Chapter 1 Private sector growth and labor demand

Over the past two decades, moderate GDP per capita growth rate in MENA was driven by demographic change rather than labor productivity and did not create enough formal private sector jobs. The economic benefits from the ongoing demographic trend could have been higher if MENA countries were able to absorb the fast increasing labor force into their formal economy. Instead, weak formal private sector job creation has resulted in a large portion of the labor force being inactive. Why has private sector job creation been so weak? We first examine whether the fundamentals of job creation in MENA countries from fast-growing emerging or high-income countries in other regions. They are not: young firms and more productive firms are the engines of private sector job creation in MENA as elsewhere. However, MENA countries' private sector has been characterized by low firm turnover – firm entry and exit – and slow productivity growth, limiting the pool of both young and productive firms.

1.1.   **This chapter examines the nature of labor demand in MENA countries' private sectors, and discusses possible determinants of private sector growth and job creation.** First, the chapter briefly examines MENA's performance in aggregate growth and the drivers of economic growth. Growth in MENA over the last two decades appears to have been moderate and mostly driven by demographic change, while productivity growth was low compared to other developing countries. Job creation was too weak over this period to absorb the growing working-age population. This resulted in high unemployment, inactivity, and informal jobs. The chapter then turns to the reasons why private sector job creation in MENA over the last two decades was weak. Our analysis shows that the determinants of job growth in MENA countries do not differ from those in high-income or fast-growing emerging economies in other regions: in MENA, as elsewhere, it is young firms and more productive firms that create more jobs. The chapter contends that low firm turnover and slow productivity growth limit the pool of young firms and productive firms, and undermine faster job creation.

1.2.   **The analysis is based on newly available firm census data from MENA, which are crucial to identify the fundamentals of job creation.** The determinants of job creation are analyzed through the lens of the firm, using unique firm census data collected in six MENA countries (Egypt, Tunisia, Morocco, Jordan, Lebanon, West Bank and Gaza), and Turkey, which is used as the benchmark country.[6] To the best of our knowledge, this is the first time that these census data, apart from Morocco, are being used for research purposes[7]. There are, however, important differences in the types of surveys, coverage of variables, and years across countries. For instance, the census data in Egypt cover over two million establishments across all sectors in 1996 and 2006, and a smaller annual manufacturing panel that includes all establishments with at least ten employees between 2007 and 2011. The Turkish census comprises more than 2.4 million establishments between 2005 and 2010. In Tunisia, Jordan, Lebanon, and West Bank and Gaza, the census data are also in panel format and cover all sectors, including between 100,000 and 600,000 economic establishments, depending on the country and year. In Morocco, the data is a panel of manufacturing firms with at least ten employees between 1996 and 2006. These differences

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[6] To the best of our knowledge firm census data, including informal firms (below 5 employees), from all non-agriculture economic sectors has only been applied in research for very few other developing countries from other regions including India, Indonesia, and Mexico.

[7] The data were collected over the course of more than a year. In Egypt, Tunisia, and Turkey the entire datasets were only accessible in the offices of the corresponding statistical departments in Cairo, Tunis, and Istanbul, respectively.

in data coverage across countries are carefully taken into account, and are highlighted when presenting the analysis. A detailed summary of the available census data is provided in the Appendix.

1.3.   The chapter is organized as follows. The first section examines the growth and job performance of MENA countries. The second section provides evidence that the fundamental mechanisms of job creation are the same in MENA as in other regions: young and more productive firms create jobs. The third section shows that low firm turnover and slow productivity growth limit the pool of young firms and productive firms and thus impede job growth in MENA[8].


1.   Economic growth has been moderate and job growth weak

MENA grew moderately during the last two decades. Growth was driven by demographic change (increased working-age population), while aggregate productivity growth was low.

1.4.   **Real GDP per capita growth hovered around two percent in the last two decades; about 2.5 percent lower than Asia, but comparable to per capita growth rates in the other developing regions**. After prolonged economic stagnation during the 1980s, growth in MENA recovered in the 1990s as governments shifted away from state-led economic models towards more private sector-led growth and trade integration. Between 1991 and 2012, real GDP growth per capita averaged 2.2 percent in constant terms (Figure 1.1). Thus, it was almost three percent lower than real GDP per capita growth in East or South Asia. Nevertheless, it was comparable or even slightly exceeded per capita growth in Latin America and the Caribbean, Eastern Europe and Central Asia, and Sub-Saharan Africa. This decent growth performance was not driven solely by MENA's oil exporting high-income countries. Real GDP per capita growth was comparable among MENA's developing countries, averaging 2.1 percent from 1991-2009 and accelerating to 2.6 percent from 2000-2009.

