2011 and a further 41% expecting to do so again in 2012. By contrast, even as jobs were shed in the public sectors just 22% of business leaders in the G7 boosted staff levels over the past 12 months, whilst 26% expect to do so in 2012. The report does not cover South Africa, and further suggests that 36% of businesses in BRIC believe an inability to find the right workers will act as a constraint on expansion plans over the next 12 months, well above the level observed in the G7 (26%).

sharing is not prevalent in South-Africa and there is no available financial data for Russia. More profitable SMEs, foreign and exporting firms appear to be more likely to offer rents to their workers.

Firms in Russia exhibit the highest employment growth rate, followed by the firms in South Africa, while firms in China exhibit negative employment growth rates on average, followed by firms in India with small positive growth rates on average. Brazil is the country with the highest gross job creation rate. However, job reallocation is the highest, as the rate for job destruction is also high, resulting in net job creation of a magnitude which is only the second highest after that of Russia and close to the respective figure for South Africa. Hence, Russia has a similar figure for gross job creation to that of Brazil, but a lower job destruction rate, which results in the highest net job creation in the sample. India and China are the two countries with the lowest net job creation.

Among the remaining results, SMEs in the BRICS have lower ratios of production-to-permanent workers and unskilled-to-production workers. Moreover, the relative wage differentials are significantly smaller in SMEs, both between nonproduction and production workers, and between the skilled and unskilled production workers. The ratios between skill and production groups are also lower in government firms. In contrast, the returns to skill are higher in exporting firms, which also pay average wages and benefits. Older firms are bigger in terms of employment in all countries and so are the firms with a foreign affiliation. There is a significant negative relationship between firm age and employment growth. Young firms are the drivers of net job creation, with the exception of South Africa. The results also suggest that older firms pay higher wages and have higher average manpower costs. Furthermore, firms in the capital pay higher wages on average, where the wage ratios between non-production and production workers are also lower.

The remainder of this study is organised as follows: *Section 2* provides the background and a literature review of the labour-market performance in the BRICS. *Section 3* introduces the data and discusses the empirical strategy. Then, *Section 4* presents and discusses the results. *Section 5* provides the concluding remarks and acknowledges any limitations of this study.

## 2 The Market for Labour in the BRICS at the New Millennium

This section attempts an overview of the knowledge on the labour market characteristics of the BRICS economies. China, India and Russia have been reported to consistently exhibit the highest labour productivity growth for every year after 1999 compared to all countries and groupings (Conference Board, 2012). However, their employment growth figures are not the highest compared to other nations and country groups. India ranks relatively highly with respect to employment growth, and all three countries have seen relatively smaller declines in employment growth rates in the years following 2007. The five countries have been hit asymmetrically from the 2007/08 financial crisis, with Brazil Russia and South Africa displaying negative growth rates for 2009, but recovering to relatively high growth rates in the following year. China and India experienced declines in their growth rates for 2008, but quickly recovered to very high rates in the following year (World Development Indicators, 2012). Unemployment does not appear to have witnessed large increases in the years following the financial crisis, with the averages for the period 2000-2010 being 8.7% in Brazil, 7.8% in Russia, 4.4% in India, 4% in China and 26.6% in South Africa. The figures for India and China are among the lowest in the World Development Indicators (2012), while the unemployment figure is consistently high – albeit declining from 31% in 2003 to 23.8% in 2009 – in South Africa. All five BRICS countries

rank very highly globally, with respect to income inequality as depicted by the GINI coefficient, with South Africa having the highest coefficient of the later years, Brazil having the second highest among the five countries, China and Russia showing similar figures and India having the lowest GINI figure among the five countries. Russia has the highest fraction of workers with both tertiary and secondary education in the WDI data, while Brazil and South Africa have the highest fractions of their workers in the primary education category. No data exists on the latter for China and India.

The Brazilian economy was characterized by large labour mobility from agriculture to service industries, with agricultural employment shares falling from about 38% of total employment in 1980 to 18% in 2008. Brazil's case is well suited as an exemplar of the labour market adjustment associated with trade liberalization, which took place at a massive scale over a relatively short period of time in the 1990s. Green et al. (2001) find a rise in the returns to college education after the reforms, due to rising demand. However, in a country with high levels of inequality these increased returns to education did not help decrease the overall wage dispersion. Trying to explain the dispersion in the wage structure, Arbache (2001) finds evidence in favour of efficiency wages and unmeasured abilities, rather than compensating differentials and transitory differences. The attribution of the high returns to schooling in Brazil to unobservable worker attributes is consistent with Lam and Schoeni (1993). Brazil is also country with a large and active informal sector, which is likely to be the outcome of a segmented labour market, pushing lower tied workers to compete for low-paying jobs (Catão et al., 2009; de Vries, 2010; Henley et al., 2009).

Having undergone two decades of massive structural reform, the Russian labour market has experienced declines in employment shares in its manufacturing sector, a unique feature among the BRICS economies. The mobility from manufacturing and agriculture has been towards mining and services (Boeri and Terrell, 2002, de Vries et al., 2012). Gains have also been seen in the trade industry and in public administration. The previous decade was characterized by high job insecurity and the widespread prevalence of wage arrears (Lehmann et al., 1999), which led to high incidence of transitory moonlighting (Guariglia and Kim, 2004; 2006). An almost non-existent private sector rose to account for 65% of the employment share in 1997. New private sector jobs offered wage premia, which explains the structural mobility and tenure-turnover rates that were among the highest observed (Lehmann and Wadsworth, 2000). This employment share was accounted for by large companies to the greatest extend, with SMEs accounting only for 13% of employment in 1996 and non-agricultural self-employment being at only 6.3% (Boeri and Terrell, 2002). Fleisher et al. (2005) find high returns to schooling in Russia both before and after the major reforms, with the latter having increased massively, a finding also documented by Brainerd (1998), along with the wage compression for experience and age premium, and the widening of the gender gap.

The new institutional economics of India's development after the early 1990s reforms have been well-documented in the literature (Rodrik and Subramanian, 2004). Agricultural employment declined steadily from 70% in 1981 to 54% in 2008 (de Vries et al., 2012). There has been large mobility to the services sector (Kocherlakota et al., 2006), as well as construction and telecommunications. Within manufacturing, skill-intensive rather than labour-intensive employment has been emphasized in large firms. "Internal liberalization" in the form of pro-business reforms (Rodrik and Subramanian, 2004) generated large productivity responses by existing manufacturing firms, which generated regional development. Eichengreen and Gupta (2011) find that the mix of skilled and unskilled workers within manufacturing and services is becoming increasingly similar, refuting the view that the modern service sector is the only viable

destination for the highly-skilled few. Privatization, global outsourcing and FDI inflows have been the drivers of these shifts. Manufacturing employment has been stable and without structural change, with the exception of textile manufacturing (Dougherty, 2008). The country has a large “unorganised” segment of the labour market (Kulshreshtha, 2011), i.e. an informal sector that is labour intensive and provides employment for a large fraction of the population. Dougherty (2008) finds that the employment gains have arisen primarily in the unorganised sector, where wages and productivity are on average much lower. Hence, labour market regulation generates impediments to formal sector employment growth, a view shared by Srinivasan (2010). In the past, the returns to skill were meagre, due to the emphasis by the state in tertiary rather than primary education. However, such policy errors were instrumental in shaping India’s modern economy (Banerjee, 2006).

The Chinese economy has been characterized by massive mobility from agriculture to manufacturing (McMillan and Rodrik, 2011). Key periods for the Chinese economy were the public enterprise reforms in 1997 and its exchange rate policy after its ascension to the WTO in 2001 (de Vries et al., 2012). The sectoral trends in China are documented in Bosworth and Collins (2008), showing that while the services and the agricultural sector have higher shares of total employment, the manufacturing sector accounts for a larger share of total value added than the two of them both. Fleisher et al. (2005) find that the Chinese economy is an outlier with respect to returns to schooling, as its rapid economic growth has not been associated with a proportionate rise in returns to schooling. The latter remain below the world average, although it has increased in later years (Fleisher and Wang, 2004). Fleisher and Wang (2005) explain this pattern based on rural enterprises overpaying production workers and underpaying skilled workers relative to the profit-maximizing benchmark of a labour-market monopsony. The authors find that the style of Chinese federalism generates a strong positive association between fiscal incentives and (a) the employment growth of rural enterprises and non-state firms; (b) the increase in the ratio between self-employed and temporary workers to total state employment, and (c) an increase in the share of bonuses on total employee wages. These labour-market performance aspects are contrasted with the unsuccessful style of federalism in the Soviet Union. Feensta and Hong (2010) document that in the 2000-2005 period, urban employment growth has exceeded rural employment growth, and the employment growth by export-oriented industries has contributed the highest to the total employment. They find that industries with the highest exports growth are also the industries with the highest average wage growth.

Rodrik (2008) documents that despite the remarkable transformation of South Africa after 1994, growth and employment generation have not picked up and unemployment is still high, with the prevailing wages being high. The shrinkage of the non-mineral tradable sector has contributed to these trends since the early 1990s, along with the weakness of export-oriented manufacturing that would facilitate job creation for the less skilled groups. Fedderke and Mariotti (2002) suggest this is a long-standing structural weakness of the South African labour market. Bhorat (2004) attributes this “jobless growth” to new technology adoption and the intensive public restructuring process that has rendered the economy a poor creator of low-end jobs. Positive returns to schooling exist (Bhorat and Leibbrandt, 1999), but higher schooling does not guarantee secure employment (Bhorat, 2000). Chamberlain and van den Berg (2002) attribute labour market discrimination and heterogeneous returns to schooling to differences in the quality of schooling as a form of pre-labour market discrimination. Moll (1998) documents weaknesses in primary education, in terms of computational skills, which translate to heterogeneous and low average wage outcomes. However, the levels of unemployment remain high, and there is incoherence in the market for intermediate skills, along with an absence of pathways from technical school to work (Kraak, 2008).

Within these distinctive labour-market environments, our study examines the employment characteristics of the BRICS, which related to labour demand, skills and performance, using recently available standardized firm-level data from the World Bank Enterprise Surveys and the years 2002-2003. The next section describes the empirical strategy used for the analysis of the three primary domains of interest of this descriptive study, i.e. the description of: (a) employment and its skill composition and profile; (b) employment growth and its constituents, and; (c) remuneration, returns to skill, and the incidence of rent-sharing.

### 3 Data and Empirical Strategy

We use the World Bank Enterprise Survey data<sup>4</sup> for Brazil, Russia, India, China, and South Africa. The data is for the period 2002-2003 and is available in a standardized form for the 5 countries. The data was collected in 2003, with the only exception of India, for which data was collected in the year 2002. The World Bank's Enterprise Surveys collect data from key manufacturing and service sectors in every region of the world. The surveys use standardized survey instruments and a uniform sampling methodology to minimize measurement error and to yield data that are comparable across countries. The Enterprise Surveys are targeted to a particular set of firms; manufacturing and retail/wholesale establishments with five or more full-time employees, located in major urban centres.

#### 3.1 The Sample

*Table 1* presents the descriptive statistics for our sample of firms. The sample comprises of 6,978 firms, operating during 2003 (2002 for India). 1,642 firms are from Brazil, 506 firms are from Russia, 1,827 from India, 2,400 from China and 603 firms are from South Africa. Column 1 presents the number of observations with non-missing values for each variable. Column 2 presents the sample of weighted averages for the pooled sample of the 5 BRICS countries, using each country's GDP in the year 2002 (current \$US) as an analytical weight<sup>5</sup>. Column 3 presents the sample of unweighted averages.

The weighted average firm age in our sample is 16.6 years (17.6 unweighted), with firms in Brazil and South Africa being older on average (19.2 years and 25.5 years respectively), compared to the firms in Russia (13.6), India (16.6) and China (16.0). 54.5% of the firms in the sample (62.6% of the unweighted sample) are SMEs, defined as enterprises employing less than 100 employees. The SME figures for Brazil (71.9%), Russia (76.5%) and India (81.9%) are higher than those for China (41.8%) and South Africa (50.4%). An additional distinction of interest is that between small, medium and large enterprises, with the identifying cut-off points between the three groups being 20 and 100 employees, i.e. small firms are those employing less than 20 employees, medium firms are those employing between 20 and 100 employees, and large firms are those with more than 100 employees. 16.7% of the sample are small firms (23.2% of the unweighted sample), 37.7% are medium firms (39.5% unweighted), and 38.5% are large firms (32.9% unweighted). There are differences between countries in the distribution

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<sup>4</sup> The World Bank: Enterprise Surveys (<http://www.enterprisesurveys.org>). The original collectors of the data bear no responsibility for the analysis and interpretation of the results in this paper.

<sup>5</sup> The macroeconomic data in this study stems from the World Bank's World Development Indicators. Alternative weights used for robustness involved the population per country, and the GDP per capita. All the results presented in the remainder of this study are robust to the usage of these alternative weights and are available upon request from the authors.

of firm size, with 42.7% of the firms in Russia and 49.5% of the firms in India being small, compared to 17.8% of the firms in Brazil, 6.3% in China and 8.5% in South Africa. Firms in China and South Africa are more likely to be large (47.9% and 48.1% respectively), compared to Brazil, Russia and India (27.7%, 23.3% and 15.4% respectively).

The next set of characteristics is related to firm affiliation, in terms of the ownership structure and exporting activity. 9.7% of the firms in the sample have some percentage of ownership by a foreign company (8.8% unweighted), 16.5% have governmental participation in ownership (10.3% unweighted) and 7.4% are family firms (12.5% unweighted). Moreover, 14.1% of the firms in the sample (16.3%) have exporting activity. The figures for foreign ownership are higher in South Africa (18.9%), Russia (16.2%) and China (12.4%), compared to Brazil (5.3%) and India (1.9%). Government participation is more frequent in China (24.7%) and Russia (15.4%), while the figures for Brazil, India and South Africa are 0.4%, 1.9% and 0.7% respectively. The figures for family firms are 27% in Brazil, 5.5% in Russia, 17.5% in India, and 13.6% in South Africa, while there are no family firms in the Chinese sub-sample. Finally, while the figures for exporting activity are close to the weighted sample average for the majority of the counties (14.1%), the figure is much higher in South Africa (38.2%).

In terms of the industrial composition of the sample, 76.7% of the sample are manufacturing firms (83% unweighted), 22.7% are in services (15.7%), while there is also a small number of firms in construction and other industries (mostly mining and quarrying), comprising 0.6% of the weighted sample in total (1.4% of the unweighted sample). The firms in Brazil, India and South Africa are mostly manufacturing firms (100%, 99.8% and 97.8% respectively), 67% of the Chinese firms are in manufacturing, while the remaining 33% are in services. 25.3% of the Russian firms are in manufacturing, 57.5% are in services, 15.8% are in construction and 1.4% are in other industries, e.g. mining and quarrying.

The location distribution of firms is variable by country. Only 1.6% of the firms in the weighted sample are located in the capital city (3.1% unweighted), some 15% of the weighted pooled sample are located within 250km from the capital, some 22.6% are located within 250 to 1,000km from the capital, and the remaining 60% in another city more than 1,000km away from the capital. The majority of firms in India (66.4%), China (75%) and South Africa (92%) belong to the latter category, while the distribution is more balanced in Russia. This is also the case in China, with the main difference that no firm is located in the capital city.

Firms in the pooled sample have a weighted average of \$76 million in total assets, \$108 million in total sales, with a weighted average gross profit of \$3.2 million (around \$1 million net profit)<sup>6</sup>. Firms in Russia report the lowest figures for total assets and sales on average (\$17.5 million and \$21.3 million respectively), while firms in South Africa have the highest figures on average (\$125.5 million and \$202.7 million respectively). The average Indian firm in the sample has \$111.7 million in total assets and \$135.4 million in total sales. The sales figure is \$122.7 million on average.

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<sup>6</sup> It is worth noting that there are no financial data reports for firms in Russia, and only the total sales figure is available for Chinese firms. Financial figures for the year prior to the survey are converted into 2002 \$US dollars using exchange rates and the GDP deflator from the World Development Indicators. Moreover, they are windorized at the 1<sup>st</sup> and the 99<sup>th</sup> percentile by country.

Table 1: Main variables and sample averages

|  | (1)   | BRICS<br>(weighted) | (3)<br>(unweighted) | Brazil<br>(4) | Russia<br>(5) | India<br>(6) | China<br>(7) | South Africa<br>(8) |
|--|-------|---------------------|---------------------|---------------|---------------|--------------|--------------|---------------------|
|  | #Obs. | 6,978               | 6,978               | 1,642         | 506           | 1,827        | 2,400        | 603                 |
| SME  | 6,978 | 54.5%               | 62.6%               | 71.9%         | 76.5%         | 81.9%        | 41.8%        | 50.4%               |
| Small (<20)                                  | 6,978 | 16.7%               | 23.2%               | 17.8%         | 42.7%         | 49.5%        | 6.3%         | 8.5%                |
| Medium (20-100)                              | 6,978 | 37.7%               | 39.5%               | 54.1%         | 33.8%         | 32.5%        | 35.4%        | 42.0%               |
| Large ( $\geq 100$ )                         | 6,978 | 38.5%               | 32.9%               | 27.7%         | 23.3%         | 15.4%        | 47.9%        | 48.1%               |
| Firm age                                     | 6,907 | 16.61               | 17.55               | 19.16         | 13.55         | 16.64        | 15.99        | 25.47               |
| Foreign ownership                            | 6,978 | 9.7%                | 8.8%                | 5.3%          | 16.2%         | 1.9%         | 12.4%        | 18.9%               |
| Government ownership                         | 6,971 | 16.5%               | 10.3%               | 0.4%          | 15.4%         | 1.9%         | 24.7%        | 0.7%                |
| Family firm                                  | 6,978 | 7.4%                | 12.5%               | 27.0%         | 5.5%          | 17.5%        | 0.0%         | 13.6%               |
| Exporter                                     | 6,830 | 14.1%               | 16.3%               | 15.9%         | 11.5%         | 14.9%        | 13.2%        | 38.2%               |
| Sector: Manufacturing                        | 6,971 | 76.7%               | 83.0%               | 100.0%        | 25.3%         | 99.8%        | 67.0%        | 97.8%               |
| Sector: Services                             | 6,971 | 22.7%               | 15.7%               | 0.0%          | 57.5%         | 0.2%         | 33.0%        | 1.2%                |
| Sector: Construction                         | 6,971 | 0.5%                | 1.2%                | 0.0%          | 15.8%         | 0.0%         | 0.0%         | 0.0%                |
| Sector: Other                                | 6,971 | 0.1%                | 0.2%                | 0.0%          | 1.4%          | 0.0%         | 0.0%         | 1.0%                |
| Location/size: Capital city                  | 6,977 | 1.6%                | 3.1%                | 0.0%          | 25.9%         | 4.6%         | 0.0%         | 0.0%                |
| Location/size: <50k                          | 6,977 | 2.8%                | 4.8%                | 14.9%         | 17.4%         | 0.0%         | 0.0%         | 0.3%                |
| Location/size: 50k-250k                      | 6,977 | 5.9%                | 9.7%                | 34.3%         | 12.7%         | 1.8%         | 0.0%         | 2.7%                |
| Location/size: 250k-1million                 | 6,977 | 24.5%               | 22.6%               | 22.4%         | 16.2%         | 27.3%        | 25.0%        | 5.0%                |
| Location/size: Other city>1 million          | 6,977 | 65.2%               | 59.8%               | 28.4%         | 27.9%         | 66.4%        | 75.0%        | 92.0%               |
| Total assets (\$thousand)                    | 3,938 | 71,336              | 76,742              | 17,549        | -             | 111,667      | -            | 125,532             |
| Total sales (\$thousand)                     | 6,374 | 110,724             | 108,463             | 21,330        | -             | 135,415      | 122,694      | 202,720             |
| Net profit (\$thousand)                      | 3,775 | 1,005.3             | 1,048.5             | 1,136.2       | -             | 859.9        | -            | 1,365.6             |
| Gross profit (\$thousand)                    | 3,979 | 2,661.8             | 3,239.3             | 3,085.4       | -             | 1,972.7      | -            | 7,683.7             |
| Total #Employees (permanent & temporary)     | 6,666 | 380.54              | 278.20              | 125.04        | 168.32        | 105.00       | 542.16       | 355.92              |
| #Managerial employees                        | 6,084 | 53.61               | 33.87               | 4.77          | 14.97         | 3.43         | 75.75        | 14.84               |
| #Professional employees                      | 6,058 | 30.04               | 22.21               | 7.28          | 29.21         | 5.77         | 39.54        | 16.33               |
| #Skilled production employees                | 5,063 | 45.43               | 50.98               | 31.18         | 72.35         | -            | 46.34        | 107.24              |
| #Unskilled production employees              | 5,068 | 305.25              | 219.54              | 66.69         | 25.98         | -            | 379.16       | 167.30              |
| #Non-production employees                    | 6,074 | 61.90               | 42.34               | 13.56         | 17.48         | 10.20        | 84.19        | 29.58               |
| Employee ratio: Production-to-permanent      | 6,081 | 60.06%              | 60.88%              | 72.14%        | 37.36%        | 63.45%       | 57.84%       | 57.32%              |
| Employee ratio: Unskilled to production      | 5,068 | 61.56%              | 58.64%              | 58.04%        | 31.71%        | -            | 63.89%       | 62.17%              |
| Employee ratio: Foreign nationals-to-skilled | 4,417 | 1.79%               | 1.71%               | 0.21%         | 1.07%         | 3.37%        | -            | 1.47%               |
| %Employees with education<6 years            | 4,396 | 20.02               | 18.33               | 18.41         | 0.23          | 25.69        | -            | 10.02               |
| %Employees with education 6-9 years          | 4,396 | 30.51               | 30.12               | 35.28         | 3.83          | 30.74        | -            | 36.59               |
| %Employees with education 10-12 years        | 4,396 | 26.98               | 29.28               | 23.42         | 53.01         | 24.48        | -            | 41.88               |
| %Employees with education>12 years           | 4,396 | 16.39               | 16.83               | 8.29          | 42.93         | 19.08        | -            | 11.51               |
| 3-year employment growth                     | 5,655 | 4.07%               | 6.90%               | 9.78%         | 21.05%        | 4.87%        | 1.44%        | 10.91%              |
| Average wages & salaries (\$thousand)        | 3,752 | 1.91                | 2.37                | 2.26          | -             | 1.33         | -            | 6.12                |
| Average manpower cost (\$thousand)           | 5,510 | 2.04                | 2.63                | 3.33          | -             | 1.52         | 1.70         | 6.95                |
| Avg. allowance, bonus & benefit cost (\$th.) | 3,521 | 0.59                | 0.66                | 1.05          | -             | 0.09         | -            | 1.13                |
| Wage ratio: Non production-to-production     | 2,152 | 3.05                | 2.88                | 3.43          | -             | 1.00         | 3.31         | 1.37                |
| Wage ratio: Skilled-to-unskilled             | 2,556 | 1.81                | 1.77                | 1.64          | -             | -            | 1.87         | 2.28                |

Notes: Financial figures for the year prior to the survey are converted into \$US dollars using exchange rates and the GDP deflator from the World Development Indicators. Moreover, they are windorized at the 1<sup>st</sup> and the 99<sup>th</sup> percentile by country. The averages in Column 2 are weighted using each country's GDP in the year 2002 (current \$US) as an analytical weight.

### 3.2 Employment and Skills

Following a large part of the literature<sup>7</sup>, our set of employment indicators of primary interest comprises of five variables, i.e.: (1) the logarithm of the total number of employees at the end of the last financial year, calculated as the summation of permanent and temporary employees; (2) the ratio of production workers among the permanent workforce of the firm (hereafter  $P2P$ ); (3) the ratio of unskilled workers among the permanent production workforce of the firm (hereafter  $U2P$ ); (4) the percentage of foreign nationals among the permanent skilled workers (hereafter  $F2PS$ ); and (5) the percentage of employees with more than 10 years of education (hereafter  $EDUC$ ).

The weighted average number of employees in the pooled sample is 381 (278 unweighted), with the average figures being 125 in Brazil, 168 in Russia, 105 in India, 542 in China, and 355 in South Africa. The weighted average ratio of production to permanent employees is 60.1% (60.9% in the unweighted sample), and the ratio of unskilled to production workers is 61.6% (58.6% unweighted). The two respective ratios, i.e.  $P2P$  and  $U2P$ , are 72.1% and 58% in Brazil, 37.4% and 31.7% in Russia, 57.8% and 63.9% in China, and 57.3% and 62.2% in South Africa, respectively. The ratio of production to permanent workers is 63.5% in India, for which there is no data on the numbers of skilled and unskilled production employees.

Inspecting the education statistics of Table 1, half of the employees in the weighted BRICS sample have fewer than 9 years of education (some 20% less than 6 years). The figures for the percentage of employees with more than 12 years of education are noteworthy, as only 8.3% of the employees in Brazil are in the top education category and 11.5% in South Africa, compared to a stunning 42.9% in Russia and 19.1% in India. No educational classification is available for China, while the figures for the bottom category of less than 6 years of education are 0.23% in Russia, 10% in South Africa, 18.4% in Brazil and 25.7% in India.

In our regression analysis, we estimate employment equations in the following fashion:

$$E_i = a + \beta Y_i + u_i \quad (1)$$

where  $E_i$  is the employment outcome of interest for firm  $i$  in country  $c$ , i.e. the five variables described above; and  $X_i$  is a vector of control variables, e.g. SME status, the logarithm of firm age, foreign and government ownership, family firm, exporter status, 24 two-digit industry variables, and 5 location variables. The specification is intuitive, making efficient usage of the data availability and following the conventions of the literature (Wood, 1995; Bilsen and Konings, 1998; Konings et al., 2003; Klapper and Richmond, 2011; *inter alia*)<sup>8</sup>. In the estimates for the pooled sample, we also incorporate country fixed effects and use each country's GDP as an analytical weight in the estimation.

<sup>7</sup> e.g. Biscour and Kramarz (2007), Commander and Kollo (2008), Berman et al. (1994), Konings (1997), Konings and Lehmann (2002), Head and Rees (2002), Machin and van Reenen (1998), Castellani et al. (2008).

<sup>8</sup> *Table A1* in the Appendix presents the weighted correlation matrix between the main covariates, confirming that there is no collinearity issue with the specification used.

### 3.3 Employment Growth

Following Davis and Haltiwanger (1992), we compute employment growth for a particular firm,  $i$ , as:

$$g_{i,t} = \frac{E_{i,t} - E_{i,t-3}}{X_{i,t}} \quad (2)$$

where:

$$X_{i,t} = \frac{E_{i,t} + E_{i,t-3}}{2}$$

The growth rate,  $g_{i,t}$ , is the difference between the number of employees in firm  $i$  at time  $t$ ,  $E_{i,t}$ , and the number of employees in the previous point in time,  $E_{i,t-3}$ , in proportion to the *average* number of employees within the three-year period,  $X_{i,t}$ . Dahl and Gjerløv-Juel (2011) suggest that the advantage of using the average employment level,  $X_{i,t}$ , over the initial employment level,  $E_{i,t-3}$ , is that it allows for job creation and job destruction by entry and exit, respectively, and it is symmetric around zero for job creation and job destruction. Using  $E_{i,t-3}$  instead would overestimate the growth rate for job creation ( $g_{j,t} > 0$ ) and underestimate the growth rate in the case of job destruction (leading to a numerically smaller  $g_{i,t}$ ). The equation for  $g_{i,t}$  also takes into account the intuitive correlation between size and growth<sup>9</sup> (Evans, 1987a; 1987b; ; Hall, 1987; Wagner, 1992; Sutton, 1997; Konings, 1995; Konings et al., 1996; Faggio and Konings, 2003; *inter alia*).

The summary statistics in Table 1 suggest that the weighted average 3-year employment growth in our pooled BRICS sample is 4.1% (6.9% unweighted), with significant variation across countries. Hence, the average employment growth rate in Brazil is 9.8%, compared to 21.5% in Russia, 4.8% in India, 1.44% in China, and 10.9% in South Africa. For further inspection of the employment growth distribution in the sample and by country, *Figure A1* at the Appendix presents the respective histograms. To investigate this variation in the employment growth figures and the potential differences in economic contribution in terms of employment, we are also interested in the overall net job creation by country. The net job creation is divided into the two components, gross job creation (GC) and gross job destruction (GD). The gross job creation in subpopulation  $s$  at time  $t$  is the sum of employment increases in all firms which expand in the period between  $t - 3$  and  $t$ :

$$GC_{s,t} = \sum_{g_{j,t} > 0, j \in s} \frac{X_{j,t}}{X_{s,t}} g_{j,t} \quad (3)$$

$$X_{s,t} = \sum_{j \in s} X_{j,t}$$

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<sup>9</sup> A business with only one employee, which recruits additionally two employees, would have a growth rate of 200% using  $E_{i,t-3}$  and just 100% using  $X_{i,t}$ , whereas a business with an initial employment level of 50 employees and an equivalent increase in staff by two employees by comparison would have a growth rate of 4 and 3.92%, respectively (Dahl and Gjerløv-Juel, 2011).

The employment growth for each firm,  $g_{j,t}$ , is weighted by the firm's size (the average number of employees,  $X_{j,t}$ ) relatively to the size of the entire subpopulation,  $X_{s,t}$ , which is the overall employment within firms characterized by  $s$ , which in our study represents different age ranges, following Dahl and Gjerlov-Juel (2011) and the vast literature on firm age and growth (Bilsen and Konings, 1998; Konings et al., 2003; Klapper and Richmond, 2011; *inter alia*). Finally, the weighted growth rates are added up.

Likewise, the gross job destruction at time  $t$  is the sum of all jobs that are lost among all firms, which reduce their staff over the period from  $t-3$  to  $t$ :

$$GD_{s,t} = \sum_{g_{j,t}>0, j \in s} \frac{X_{j,t}}{X_{s,t}} |g_{j,t}| \quad (4)$$

Firms with an unchanged employment enter neither job creation nor destruction. The overall employment net change is computed as the difference between employment at year  $t$  and  $t-3$ :

$$NC_{s,t} = GC_{s,t} - GD_{s,t} \quad (5)$$

Thus, the net growth rate is total employment growth in percentages of the average employment level within firms characterized by  $s$  (e.g. total employment growth of firms aged 0 to 5).

The overall re-allocation accounts for the number of jobs which are created and destructed, respectively:

$$R_{s,t} = GC_{s,t} + GD_{s,t} \quad (6)$$

Job reallocation at time  $t$  is the sum of the total job creation and job destruction which has taken place within the period  $t-3$  to  $t$ . Job creation captures the opportunities of employment within different locations, industries, age groups etc. depending on the classification,  $s$ . An increase in job creation improves the chances of finding employment, all things being equal. Likewise, an increase in job destruction increases uncertainty among those already employed. These opposite trends are summarized in the job reallocation. Thus, job creation and job destruction are indicators of the heterogeneity of employment growth within different age groups and countries, and we will interpret a higher job reallocation as an indicator of greater heterogeneity within the group of firms in question.

### 3.4 Wages, Returns to Skills, and Rent-sharing

Finally, we examine wages and returns to skills, by estimating:

$$W_i = a + \beta Y_i + u_i \quad (7)$$

where, in distinct specifications,  $W$  captures: (i) the logarithm of the average wage in the firm, calculated by dividing the total wage cost by the number of employees; (ii) the logarithm of the average manpower cost, which incorporates bonuses, allowances and benefits in addition to the total wage cost; (iii) the logarithm of the cost of benefits, allowances and bonuses; (iv) the average wage ratio between non-production and production workers; and (v) the average wage ratio between skilled and unskilled production workers. The summary statistics in Table 1 indicate that the weighted average annual salary in the pooled BRICS sample is \$1,910 (\$2,370 unweighted). The average annual figures by country are \$2,260 in Brazil, \$1,330 in India, and \$6,120 in South Africa. The latter high figure is in line with Rodrik's (2008) view of the average wages being high in South Africa. The average manpower cost in China is \$1,700.

Moreover, following Martins and Yang (2010), we augment equation (7) to examine rent-sharing, via the impact of the firm's profitability to the wage outcomes (Christofides and Oswald, 1992; Murphy et al., 1993; Blanchflower et al., 1996; Abowd et al., 1999; Martins, 2010; Dobbelaere and Mairesse, 2010), described in (i)-(v)<sup>10</sup>. Hence, equation (7) becomes:

$$W_i = a + \beta Z_i + \gamma \Pi_i + u_i \quad (8)$$

where  $\Pi_i$  is the net profit per worker of firm  $i$  in country  $c$ . The equation also includes other control variables in the vector  $Z$ , namely the total assets per worker, along with the remaining characteristics of vector  $Y$ . The key parameter is  $\gamma$ , which indicates the effect of a firm's profit per worker on the average wage outcome of interest. The average net profit figures in the countries which have available data are: \$1.136 millions in Brazil, \$860 thousands in India, and \$1.366 millions in South Africa.

## 4 Regression Estimates and Empirical Results

The summary statistics of the previous section highlighted some interesting differences between countries with respect to the main variables of interest, i.e. employment and its constituents and evolution, the returns to skill and rent-sharing. In this section we explore these differences further using regression analysis, as described in the previous section, exploring sources of heterogeneity within and between countries.

### 4.1 Employment and its Specifics

*Table 2* presents the regression results for the employment variables, as described by equation (1) in the previous section. The results are from weighted linear regression models for the five dependent variables previously described<sup>11</sup>. Column 1 presents estimates of the logarithm of total employment at the firm level. Expectedly, SMEs have significantly lower employment in the pooled BRICS sample. They also have a somewhat lower ratio of unskilled to production

<sup>10</sup> One key difference between equation (7) and (8) is that the latter does not use logarithmic forms, as a firm's net profit can entail negative values for a small fraction of firms. Hence, average wages and average net profit are used instead.

<sup>11</sup> The calculation of the effect of dummy variables in models with log-transformed dependent variables is based on the following formula:  $100 * [\exp(\text{Coef.} - \frac{\text{S.E.}^2}{2}) - 1]$ . Apart from the coefficients and robust standard errors presented in the tables, the text often reports in parentheses the percentage effect, which is calculated by dividing the coefficient by the linear prediction of the model (and multiplying by 100).

workers, although the magnitude of the effect is small, given the linear prediction of the model shown at the bottom of the table (3.7 percent effect). They also have a significantly lower fraction of foreign nationals among their skilled workforce (63.6 percent effect) and are less likely to employ individuals with more than 10 years of education (5.3 percent effect). Older firms are significantly more likely to employ more workers and have a higher production to permanent worker ratio. This is also the case with foreign firms, which employ 15 percent more employees and have a 13.2 percent higher production to permanent worker ratio. Government firms are also bigger in terms of employment, they have a lower unskilled to production worker ratio and, employee fewer foreign nationals among their skilled workforce and are more likely to have an educated workforce. Family firms are also bigger in terms of employment, employee fewer foreign nationals among their skilled workers and have a higher production to permanent worker ratio. This is also the case with exporting firms, which also have a higher unskilled to production worker ratio, and are more likely to employ more highly educated workers.

Table 2: Employment

|                         | (1)<br>Log<br>(Total<br>#employees) | (2)<br>Prod.-to-<br>-perm.<br>workers ratio | (3)<br>Unskilled-to-<br>-prod. workers<br>ratio | (4)<br>%Foreign nationals-<br>to-perm. skilled<br>workers | (5)<br>%Employees<br>with > 10 years<br>of education |
|-------------------------|-------------------------------------|---|---|---|--|
| SME                     | -2.162***<br>[0.029]                | 0.009<br>[0.015]                            | -0.023*<br>[0.012]                              | -0.011***<br>[0.004]                                      | -0.023**<br>[0.010]                                  |
| Log(Firm age)           | 0.125***<br>[0.017]                 | 0.015*<br>[0.008]                           | -0.009<br>[0.007]                               | 0.003<br>[0.002]  | 0.004<br>[0.005]                                     |
| Foreign ownership       | 0.142***<br>[0.053]                 | 0.079***<br>[0.023]                         | -0.016<br>[0.016]                               | 0.003<br>[0.004]  | 0.118***<br>[0.018]                                  |
| Government ownership    | 0.327***<br>[0.049]                 | -0.018<br>[0.020]                           | -0.029*<br>[0.016]                              | -0.012*<br>[0.007]  | 0.045*<br>[0.027]                                    |
| Family firm             | 0.097***<br>[0.030]                 | 0.034**<br>[0.014]                          | 0.005<br>[0.018]                                | -0.006**<br>[0.003]                                       | 0.013<br>[0.010]                                     |
| Exporter                | 0.308***<br>[0.040]                 | 0.100***<br>[0.018]                         | 0.034**<br>[0.014]                              | -0.012***<br>[0.004]                                      | 0.063***<br>[0.012]                                  |
| City/size: Capital      | {Ref.}                              | {Ref.}                                      | {Ref.}  | {Ref.}  | {Ref.}   |
| City/size: < 50k        | -0.088<br>[0.066]                   | -0.126***<br>[0.028]                        | 0.123***<br>[0.043]                             | 0.013***<br>[0.005]                                       | -0.128***<br>[0.020]                                 |
| City/size: 50k-250k     | -0.074<br>[0.060]                   | -0.070***<br>[0.026]                        | 0.138***<br>[0.042]                             | 0.009**<br>[0.004]  | -0.117***<br>[0.019]                                 |
| City/size: 250k-1mln    | -0.118**<br>[0.056]                 | -0.069***<br>[0.023]                        | 0.079**<br>[0.040]                              | 0.002<br>[0.004]  | -0.101***<br>[0.018]                                 |
| City/size: Other >1mln  | -0.029<br>[0.053]                   | -0.081***<br>[0.022]                        | 0.065<br>[0.040]                                | 0.022***<br>[0.004]                                       | -0.111***<br>[0.017]                                 |
| Brazil                  | {Ref.}                              | {Ref.}                                      | {Ref.}  | {Ref.}  | {Ref.}   |
| Russia                  | -0.387***<br>[0.089]                | -0.318***<br>[0.034]                        | -0.028<br>[0.038]                               | 0.010*<br>[0.006]   | 0.548***<br>[0.021]                                  |
| India                   | -0.535***<br>[0.032]                | -0.108***<br>[0.016]                        | -   | 0.031***<br>[0.004]                                       | 0.063***<br>[0.012]                                  |
| China                   | 0.214***<br>[0.037]                 | -0.125***<br>[0.019]                        | 0.300***<br>[0.017]                             | -   | .  |
| South Africa            | 0.140***<br>[0.051]                 | -0.150***<br>[0.026]                        | 0.064***<br>[0.023]                             | 0.001<br>[0.004]  | 0.161***<br>[0.017]                                  |
| Linear prediction       | 4.4020                              | 0.5998                                      | 0.6168  | 0.0173  | 0.4339   |
| No. of observations     | 6,443                               | 5,959                                       | 5,030   | 4,220   | 4195   |
| Adjusted R <sup>2</sup> | 0.720                               | 0.057                                       | 0.349   | 0.041   | 0.373  |
| F-statistic             | 300.04***                           | 17.63***                                    | 89.37***  | 3.78***   | 275.45***  |

Notes: \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. All specifications incorporate control variables for industry (24 2-digit dummies) and a constant term. Estimates are weighted using the 2002 GDP (current US dollars, from the World Development Indicators).

In terms of country effects, China and South Africa are the countries with the biggest firms in the weighted sample. Brazil is the country with the highest production to permanent worker ratio and Russia is the country with the lowest. China has the highest unskilled to production worker ratio, and India the country with the highest foreigner to skilled worker ratio. The Russian sample has the most highly educated workforce, and Brazil the lowest<sup>12</sup>.

*Table 3* presents estimates of the same dependent variables by country, helping to highlight country differences. It is shown that SMEs in all countries have lower production to permanent and unskilled to production worker ratios. The only exception is China, in which SMEs actually have a higher production to permanent worker ratio, compared to large enterprises. The difference between SMEs and large enterprises for the unskilled-to-production-worker ratio is insignificant in China and South Africa. SMEs are less likely to employ foreign nationals among their skilled workforce in India, which has the highest foreign to skilled ratio in the BRICS sample. Older firms are bigger in terms of employment in all countries and so are the firms with a foreign affiliation. Government firms are also bigger in size, with the exception of South Africa, and exporting companies are also bigger, with the only exception of Russia.

Firms with a higher production workforce in Brazil are more likely to be older and with some government involvement. Firms with a higher unskilled to production worker ratio in Brazil are less likely to be foreign or government owned. Foreign firms employ more foreigners among their skilled workforce in Brazil, and also have a more highly educated workforce. In Russia, foreign firms and exporting firms are also more likely to employ more foreigners among their skilled workforce.

Foreign firms in India have a lower unskilled to production worker ratio and have a significantly higher ratio of foreigners among their skilled workforce. The effect is of a large magnitude, and indicative of a pattern among foreign firms in India. Exporters in India have a higher production workforce, a lower unskilled production worker ratio and employ more foreign nationals among their skilled workforce. In contrast, although exporters in China are also bigger and with a higher production workforce, they have a higher unskilled to production worker ratio. This is indicative of the different growth models and the industrial composition of the two countries (Bosworth and Collins, 2008). Government firms in China are the biggest firms, and firms with a foreign affiliation also tend to be bigger in size, compared to domestic firms.

Finally, in South Africa, foreign firms are bigger in size, and so are exporting firms. Government firms have a small unskilled workforce and exporters have a lower foreigner to skilled worker ratio.

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<sup>12</sup> It is worth noting that there are no observations for China in the analysis of columns 4 and 5, and no observations for India in the analysis of column 3.

Table 3: Employment by country

|                                | Log<br>(Total<br>#employees) | Prod.-to-<br>-perm.<br>workers ratio | Unskilled-to-<br>-prod.<br>workers ratio | %Foreign nationals<br>to-perm. skilled<br>workers | %Employees<br>with > 10 years<br>of education |
|--------------------------------|------------------------------|--------------------------------------|--|---|---|
| <b>Brazil (1,629 Obs.)</b>     |                              | (1)                                  | (2)                                      | (3)   | (4)   |
| SME                            | -1.808***<br>[0.036]         | -0.112***<br>[0.016]                 | -0.062***<br>[0.021]                     | 0.0004<br>[0.001]                                 | -0.002<br>[0.014]                             |
| Log(Firm age)                  | 0.120***<br>[0.019]          | 0.024**<br>[0.009]                   | -0.015<br>[0.010]                        | -0.001<br>[0.001]                                 | 0.002<br>[0.007]                              |
| Foreign ownership              | 0.239***<br>[0.080]          | -0.044<br>[0.033]                    | -0.120***<br>[0.043]                     | 0.005***<br>[0.002]                               | 0.155***<br>[0.031]                           |
| Government ownership           | 0.556**<br>[0.233]           | 0.085*<br>[0.045]                    | -0.445***<br>[0.088]                     | 0.003<br>[0.002]                                  | 0.321***<br>[0.091]                           |
| Exporter                       | 0.373***<br>[0.049]          | 0.032<br>[0.020]                     | -0.006<br>[0.024]                        | -0.001<br>[0.001]                                 | 0.046***<br>[0.017]                           |
| <b>Russia (500 Obs.)</b>       |                              | (6)                                  | (7)                                      | (8)   | (9)   |
| SME                            | -2.567***<br>[0.106]         | -0.090*<br>[0.049]                   | -0.109**<br>[0.051]                      | 0.006<br>[0.004]                                  | 0.012<br>[0.013]                              |
| Log(Firm age)                  | 0.194***<br>[0.060]          | -0.037<br>[0.025]                    | 0.056**<br>[0.026]                       | -0.001<br>[0.003]                                 | -0.002<br>[0.007]                             |
| Foreign ownership              | 0.252*<br>[0.130]            | -0.008<br>[0.051]                    | -0.014<br>[0.060]                        | 0.028***<br>[0.010]                               | -0.017<br>[0.017]                             |
| Government ownership           | 0.272*<br>[0.142]            | 0.070<br>[0.057]                     | 0.001<br>[0.060]                         | 0.001<br>[0.004]                                  | -0.024<br>[0.017]                             |
| Exporter                       | 0.098<br>[0.154]             | 0.005<br>[0.063]                     | -0.012<br>[0.065]                        | -0.011*<br>[0.007]                                | 0.017<br>[0.014]                              |
| <b>India (1,593 Obs.)</b>      |                              | (11)                                 | (12)                                     | (13)  | (14)  |
| SME                            | -2.512***<br>[0.066]         | -0.066*<br>[0.037]                   | -0.036***<br>[0.012]                     | -0.065***<br>[0.021]                              | -   |
| Log(Firm age)                  | 0.126***<br>[0.029]          | 0.018<br>[0.012]                     | 0.005<br>[0.004]                         | 0.011<br>[0.009]                                  | -   |
| Foreign ownership              | 0.676***<br>[0.158]          | 0.110<br>[0.083]                     | -0.033***<br>[0.009]                     | 0.173***<br>[0.047]                               | -   |
| Government ownership           | 0.596***<br>[0.153]          | 0.089<br>[0.077]                     | -0.041**<br>[0.017]                      | 0.051<br>[0.058]                                  | -   |
| Exporter                       | 0.490***<br>[0.055]          | 0.100***<br>[0.027]                  | -0.023***<br>[0.008]                     | 0.072***<br>[0.020]                               | -   |
| <b>China</b>                   |                              | (16)                                 | (17)                                     | (18)  | (19)  |
| SME                            | -2.166***<br>[0.039]         | 0.042**<br>[0.019]                   | -0.015<br>[0.015]                        | -   | -   |
| Log(Firm age)                  | 0.117*<br>[0.065]            | 0.097***<br>[0.027]                  | -0.009<br>[0.018]                        | -   | -   |
| Foreign ownership              | 0.130***<br>[0.029]          | 0.012<br>[0.012]                     | -0.013<br>[0.009]                        | -   | -   |
| Government ownership           | 0.287***<br>[0.055]          | -0.013<br>[0.022]                    | -0.024<br>[0.017]                        | -   | -   |
| Exporter                       | 0.245***<br>[0.066]          | 0.109***<br>[0.028]                  | 0.043**<br>[0.018]                       | -   | -   |
| <b>South Africa (589 Obs.)</b> |                              | (21)                                 | (22)                                     | (23)  | (24)  |
| SME                            | -1.900***<br>[0.068]         | -0.123***<br>[0.039]                 | 0.021<br>[0.031]                         | -0.001<br>[0.009]                                 | 0.025<br>[0.027]                              |
| Log(Firm age)                  | 0.207**<br>[0.097]           | -0.042<br>[0.048]                    | 0.003<br>[0.039]                         | 0.012<br>[0.011]                                  | 0.082**<br>[0.033]                            |
| Foreign ownership              | 0.166***<br>[0.034]          | 0.019<br>[0.015]                     | -0.017<br>[0.014]                        | -0.004<br>[0.004]                                 | -0.001<br>[0.011]                             |
| Government ownership           | 0.185<br>[0.483]             | 0.042<br>[0.129]                     | -0.356***<br>[0.100]                     | -0.018<br>[0.029]                                 | 0.129<br>[0.247]                              |

|          |                     |                  |                  |                    |                  |
|----------|---------------------|------------------|------------------|--------------------|------------------|
| Exporter | 0.260***<br>[0.073] | 0.046<br>[0.040] | 0.013<br>[0.032] | -0.011*<br>[0.006] | 0.021<br>[0.026] |
|----------|---------------------|------------------|------------------|--------------------|------------------|

## 4.2 Employment Growth

The previous section highlighted some interesting patterns related to the profile of SMEs in the BRICS and the specifics of companies with a foreign affiliation and exporters. Employment growth is a feature of primary interest in the five countries both pre- and post- 2007-2010. In order for the BRICS to maintain their high growth path, employment growth and net job creation and reallocation are features of the highest importance (Davis and Haltiwanger, 1990; 1992; 1999).

*Table 4* presents 3-year employment growth regressions for the weighted pooled sample in column 1 and then by country in columns 2-6<sup>13</sup>. The inspection of the results suggests that SMEs exhibit lower employment growth, both in the pooled weighted sample and in every country, with the only exception of South Africa where there are no significant differences in growth between SMEs and large firms. This is an interesting pattern, as SMEs are often claimed to be the drivers of growth and employment generation in the majority of the developed world. However, the empirical evidence confirming that role is often scarce. Hence, it is useful to further elaborate on this relationship between firm size and employment generation, in terms of estimating regressions for each of the five counties and distinguishing between the constitutions of employment growth.

Table 4: 3-year total employment growth

|                             | (1)<br>BRICS         | (2)<br>Brazil        | (3)<br>Russia        | (4)<br>India         | (5)<br>China         | (6)<br>South Africa  |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| SME                         | -0.072***<br>[0.011] | -0.084***<br>[0.022] | -0.190***<br>[0.063] | -0.060<br>[0.038]    | -0.070***<br>[0.013] | -0.029<br>[0.031]    |
| Log(Firm age)               | -0.077***<br>[0.006] | -0.129***<br>[0.013] | -0.191***<br>[0.030] | -0.042***<br>[0.012] | -0.062***<br>[0.008] | -0.052***<br>[0.018] |
| Foreign ownership           | -0.014<br>[0.016]    | 0.057<br>[0.047]     | -0.098<br>[0.068]    | -0.057*<br>[0.030]   | -0.018<br>[0.019]    | 0.015<br>[0.033]     |
| Government ownership        | -0.056***<br>[0.013] | -0.247***<br>[0.068] | -0.107*<br>[0.056]   | -0.042<br>[0.043]    | -0.061***<br>[0.014] | 0.081<br>[0.175]     |
| Family firm                 | 0.001<br>[0.015]     | 0.027<br>[0.019]     | -0.026<br>[0.109]    | -0.032<br>[0.021]    | -                    | 0.052<br>[0.037]     |
| Exporter                    | 0.008<br>[0.014]     | 0.016<br>[0.023]     | 0.073<br>[0.078]     | -0.006<br>[0.026]    | 0.013<br>[0.020]     | -0.042<br>[0.030]    |
| City/size: Capital          | {Ref.}               | {Ref.}               | {Ref.}               | {Ref.}               | {Ref.}               | {Ref.}               |
| City/size: < 50k            | 0.060*<br>[0.034]    | 0.050*<br>[0.029]    | 0.007<br>[0.071]     | -                    | -                    | -                    |
| City/size: 50k-250k         | 0.075**<br>[0.030]   | 0.054**<br>[0.023]   | 0.052<br>[0.063]     | 0.198***<br>[0.047]  | -                    | 0.040<br>[0.082]     |
| City/size: 250k-1mln        | 0.041<br>[0.027]     | -                    | 0.077<br>[0.074]     | 0.031*<br>[0.018]    | 0.019<br>[0.015]     | 0.119<br>[0.095]     |
| City/size: Other city >1mln | 0.030<br>[0.026]     | 0.018<br>[0.025]     | 0.055<br>[0.064]     | 0.025<br>[0.020]     | -                    | 0.047<br>[0.045]     |
| Brazil                      | {Ref.}               | {Ref.}               | {Ref.}               | {Ref.}               | {Ref.}               | {Ref.}               |
| Russia                      | 0.145***<br>[0.041]  | -                    | -                    | -                    | -                    | -                    |
| India                       | -0.034**             | -                    | -                    | -                    | -                    | -                    |

<sup>13</sup> It is worth noting that 2-year employment growth is computed for China, for which 3-year growth is not observable. The results in this section are robust to the usage of 2-year employment growth as the dependent variable for all counties.

|                         |           |         |        |        |        |        |
|-------------------------|-----------|---------|--------|--------|--------|--------|
| China                   |           | [0.015] |        |        |        |        |
|                         | -0.098*** | -       | -      | -      | -      | -      |
| South Africa            |           | [0.017] |        |        |        |        |
|                         | 0.037*    | -       | -      | -      | -      | -      |
|                         | [0.022]   |         |        |        |        |        |
| Linear prediction       | 0.0410    | 0.0980  | 0.2111 | 0.0513 | 0.0144 | 0.1068 |
| No. of observations     | 5,546     | 1,552   | 495    | 873    | 2,124  | 502    |
| Adjusted R <sup>2</sup> | 0.087     | 0.080   | 0.116  | 0.029  | 0.062  | 0.019  |

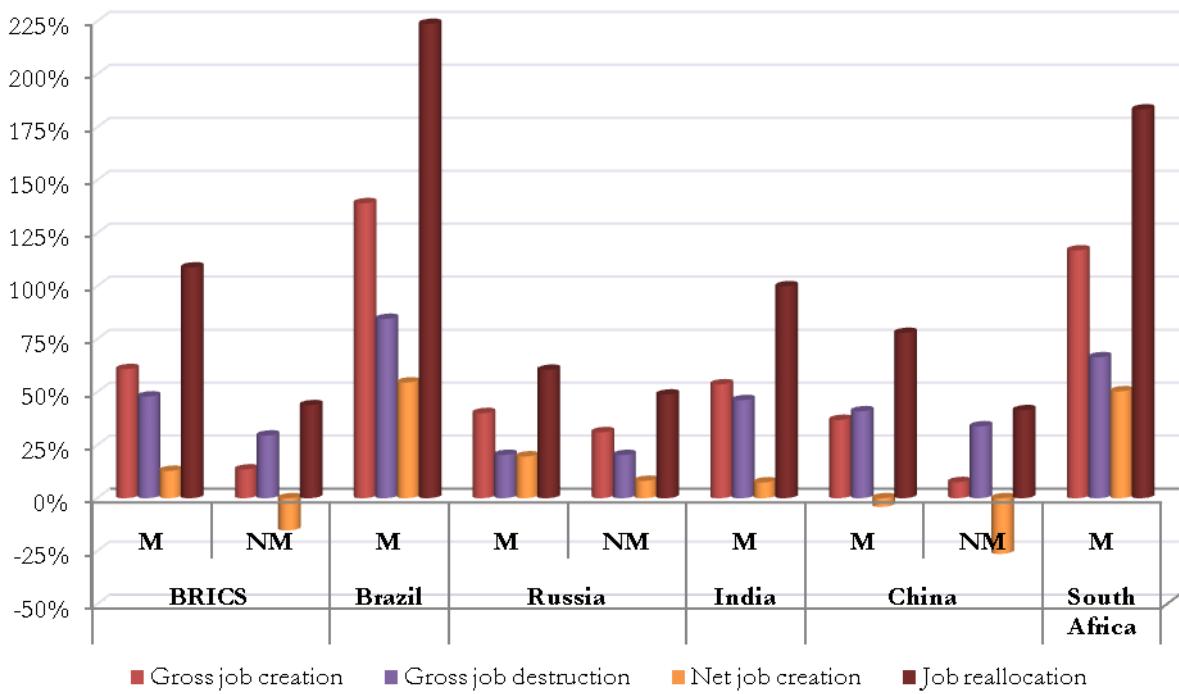
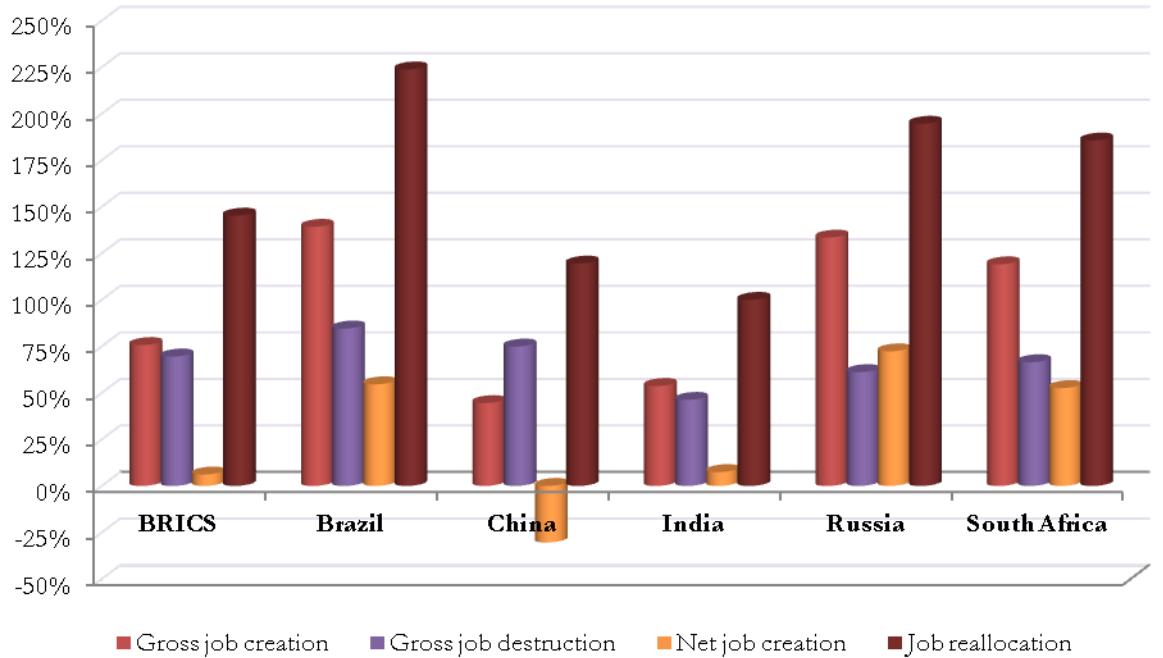
**Notes:** \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. All specifications incorporate control variables for industry (24 2-digit dummies) and a constant term. Estimates in column (1) are weighted using the 2002 GDP (current US dollars, from the World Development Indicators).

The remaining results in Table 4 suggest that there is a significant negative relationship between firm age and employment growth. A similar relationship exists between government ownership and employment growth, again with the only exception of South Africa. In the pooled weighted estimation of column 1, it is shown that firms in Russia exhibit the highest employment growth rate, followed by the firms in South Africa, while firms in China exhibit negative employment growth rates on average, followed by firms in India with small positive growth rates on average. It is worth noting that for China, only 2-year employment growth rates are possible to compute.

*Figure 1* helps further clarify the nature of these country differences in employment growth by distinguishing between job creation and job destruction, and also presenting the figures for net job creation and job reallocation overall and by country, using the formulas presented in equations (3)-(6). It is shown that in the pooled weighted sample of the BRICS the figure for gross job creation is slightly higher than that of gross job destruction (75.7% versus 69.6%, respectively). This results to a small positive net job-creation figure, in the magnitude of 6.1%, with the overall job reallocation rate being high (145%) though. The figures by country suggest that Brazil is the country with the highest gross job creation rate (139.2%). However, job reallocation is the highest (223.8%), as the rate for job destruction is also high (84.6%), resulting in net job creation in the magnitude of 54.6%, which is only the second highest after that of Russia (72.3%) and close to the respective figure for South Africa (52.6%). Hence, Russia has a similar figure for gross job creation (133.5%) to that of Brazil, but a lower job destruction rate (61.2%), which results in the highest net job creation in the sample. India and China are the two countries with the lowest net job creation. The figure for India is 7.4%, while the number is negative for China (-30.4%).

The figure for China is worthy of further inspection, noting that it presents 2-year growth. The 2<sup>nd</sup> panel of Figure 1 distinguishes between manufacturing and non-manufacturing firms of similar age in the sample. It is shown that among firms of similar age, manufacturing firms exhibit positive net job creation rates in the weighted BRICS sample (12.9%), in contrast to the non-manufacturing firms, which exhibit negative net job creation rates (-15.2%). The pattern is also prevalent in China, with firms in manufacturing exhibiting a small negative job creation rate (-4.1%), in contrast to firms outside manufacturing which show a highly negative net job creation rate (-26.3%).

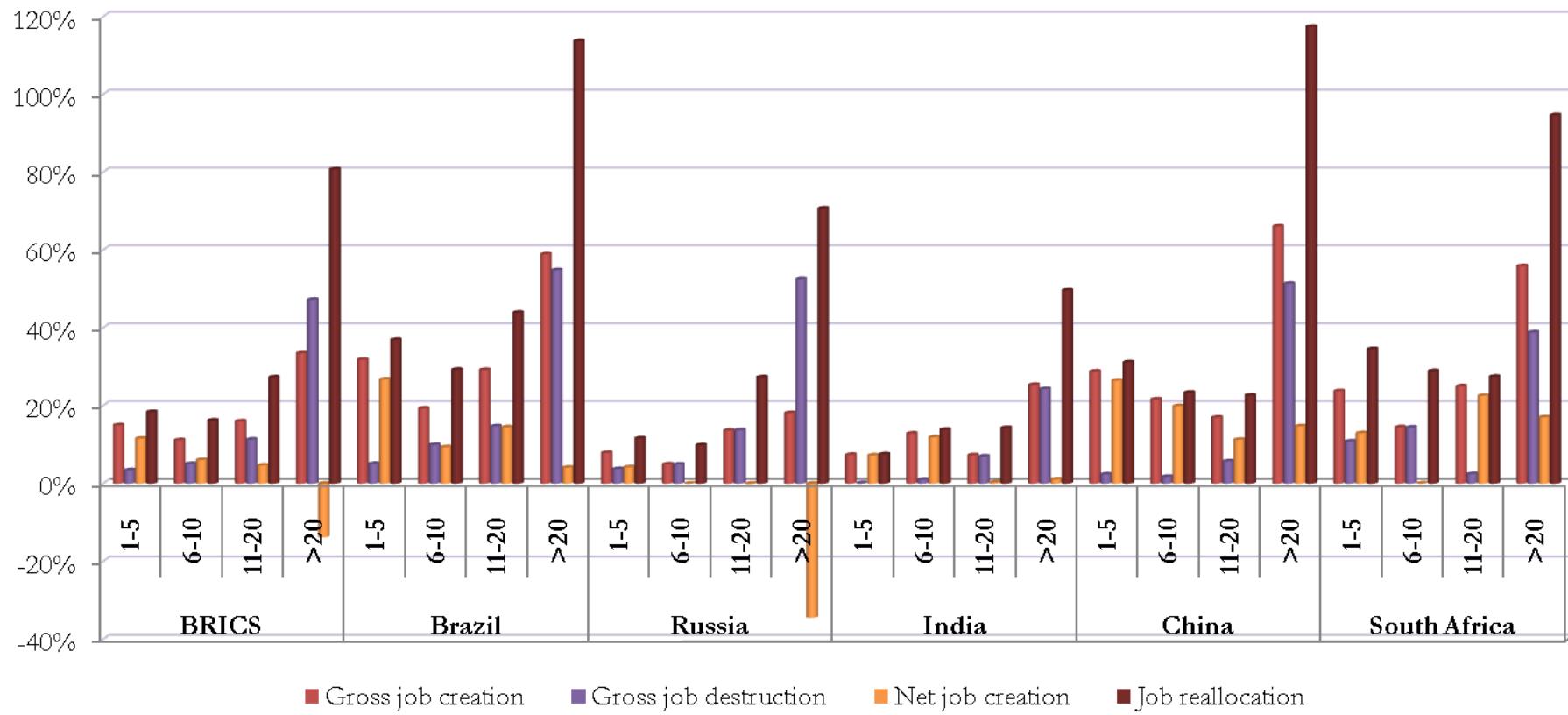
Figure 1: Job creation and job destruction by country and by industry  
(Manufacturing versus Non-Manufacturing)



*Figure 2* presents the employment growth specifics figures distinguishing between four categories of firm age, i.e. 1-5 years, 6-10, 11-20, and more than 20 years of age. The figure shows that young firms exhibit higher net job creation rates in the weighted pooled sample, while the rate for firms older than 20 years of age is negative. The patterns of higher net job creation by firms aged between 1-5 holds for Brazil, Russia, India and China, while in South

Africa is both the very young and the very old firms that exhibit high net job creation rates, with the latter having the highest rate.

Figure 2: Job creation and job destruction by firm age group



*Figure 3* investigates the negative relationship between firm size and employment growth, shown in Table 2, by presenting the previous four figures of interest among firms of similar age<sup>14</sup>, distinguishing by three categories of firm size, i.e. small, medium and large firms. The figure clarifies that in Russia and South Africa, large firms are almost exclusively responsible for the high figures of net job creation, among firms of similar age. The pattern is similar in Brazil, where large firm have a net job creation figure of 44.5%. However, medium-sized enterprises in Brazil also have a positive net job creation figure of 11%. A pattern of great interest emerges from the inspection of the figures in India and China. In China, large firms exhibit the highest negative rate of net job creation among firms of similar age (-27.9%), while the rates are much smaller for small (-0.5%) and medium firms (-2%). In India, small and medium firms exhibit positive rates of net job creation, i.e. 5.3% and 6% respectively. Large firms in India have a negative rate of net job creation (-3.9%). Hence, within countries there is large heterogeneity in employment growth stability.

Two final distinctions are explored in the two panels of *Figure 4*, as potential sources of variation in employment growth, i.e. by foreign affiliation and government affiliation respectively. In the 1<sup>st</sup> panel, it is shown that in the weighted BRICS sample, foreign firms are the main drivers of net job creation, with a positive figure of 6.9%, compared to a figure of -0.8% for the remaining firms. Although firms without a foreign affiliation have higher rates of both gross job creation and destruction and, hence, exhibit higher job reallocation, foreign firms are the ones with a positive net job creation figure. This pattern is strongly prevalent in China, with foreign firms having a 7.2% net job creation rates, compared to a -37.5% rate for domestic firms. In contrast, in Brazil and India, it is domestic firms that exhibit the high rates of net job creation. In Brazil, domestic firms have a 54% net job creation rate, compared to a 0.7% rate by foreign firms. In India, the rate for domestic firms is 11.1%, compared to a -3.6% rate by foreign firms. The net job creation description seems to be more homogeneous in that respect in Russia and South Africa, with both foreign and domestic firms exhibiting high positive net job creation figures. Domestic firms in Russia have a 45.7% rate, compared to a 26.6% by foreign firms. In South Africa, the net job creation rate is 20.9% for foreign firms, and that of domestic firms is 31.7%.

The 2<sup>nd</sup> panel of Figure 4 shows that both in the weighted BRICS sample and in all countries, firms with a government affiliation exhibit negative and only marginally positive net job creation rates. The figure is highly negative for China and close to zero for the remaining countries. Hence, it is private firms that are the main drivers of net job creation in the BRICS.

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<sup>14</sup> The distinction between firms of similar age in the  $s$  vector of equations (3) and (4) is performed via the usage of 11 firm age categories, i.e. 1-5 years (20.5%); 6-10 (31.3%); 11-15 (13.7%); 16-20 (8.6%); 21-25 (5.7%); 26-30 (2.8%); 31-35 (3.6%); 36-40 (2.9%); 41-45 (3.9%); 46-50 (3.2%); >50 years (3.9%). Frequencies for the pooled weighted sample are given in parentheses.

Figure 3: Job creation and job destruction by firm size

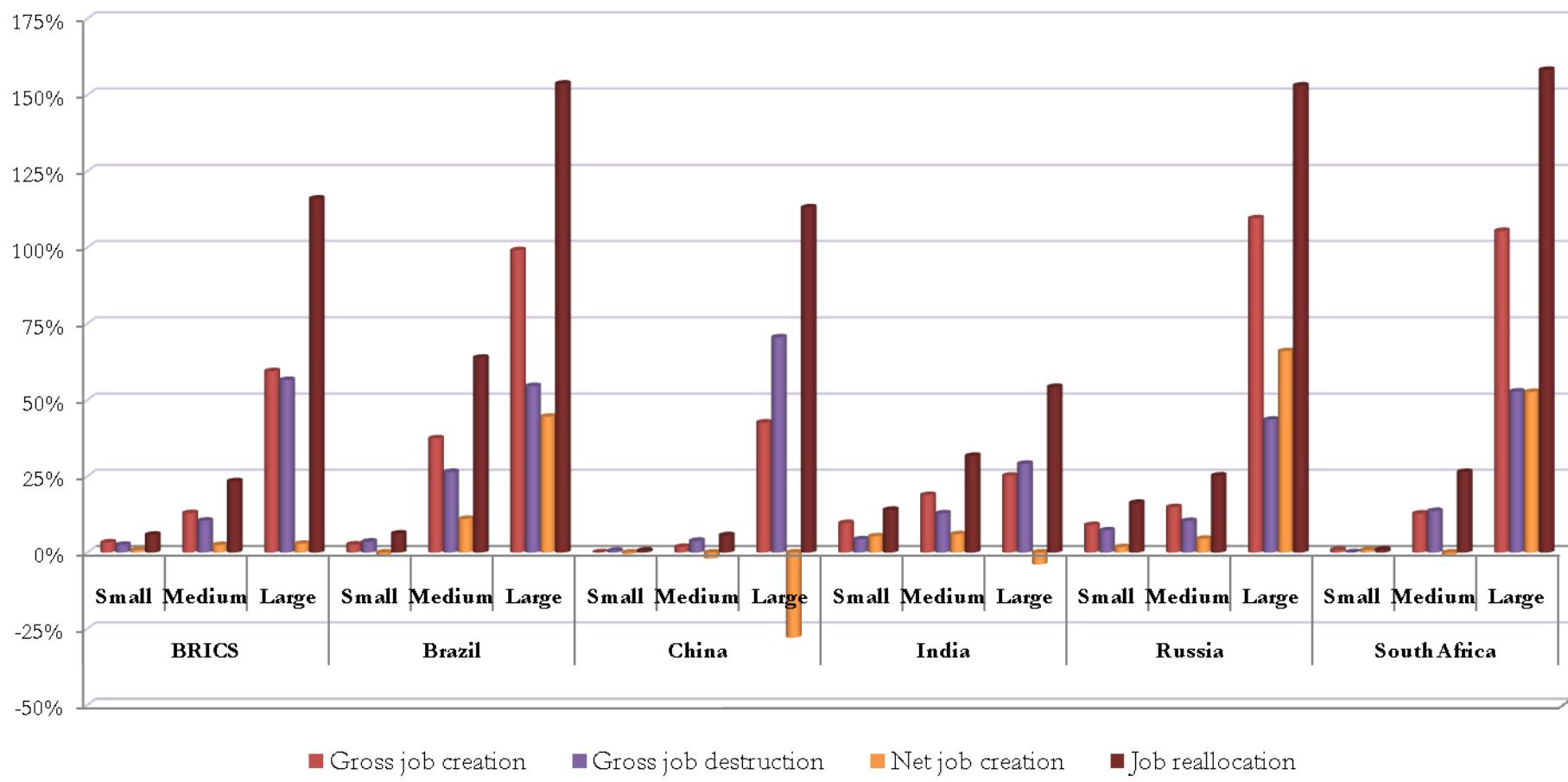
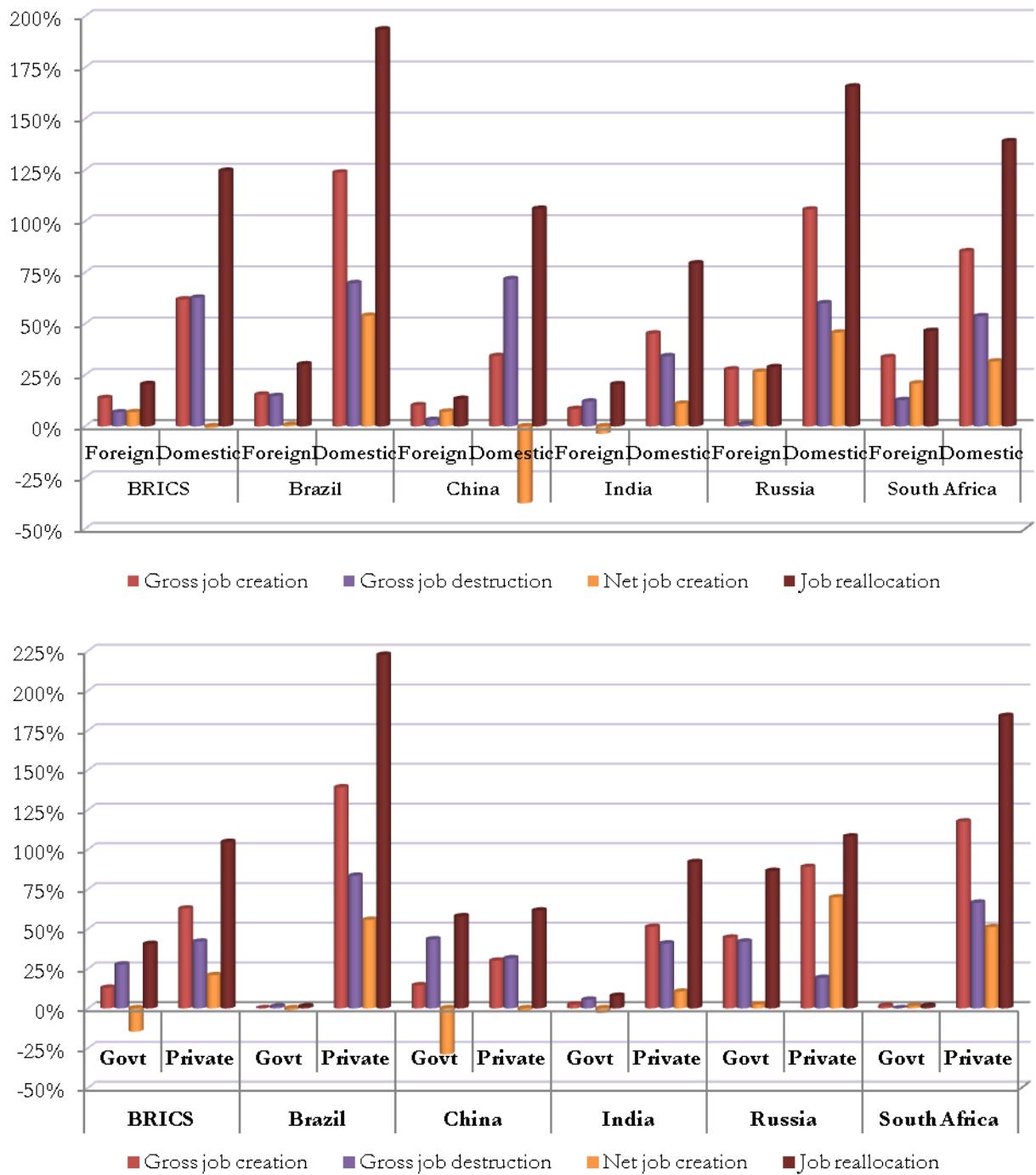


Figure 4: Job creation and job destruction: Foreign affiliation and government involvement



#### 4.3 Remuneration and Rent-sharing

The results of the previous sections have shown considerable heterogeneity within and between counties in the driving forces of net job creation. The complete description of the employment specifics requires the examination of wages and their specifics, and this section proceeds with the analysis of equation (7). *Table 5* shows estimation results for remuneration regressions, in which the determinants of the logarithms of (i) average wage, (ii) average manpower costs (including allowances, bonus and benefits), (iii) benefits (including allowances and bonuses), and wage ratios of (iv) non-production to production workers and (v) skilled to unskilled production workers are examined.

Table 5: Remuneration and returns to skill

|                         | (1)<br>Log<br>(Average<br>wage) | (2)<br>Log<br>(Average<br>labour cost) | (3)<br>Log<br>(Average<br>benefits) | (4)<br>Wage ratio:<br>Non-prod.-to-<br>prod. workers | (5)<br>Wage ratio:<br>Skill.-to-unskill.<br>prod. workers |
|-------------------------|---------------------------------|--|-------------------------------------|--|---|
| SME                     | -0.011<br>[0.033]               | -0.059**<br>[0.030]                    | -0.285***<br>[0.060]                | -0.246**<br>[0.100]                                  | -0.302***<br>[0.087]                                      |
| Log(Firm age)           | 0.110***<br>[0.015]             | 0.004<br>[0.014]                       | 0.159***<br>[0.027]                 | -0.076<br>[0.048]                                    | -0.035<br>[0.046]   |
| Foreign ownership       | 0.822***<br>[0.074]             | 0.410***<br>[0.045]                    | 0.785***<br>[0.117]                 | -0.100<br>[0.144]                                    | 0.003<br>[0.135]  |
| Government ownership    | 0.591***<br>[0.179]             | 0.050<br>[0.042]                       | 0.561**<br>[0.254]                  | -0.473***<br>[0.153]                                 | -0.233**<br>[0.116]                                       |
| Family firm             | -0.017<br>[0.029]               | -0.041<br>[0.031]                      | -0.080<br>[0.054]                   | 0.107<br>[0.083]                                     | 0.157<br>[0.115]  |
| Exporter                | 0.183***<br>[0.036]             | 0.181***<br>[0.033]                    | 0.530***<br>[0.063]                 | 0.240**<br>[0.107]                                   | 0.190*<br>[0.106]   |
| City/size: Capital      | {Ref.}                          | {Ref.}                                 | {Ref.}                              | {Ref.}   | {Ref.}  |
| City/size: < 50k        | -0.186***<br>[0.057]            | -0.048<br>[0.061]                      | -0.068<br>[0.306]                   | 0.779***<br>[0.147]                                  | 0.247<br>[0.165]  |
| City/size: 50k-250k     | -0.164***<br>[0.051]            | 0.046<br>[0.055]                       | -0.026<br>[0.304]                   | 0.878***<br>[0.120]                                  | -   |
| City/size: 250k-1mln    | -0.206***<br>[0.042]            | -0.034<br>[0.045]                      | -0.064<br>[0.302]                   | 0.535***<br>[0.092]                                  | -0.090<br>[0.121]   |
| City/size: Other >1mln  | -0.183***<br>[0.038]            | 0.022<br>[0.041]                       | -0.076<br>[0.299]                   | 0.611***<br>[0.090]                                  | -0.263**<br>[0.114]                                       |
| Brazil                  | {Ref.}                          | {Ref.}                                 | {Ref.}                              | {Ref.}   | {Ref.}  |
| Russia                  | -                               | -                                      | -                                   | -  | -   |
| India                   | -                               | -1.015***<br>[0.039]                   | -                                   | 0.231*<br>[0.126]                                    | 0.403***<br>[0.115]                                       |
| China                   | -0.625***<br>[0.035]            | -0.831***<br>[0.034]                   | -2.236***<br>[0.069]                | -2.041***<br>[0.100]                                 | -   |
| South Africa            | 0.849***<br>[0.048]             | 0.660***<br>[0.048]                    | -0.014<br>[0.103]                   | -1.813***<br>[0.209]                                 | 0.839***<br>[0.162]                                       |
| Linear prediction       | 0.2290                          | 0.2726                                 | -1.2173                             | 3.0580   | 1.8095  |
| No. of observations     | 3,570                           | 5,337                                  | 2,594                               | 2,640  | 2,546   |
| Adjusted R <sup>2</sup> | 0.366                           | 0.267                                  | 0.495                               | 0.225  | 0.028   |

Notes: \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. All specifications incorporate control variables for industry (24 2-digit dummies) and a constant term. Estimates are weighted using the 2002 GDP (current US dollars, from the World Development Indicators). There are no observations on the financial data of companies in Russia.

The results in Table 5 suggest that in the weighted BRICS sample SME's do not pay significantly lower average wages, but pay a significantly lower amount in bonuses, allowances, and benefits, which render their average manpower costs significantly lower, compared to large firms<sup>15</sup>. Moreover, the relative wage differentials are significantly smaller in SMEs, both between non-production and production workers, and between the skilled and unskilled production workers. The results also suggest that older firms pay higher wages and have higher average manpower costs. This is also the case with government firms, as well as with foreign firms which also pay higher amounts on average in bonuses, allowances and benefits. The ratios between skill and production groups are also lower in government firms. In contrast, the returns to skill are higher in exporting firms, which also pay average wages and benefits. The remaining

<sup>15</sup> It is worth noting, that there is no wage data available for Russia. Indian firms provide information on manpower costs, but not on wages and benefits. Chinese firms do not provide wage disaggregation for the skilled and unskilled production groups.

results suggest that firms in the capital pay higher wages on average, where the wage ratios between non-production and production workers are also lower.

*Table 6* presents estimation results replicating the same line of analysis for each country separately. It is shown that SMEs in Brazil have lower average manpower costs and benefit costs, and the wage ratios between production and skill groups are also lower. In the remaining countries, the SME coefficient is also negative but statistically insignificant at conventional levels in all columns. In Brazil, older firms, foreign and government firms, as well as exporters all have higher average wage costs. The wage ratio between production groups is lower in older firms and higher in exporting firms. The situation is somewhat similar in India, and the difference in China is that older firms have lower manpower costs, while the non-production and skill wage premium is higher in exporting firms. In South Africa, it is the older, the foreign and the exporting firms that have higher average wage and manpower costs, while government firms pay higher amounts on average in benefits, allowances and bonuses.

Table 6: Remuneration and returns to skill by country

|                            | Log<br>(Average<br>wage) | Log<br>(Average<br>labour cost) | Log<br>(Average<br>benefits) | Wage ratio:<br>Non-prod.-to-<br>prod. workers | Wage ratio:<br>Skill.-to-unskill.<br>prod. workers |
|----------------------------|--------------------------|---------------------------------|------------------------------|---|--|
| <b>Brazil (1,571 Obs.)</b> | (1)                      | (2)                             | (3)                          | (4)   | (5)  |
| SME                        | -0.039<br>[0.041]        | -0.115***<br>[0.043]            | -0.377***<br>[0.061]         | -0.245**<br>[0.101]                           | -0.847***<br>[0.135]                               |
| Log(Firm age)              | 0.140***<br>[0.019]      | 0.149***<br>[0.020]             | 0.204***<br>[0.031]          | -0.180***<br>[0.051]                          | -0.010<br>[0.060]                                  |
| Foreign ownership          | 0.773***<br>[0.088]      | 0.766***<br>[0.088]             | 0.731***<br>[0.121]          | -0.226<br>[0.202]                             | -0.187<br>[0.236]                                  |
| Government ownership       | 1.365***<br>[0.218]      | 1.325***<br>[0.191]             | 1.212***<br>[0.199]          | 0.145<br>[0.621]                              | -1.566***<br>[0.407]                               |
| Family firm                | -0.061*<br>[0.037]       | -0.095**<br>[0.038]             | -0.148**<br>[0.059]          | 0.148<br>[0.094]                              | 0.153<br>[0.117]                                   |
| Exporter                   | 0.228***<br>[0.053]      | 0.289***<br>[0.054]             | 0.422***<br>[0.073]          | 0.330***<br>[0.116]                           | -0.183<br>[0.143]                                  |
| <b>India (1,497 Obs.)</b>  | (6)                      | (7)                             | (8)                          | (9)   | (10)   |
| SME                        | 0.032<br>[0.061]         | 0.057<br>[0.062]                | -0.072<br>[0.167]            | -0.204<br>[0.287]                             | -  |
| Log(Firm age)              | 0.067***<br>[0.022]      | 0.049**<br>[0.021]              | 0.114*<br>[0.062]            | -0.080<br>[0.081]                             | -  |
| Foreign ownership          | 1.024***<br>[0.214]      | 0.928***<br>[0.221]             | 1.642***<br>[0.475]          | -0.058<br>[0.104]                             | -  |
| Government ownership       | 0.401**<br>[0.201]       | 0.212<br>[0.203]                | 0.300<br>[0.385]             | -0.435<br>[0.640]                             | -  |
| Family firm                | 0.083*<br>[0.050]        | 0.071<br>[0.049]                | 0.135<br>[0.125]             | -0.104<br>[0.141]                             | -  |
| Exporter                   | 0.040<br>[0.055]         | -0.022<br>[0.051]               | 0.648***<br>[0.151]          | -0.101<br>[0.145]                             | -  |
| <b>China (1,769 Obs.)</b>  | (11)                     | (12)                            | (13)                         | (14)  | (15)   |
| SME                        | -<br>[0.039]             | -0.048<br>[0.039]               | -<br>[0.166]                 | -0.256<br>[0.110]                             | -0.089   |
| Log(Firm age)              | -<br>[0.024]             | -0.109***<br>[0.024]            | -<br>[0.087]                 | 0.011<br>[0.064]                              | -0.077   |
| Foreign ownership          | -<br>[0.052]             | 0.306***<br>[0.052]             | -<br>[0.177]                 | -0.045<br>[0.155]                             | 0.015  |
| Government ownership       | -<br>[0.045]             | 0.103**<br>[0.045]              | -<br>[0.165]                 | -0.551***<br>[0.121]                          | -0.151   |
| Exporter                   | -<br>[0.049]             | 0.099**<br>[0.049]              | -<br>[0.179]                 | 0.403**<br>[0.143]                            | 0.247*   |

| South Africa (542 Obs.) | (16)                | (17)                | (18)               | (19)              | (20)              |
|-------------------------|---------------------|---------------------|--------------------|-------------------|-------------------|
| SME                     | -0.077<br>[0.065]   | -0.045<br>[0.068]   | -0.003<br>[0.224]  | -0.370<br>[0.332] | -0.079<br>[0.295] |
| Log(Firm age)           | 0.073**<br>[0.030]  | 0.077***<br>[0.029] | -0.004<br>[0.063]  | -0.058<br>[0.252] | 0.130<br>[0.105]  |
| Foreign ownership       | 0.185***<br>[0.069] | 0.154**<br>[0.069]  | -0.154<br>[0.238]  | 0.263<br>[0.477]  | 0.206<br>[0.409]  |
| Government ownership    | 0.696<br>[0.573]    | 0.329<br>[0.463]    | 1.190**<br>[0.502] | -1.502<br>[1.042] | .                 |
| Family firm             | -0.049<br>[0.097]   | -0.032<br>[0.099]   | -0.303<br>[0.256]  | 0.785<br>[0.831]  | -0.302<br>[0.316] |
| Exporter                | 0.187***<br>[0.062] | 0.227***<br>[0.066] | 0.150<br>[0.159]   | -0.006<br>[0.389] | -0.020<br>[0.319] |

Notes: \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. There is no data on wage outcomes for Russia.

In *Table 7*, the relationship between firm profitability and wage outcomes is examined<sup>16</sup>. The results provide clear indications of rent-sharing in the weighted BRICS sample. Specifically, more profitable firms pay higher wages, have higher average manpower costs, and pay higher amounts in bonuses, allowances and benefits. Moreover, higher profitability lowers the differential between the wages of non-production and production workers. The remaining results are robust to the incorporation of firm profitability per worker and net assets per worker in the specifications.

Table 7: Rent-sharing

|                         | Log<br>(Average<br>wage) | Log<br>(Average<br>labour cost) | Log<br>(Average<br>benefits) | Wage ratio:<br>Non-prod.-to-<br>prod. workers | Wage ratio:<br>Skill.-to-unskill.<br>prod. workers |
|-------------------------|--------------------------|---------------------------------|------------------------------|---|--|
| Panel A: BRICS sample   | (1)                      | (2)                             | (3)                          | (4)   | (5)  |
| Net profit per worker   | 0.054***<br>[0.009]      | 0.058***<br>[0.010]             | 0.016***<br>[0.003]          | -0.007**<br>[0.003]                           | -0.005<br>[0.004]                                  |
| Total assets per worker | 0.001***<br>[0.000]      | 0.001***<br>[0.000]             | 0.0001*<br>[0.00004]         | 0.0001***<br>[0.0001]                         | -0.0001<br>[0.0001]                                |
| SME                     | 0.180<br>[0.124]         | 0.088<br>[0.156]                | -0.103**<br>[0.050]          | -0.268***<br>[0.094]                          | -0.865***<br>[0.135]                               |
| Log(Firm age)           | 2.146***<br>[0.396]      | 3.421***<br>[0.513]             | 1.053***<br>[0.165]          | -0.181<br>[0.197]                             | -0.076<br>[0.238]                                  |
| Foreign ownership       | 0.243***<br>[0.051]      | 0.307***<br>[0.064]             | 0.086***<br>[0.020]          | -0.137***<br>[0.043]                          | 0.024<br>[0.060]                                   |
| Government ownership    | 2.019**<br>[0.999]       | 3.103**<br>[1.310]              | 0.758**<br>[0.346]           | -0.119<br>[0.539]                             | -1.178***<br>[0.309]                               |
| Family firm             | -0.075<br>[0.107]        | -0.223*<br>[0.129]              | -0.127***<br>[0.040]         | 0.110<br>[0.085]                              | 0.189<br>[0.122]                                   |
| Exporter                | 0.410***<br>[0.146]      | 0.772***<br>[0.185]             | 0.332***<br>[0.060]          | 0.186**<br>[0.095]                            | -0.163<br>[0.142]                                  |
| City/size: < 50k        | -0.263<br>[0.160]        | -0.447*<br>[0.236]              | -0.344***<br>[0.079]         | 0.812***<br>[0.149]                           | -  |
| City/size: 50k-250k     | -0.167<br>[0.143]        | -0.153<br>[0.212]               | -0.180**<br>[0.071]          | 0.921***<br>[0.120]                           | -0.279*<br>[0.167]                                 |
| City/size: 250k-1mln    | -0.309***<br>[0.114]     | -0.326*<br>[0.172]              | -0.180***<br>[0.052]         | 0.554***<br>[0.087]                           | -0.409**<br>[0.181]                                |
| City/size: Other >1mln  | -0.314***<br>[0.314***]  | -0.379***<br>[0.379***]         | -0.213***<br>[0.213***]      | 0.696***<br>[0.696***]                        | -0.444***<br>[0.444***]                            |

<sup>16</sup> Net profit is calculated as the difference between total sales revenue and the cost of raw materials, the cost of energy, gas and fuel, the cost of manpower, the cost of interest payment s and other costs. It is worth noting that all results in this section are robust to the usage of gross profit, which is calculated as the difference between total sales revenue and the cost of raw materials. All financial variables are deflated, converted into \$US and windsorized at the 1<sup>st</sup> and the 99<sup>th</sup> percentile.

|                                    | [0.077]             | [0.138]             | [0.045]             | [0.091]              | [0.171]              |
|------------------------------------|---------------------|---------------------|---------------------|----------------------|----------------------|
| Prediction                         | 1.9294              | 2.5948              | 0.6156              | 2.7463               | 1.6769               |
| No. of observations                | 3,372               | 3,528               | 3,331               | 1,793                | 1,362                |
| Adjusted R <sup>2</sup>            | 0.409               | 0.396               | 0.407               | 0.406                | 0.061                |
| <b>Panel B: Interactions I</b>     | <b>(6)</b>          | <b>(7)</b>          | <b>(8)</b>          | <b>(9)</b>           | <b>(10)</b>          |
| Net profit per worker*SME          | 0.007<br>[0.017]    | -0.003<br>[0.019]   | -0.007<br>[0.005]   | 0.006<br>[0.005]     | 0.011*<br>[0.006]    |
| Net profit per worker              | 0.049***<br>[0.012] | 0.061***<br>[0.014] | 0.021***<br>[0.004] | -0.011***<br>[0.004] | -0.011**<br>[0.005]  |
| SME                                | 0.138<br>[0.123]    | 0.109<br>[0.164]    | -0.057<br>[0.050]   | -0.301***<br>[0.097] | -0.920***<br>[0.140] |
| <b>Panel C: Interactions II</b>    | <b>(11)</b>         | <b>(12)</b>         | <b>(13)</b>         | <b>(14)</b>          | <b>(15)</b>          |
| Net profit per worker*Foreign own. | 0.020<br>[0.023]    | 0.049**<br>[0.023]  | 0.014**<br>[0.006]  | 0.004<br>[0.006]     | -0.002<br>[0.007]    |
| Net profit per worker              | 0.051***<br>[0.010] | 0.051***<br>[0.011] | 0.014***<br>[0.003] | -0.008**<br>[0.003]  | -0.004<br>[0.004]    |
| Foreign owned                      | 1.782***<br>[0.371] | 2.531***<br>[0.532] | 0.794***<br>[0.168] | -0.244<br>[0.222]    | -0.041<br>[0.274]    |
| <b>Panel D: Interactions III</b>   | <b>(16)</b>         | <b>(17)</b>         | <b>(18)</b>         | <b>(19)</b>          | <b>(20)</b>          |
| Net profit per worker*Exporter     | 0.048**<br>[0.020]  | 0.051**<br>[0.022]  | 0.011*<br>[0.006]   | -0.008<br>[0.005]    | -0.007<br>[0.006]    |
| Net profit per worker              | 0.039***<br>[0.009] | 0.042***<br>[0.010] | 0.013***<br>[0.003] | -0.005<br>[0.003]    | -0.003<br>[0.004]    |
| Exporter                           | 0.011<br>[0.164]    | 0.348<br>[0.229]    | 0.239***<br>[0.073] | 0.256**<br>[0.101]   | -0.113<br>[0.149]    |

**Notes:** \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. Panel incorporates county fixed effects, but there are no observations for China and Russia. The number of observations in panels B-D is the same as in those in panel A. The reference groups are Capital city and Brazil.

In Panels B, C, and D of Table 7, we incorporate interaction terms between net profit per worker and (a) SME, (b) foreign affiliation, and (c) exporting activity, respectively. The inspection of the coefficients of the interaction terms suggests that more profitable SME pay a higher return to skills. Moreover, rent-sharing is more prevalent in profitable foreign firms, in terms of benefits, bonuses and allowances and ultimately average manpower costs. Finally, rent-sharing is higher in profitable exporting firms, in terms of all wages, benefits and average manpower costs.

*Table 8* provides estimations results for each country sub-sample, intended to confirm the robustness of the findings for the weighted BRICS sample. The inspection of the results confirms they are strongly robust for Brazil, China<sup>17</sup> and India. Moreover, it appears that rent-sharing is higher in profitable SMEs, foreign firms and exporting firms, as indicated by the positive interaction terms in columns 6, 7, and 8. There is no evidence of rent-sharing in South Africa, despite the fact that the average wages are high as indicated by the summary statistics.

<sup>17</sup> There is no net profit, gross profit and total assets data available for China, and total sales per worker is used as a proxy for profitability. We interpret the results for China with caution, recognizing the caveat the sales per worker may be a better proxy for productivity, rather than profitability.

Table 8: Rent-sharing by country

|                                | Log<br>(Average<br>wage) | Log<br>(Average<br>labour cost) | Log<br>(Average<br>benefits) | Wage ratio:<br>Non-prod.-to-<br>prod. workers | Wage ratio:<br>Skilled/unskill.<br>prod. workers | Average salary<br>Interaction terms between<br>net profit per worker and:<br><i>SME</i> <i>Foreign</i> <i>Exporter</i> |                      |                      |
|--------------------------------|--------------------------|---------------------------------|------------------------------|---|--|--|----------------------|----------------------|
| <b>Brazil (1,540 Obs.)</b>     | (1)                      | (2)                             | (3)                          | (4)   | (5)  | (6)  | (7)                  | (8)                  |
| Net profit per worker          | 0.044***<br>[0.011]      | 0.056***<br>[0.013]             | 0.018***<br>[0.004]          | -0.007**<br>[0.003]                           | -0.005<br>[0.004]                                | 0.032**<br>[0.016]   | 0.047***<br>[0.011]  | 0.029***<br>[0.011]  |
| Interaction term               | -                        | -                               | -                            | -   | -  | 0.019<br>[0.021]   | -0.019<br>[0.030]    | 0.052**<br>[0.023]   |
| SME                            | 0.181<br>[0.146]         | -0.132<br>[0.199]               | -0.174**<br>[0.069]          | -0.263***<br>[0.101]                          | -0.877***<br>[0.138]                             | 0.062<br>[0.144]   | 0.190<br>[0.147]     | 0.130<br>[0.143]     |
| Log(Firm age)                  | 0.275***<br>[0.069]      | 0.392***<br>[0.095]             | 0.147***<br>[0.033]          | -0.161***<br>[0.052]                          | 0.017<br>[0.062]                                 | 0.283***<br>[0.069]  | 0.280***<br>[0.068]  | 0.286***<br>[0.069]  |
| Foreign ownership              | 2.231***<br>[0.546]      | 3.726***<br>[0.737]             | 1.205***<br>[0.224]          | -0.106<br>[0.215]                             | -0.094<br>[0.250]                                | 2.270***<br>[0.539]  | 2.594***<br>[0.478]  | 2.240***<br>[0.529]  |
| Exporter                       | 0.573***<br>[0.205]      | 0.973***<br>[0.292]             | 0.368***<br>[0.100]          | 0.363***<br>[0.116]                           | -0.172<br>[0.147]                                | 0.570***<br>[0.203]  | 0.544***<br>[0.198]  | 0.026<br>[0.211]     |
| <b>India (1,453 Obs.)</b>      | (9)                      | (10)                            | (11)                         | (12)  | (13)   | (14)   | (15)                 | (16)                 |
| Net profit per worker          | 0.059***<br>[0.019]      | 0.037*<br>[0.019]               | -0.002<br>[0.003]            | 0.014**<br>[0.006]                            | -  | 0.084***<br>[0.025]  | 0.049**<br>[0.019]   | 0.049***<br>[0.019]  |
| Interaction term               | -                        | -                               | -                            | -   | -  | -0.028<br>[0.033]  | 0.121***<br>[0.047]  | 0.035<br>[0.050]     |
| SME                            | 0.142<br>[0.233]         | 0.294<br>[0.256]                | -0.046<br>[0.035]            | -0.082<br>[0.261]                             | -  | 0.299<br>[0.217]   | 0.077<br>[0.216]     | 0.116<br>[0.226]     |
| Log(Firm age)                  | 0.195**<br>[0.079]       | 0.178**<br>[0.078]              | 0.004<br>[0.008]             | -0.123*<br>[0.072]                            | -  | 0.189**<br>[0.080]   | 0.203***<br>[0.077]  | 0.193**<br>[0.079]   |
| Foreign ownership              | 1.862*<br>[1.013]        | 2.778**<br>[1.149]              | 0.518**<br>[0.247]           | 0.042<br>[0.147]                              | -  | 1.692<br>[1.061]   | -0.886<br>[0.648]    | 1.562*<br>[0.914]    |
| Exporter                       | -0.054<br>[0.221]        | -0.088<br>[0.225]               | 0.033<br>[0.030]             | 0.018<br>[0.142]                              | -  | -0.036<br>[0.219]  | -0.058<br>[0.219]    | -0.259<br>[0.271]    |
| <b>China (1,769 Obs.)</b>      | (17)                     | (18)                            | (19)                         | (20)  | (21)   | (22)   | (25)                 | (24)                 |
| Total sales per worker         | -                        | 0.003***<br>[0.0007]            | -                            | 0.001<br>[0.001]                              | -0.001*<br>[0.0006]                              | 0.002***<br>[0.0004]   | 0.003***<br>[0.0006] | 0.003***<br>[0.0005] |
| Interaction term               | -                        | -                               | -                            | -   | -  | 0.001**<br>[0.001]   | -0.002***<br>[0.001] | -0.001<br>[0.001]    |
| SME                            | -                        | 0.220<br>[0.162]                | -                            | -0.246<br>[0.170]                             | -0.094<br>[0.112]                                | -0.057<br>[0.149]  | 0.208<br>[0.161]     | 0.218<br>[0.162]     |
| Log(Firm age)                  | -                        | -0.057<br>[0.090]               | -                            | 0.032<br>[0.091]                              | -0.091<br>[0.067]                                | -0.092<br>[0.087]  | -0.030<br>[0.089]    | -0.054<br>[0.090]    |
| Foreign ownership              | -                        | -0.214<br>[0.248]               | -                            | -0.028<br>[0.188]                             | 0.054<br>[0.164]                                 | -0.058<br>[0.245]  | 0.561**<br>[0.239]   | -0.204<br>[0.248]    |
| Exporter                       | -                        | 0.179<br>[0.163]                | -                            | 0.384**<br>[0.183]                            | 0.265*<br>[0.146]                                | 0.219<br>[0.158]   | 0.137<br>[0.156]     | 0.303**<br>[0.149]   |
| <b>South Africa (535 Obs.)</b> | (25)                     | (26)                            | (27)                         | (28)  | (29)   | (30)   | (31)                 | (32)                 |
| Net profit per worker          | 0.001<br>[0.015]         | -0.012<br>[0.022]               | 0.005<br>[0.007]             | -0.002<br>[0.005]                             | -0.002<br>[0.009]                                | -0.010<br>[0.016]  | 0.004<br>[0.016]     | 0.001<br>[0.020]     |
| Interaction term               | -                        | -                               | -                            | -   | -  | 0.020<br>[0.027]   | -0.020<br>[0.039]    | -0.003<br>[0.025]    |
| SME                            | -0.457<br>[0.405]        | -0.144<br>[0.456]               | 0.033<br>[0.170]             | -0.243<br>[0.385]                             | -0.073<br>[0.329]                                | -0.561<br>[0.442]  | -0.436<br>[0.403]    | -0.460<br>[0.406]    |
| Log(Firm age)                  | 0.261<br>[0.217]         | 0.480**<br>[0.198]              | 0.037<br>[0.070]             | -0.100<br>[0.267]                             | 0.206*<br>[0.105]                                | 0.257<br>[0.216]   | 0.251<br>[0.216]     | 0.261<br>[0.218]     |
| Foreign ownership              | 0.527<br>[0.487]         | 0.380<br>[0.481]                | 0.034<br>[0.154]             | 0.154<br>[0.557]                              | 0.344<br>[0.449]                                 | 0.514<br>[0.479]   | 0.692<br>[0.607]     | 0.531<br>[0.483]     |
| Exporter                       | 0.798**<br>[0.377]       | 1.536***<br>[0.462]             | 0.183<br>[0.156]             | -0.056<br>[0.372]                             | 0.077<br>[0.337]                                 | 0.808**<br>[0.376]   | 0.814**<br>[0.376]   | 0.812**<br>[0.400]   |

Notes: Total sales per worker are included in China, as an indicator of profitability. Results should be interpreted with caution.

## 5 Concluding Remarks and Limitations

We utilize homogeneous data for the period 2002-2003 for the BRICS economies from the World Bank Investment Climate Surveys. Investment climate assessments help shed light in the diversity of employment characteristics depending on the sector, size, location and ownership structure of enterprises. Moreover, they provide an insightful companion to the analysis of labour demand in the growth champions of the new millennium, enabling inferences related to skills, labour market performance, inequality, and future prospects.

The results of this study reveal interesting patterns highlighting considerable sources of heterogeneity with respect to employment growth and net job creation, skilled labour demand and rent-sharing in the five economies. Specifically, despite recent claims of the contrary, SMEs in the BRICS exhibit lower employment growth, compared to large firms. The only notable exception is South Africa, where there are no major differences between SMEs and large firms. Large firms in Russia and South Africa are responsible for most of the net job creation, while the differences between SMEs and large firms with respect to net job creation are minimal in Brazil, and in favour of SMEs in India and China. Younger firms also have higher net job creation figures, again with the exception of South Africa where young and old firms have similar figures. Foreign firms in China exhibit the highest net job creation, while in Brazil and India domestic firms create most of the new net employment. There are no major differences with respect to foreign affiliation and net job creation in Russia and South Africa. Government firms have lower net job creation rates in all countries. SMEs do not pay lower wages but seem to pay lower benefits and have lower ratios of returns to skills. Finally, the results provide clear evidence on rent-sharing in Brazil and India, some evidence of rent-sharing in China, while rent-sharing is not prevalent in South Africa and there is no available financial data for Russia. More profitable SMEs, foreign and exporting firms appear to be more likely to offer rents to their workers.

Firms in Russia exhibit the highest employment growth rate, followed by the firms in South Africa, while firms in China exhibit negative employment growth rates on average, followed by firms in India with small positive growth rates on average. Brazil is the country with the highest gross job creation rate. However, job reallocation is the highest, as the rate for job destruction is also high, resulting in net job creation of a magnitude which is only the second highest after that of Russia and close to the respective figure for South Africa. Hence, Russia has a similar figure for gross job creation to that of Brazil, but a lower job destruction rate, which results in the highest net job creation in the sample. India and China are the two countries with the lowest net job creation.

Among the remaining results, SMEs in the BRICS have lower ratios of production to permanent and unskilled to production workers. Moreover, the relative wage differentials are significantly smaller in SMEs, both between nonproduction and production workers, and between the skilled and unskilled production workers. The ratios between skill and production groups are also lower in government firms. In contrast, the returns to skill are higher in exporting firms, which also pay average wages and benefits. Older firms are bigger in terms of employment in all countries and so are the firms with a foreign affiliation. There is a significant negative relationship between firm age and employment growth. Young firms are the drivers of net job creation, with the exception of South Africa. The results also suggest that older firms pay higher wages and have higher average manpower costs. Furthermore, firms in the capital pay higher wages on average, where the wage ratios between non-production and production workers are also lower.

This study is among the first attempts to examine labour demand and its specifics in the BRICS, using standardized data. Among the study's strengths, the dataset entails retrospective questions about financial and labour variables in the past. The data in this study have several strengths, such as the information about different skill and production employee groups. Hence, the results presented provide material with great descriptive value for the understanding of the employment specifics in the BRICS. Among the study's limitations, the usage of a cross-sectional database provides a snapshot of the situation in the five countries in the sample at the dawn of the new millennium. It is an interesting avenue to explore the persistence and evolution of labour demand in the post-crisis period and following recent events in each of the five BRICS countries. Moreover, the availability of panel data would certainly facilitate the conduct of dynamic analysis which would be even more illuminating about the specifics of employment in the BRICS. This latter feature would also allow the examination of business cycle effects and the analysis of their relationship with employment in the BRICS.

A final limitation of the data is that it is based exclusively on formal sector enterprises. The size and activity of the informal sector in the BRICS varies, with estimates for the period 1999-2007 ranging from 31.2% in Brazil, 48.6% in Russia, 24% in India, 13.5% in China, and 29.5 in South Africa (Schneider et al., 2010; Schneider, 2012)<sup>18</sup>. Informal firms often compete with formal sector enterprises in terms of employment and wages and they could have their own patterns when it comes to employment growth and returns to skill. However, very few datasets with information on informal firms exist in general, and the authors are unaware of any available micro-datasets for the BRICS.

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<sup>18</sup> For some recent works on informality, see Catão et al. (2009), de Vries (2010), Henley et al. (2009) for Brazil, and Kulshreshtha (2011) for India.

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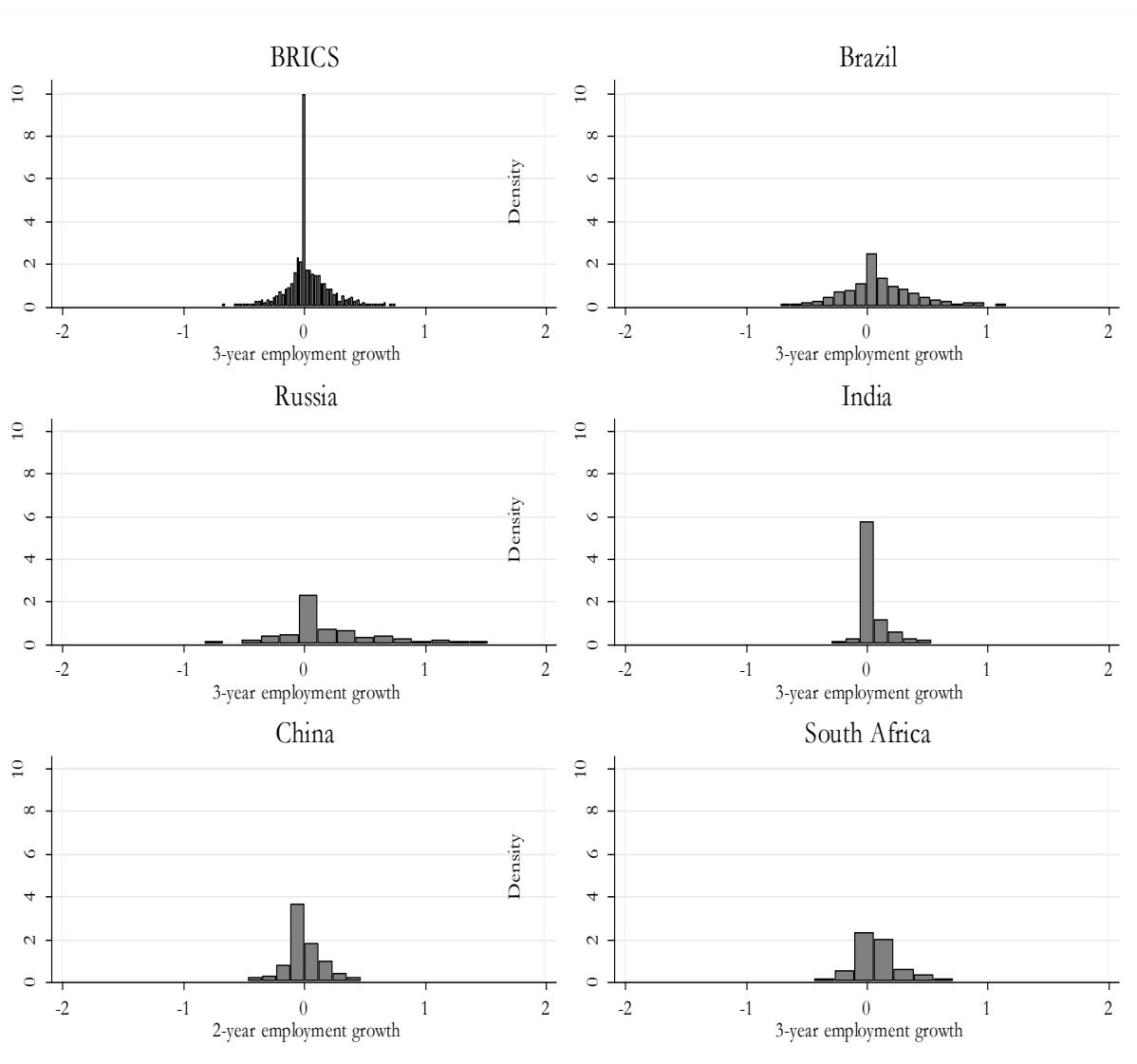
## Appendix

Table A1: Weighted pairwise correlation matrix

|                                 | SME  | Firm age | Foreign | Government | Family firm | Exporter | Emp. growth - 3y | Average salary wage | Avg. manpower cost | Average benefit cost | Non prod.-to-prod wage ratio | Skill.-to-unskill. wage ratio | Total #employees | Prod.-to-perm. empl. ratio | Unskill.-to-prod. empl. | % Foreign skilled | #Employees<6 years education | #Employees>12 years education | Net profit | Gross profit | Total assets | Total sales |  |
|---------------------------------|--|----------|---------|------------|-------------|----------|------------------|---------------------|--------------------|----------------------|------------------------------|-------------------------------|------------------|----------------------------|-------------------------|-------------------|------------------------------|-------------------------------|------------|--------------|--------------|-------------|--|
| SME                             | 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Firm age                        | -0.22* 1.00  |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Foreign                         | -0.16* -0.11* 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Government                      | -0.21* 0.28* -0.09* 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Family firm                     | 0.08* 0.08* -0.06* -0.12* 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Exporter                        | -0.19* 0.00 0.27* -0.08* 0.03* 1.00  |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Emp. growth - 3y                | 0.00 -0.18* 0.03* -0.15* 0.03* 0.03* 1.00  |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Average wage/salary             | -0.14* 0.22* 0.28* 0.09* 0.01 0.16* -0.06* 1.00  |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Average manpower cost           | 0.01 0.08* 0.10* -0.02 0.05* 0.09* -0.04* 0.91* 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Average benefit cost            | -0.22* 0.22* 0.33* 0.07* 0.00 0.20* -0.06* 0.64* 0.79* 1.00  |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Non prod.-to-prod. wage ratio   | -0.18* -0.01 0.08* -0.05* 0.01 0.11* 0.08* 0.06* 0.00 0.09* 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Skilled-to-unskilled wage ratio | -0.09* -0.03 0.04* -0.04* 0.00 0.07* 0.05* -0.05 -0.04* -0.05 0.18* 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Total #employees                | -0.18* 0.08* 0.02* 0.14* -0.02* 0.03* -0.02 0.08* -0.01 0.08* 0.03 0.00 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Prod.-to-permanent empl.ratio   | 0.00 0.03* 0.07* -0.05* 0.07* 0.11* 0.01 -0.02 0.03* 0.07* 0.59* 0.04* 0.04* 1.00  |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Unskilled-to-prod. empl. ratio  | -0.17* 0.04* 0.07* 0.00 -0.02 0.13* -0.02 -0.11* -0.10* -0.12* 0.01 0.39* 0.04* -0.11* 1.00  |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| %Foreign skilled                | -0.03* 0.04* 0.00 0.00 -0.03* -0.02 0.00 0.00 -0.01 -0.05* 0.00 0.00 0.00 -0.03* -0.04* 1.00                                       |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| #Employees<6 years educ.        | 0.06* 0.00 -0.11* -0.04* 0.00 -0.04* -0.07* -0.05* -0.08* -0.11* 0.07* 0.04 -0.03* 0.02 0.14* 0.08* 1.00                           |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| #Employees>12 years educ.       | -0.04* -0.02 0.18* 0.14* -0.06* 0.08* 0.07* 0.08* 0.11* 0.09* -0.34* -0.11* 0.04* -0.16* -0.27* -0.01 -0.54* 1.00                  |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Net profit                      | -0.24* 0.20* 0.22* 0.10* 0.06* 0.14* -0.03* 0.34* 0.36* 0.29* 0.03 -0.01 0.49* 0.03* -0.05* 0.01 -0.04* 0.09* 1.00                 |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Gross profit                    | -0.24* 0.20* 0.20* 0.13* 0.05* 0.16* -0.03 0.37* 0.39* 0.30* 0.04* 0.00 0.50* 0.04* -0.06* 0.01 -0.04* 0.09* 0.91* 1.00            |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Total assets                    | -0.29* 0.21* 0.16* 0.16* 0.08* 0.16* -0.01 0.24* 0.20* 0.07* 0.00 0.00 0.44* 0.03 0.03 -0.04 0.05* -0.03* 0.13* 0.58* 0.56* 1.00   |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |
| Total sales                     | -0.18* 0.06* 0.17* 0.06* 0.03* 0.12* 0.00 0.28* 0.16* 0.06* 0.06* -0.01 0.46* 0.03* 0.04* 0.05* -0.03 0.12* 0.73* 0.71* 0.81* 1.00 |          |         |            |             |          |                  |                     |                    |                      |                              |                               |                  |                            |                         |                   |                              |                               |            |              |              |             |  |

Notes: \*: Stars denote significance at the 5% level. The 2002 GDP (current US dollars) is used as an analytical weight (World Development Indicators).

Figure A1: 3-year employment growth histograms



Notes: The GDP in 2002 per country is used as an analytical weight for the computation of the figures.