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[8] The different methodologies used and additional country specific analysis are described in detail in the corresponding companion papers of this report, including Sy (2014) for Morocco; Rijkers, Arouri, Freund, and Nucifora (2013) for Tunisia; Al Kadi (2014) for Jordan; and Hussain and Schiffbauer (2014) for Egypt.
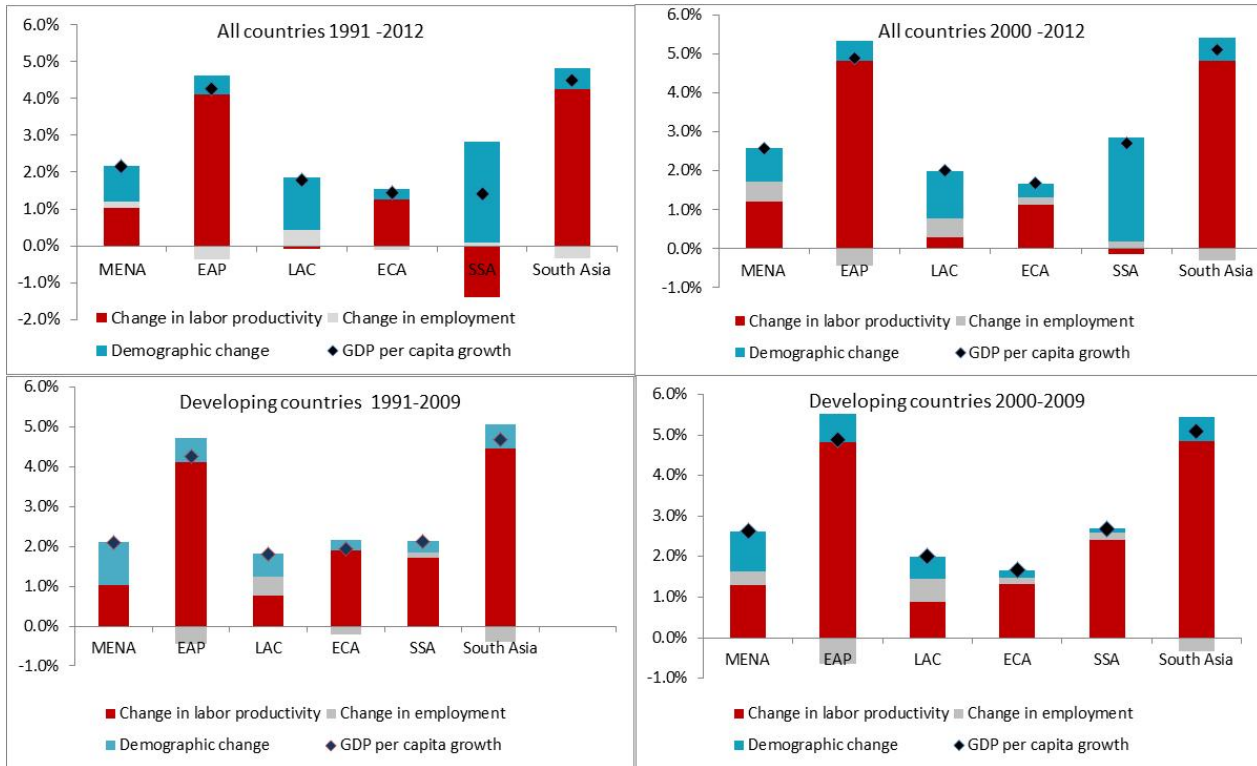
Notes: Authors' calculations based on WDI. Developing MENA effectively excludes the GCC (data missing for Qatar).

1.5.   **Demographic change accounted for about 50 percent of aggregate real GDP per capita growth over the past 20 years, substantially higher than in any other region.** Demographic change, measured by the change in working-age population as a share of total population, accounted for about 50 percent of economic growth. The MENA region has the second highest population growth rate in the world. Its population growth rate between 1990 and 2012 averaged 2 percent and was only surpassed by population growth in Sub-Saharan Africa (2.7 percent). High fertility rates combined with rapidly declining mortality contributed to a sharp increase in MENA's working-age population as a share of total population (Figure 1.1, left), rapidly increasing MENA's potential labor supply. Though its demographic profile is often blamed for MENA's high youth unemployment, the relative size of the labor force is a key determinant of the region's recent economic growth performance.

1.6.   **Aggregate productivity growth was low in MENA compared to other developing regions.** Figure 1.1 demonstrates that the change in labor productivity explained about 50 percent of GDP growth among MENA's developing countries over the last two decades, generating 1 percent real GDP per capita growth annually in that period. Productivity was significantly lower than in other developing regions: it generated about 4.5 percent real GDP per capita growth annually in East Asia, 4 percent in South Asia, and about 2 percent in Europe and Central Asia and Sub-Saharan Africa. For the MENA region as a whole, per capita growth increased between 1995-2000 and 2000-2005 when demographic change accelerated. Among GCC countries, labor productivity did not contribute to economic growth over the last fifteen years. Among MENA's developing countries, however, productivity growth averaged 1.3 percent over the last decade, primarily based on growth in non-oil exporting countries.

MENA experienced significant productivity growth through reallocation across sectors, but within-sector productivity growth was the lowest among all regions.

1.7.   **The reallocation of workers from sectors with lower (marginal) productivity to sectors with higher productivity can be an important driver of aggregate productivity growth.** One key insight of development economics is that growth is driven by a structural shift from agriculture to manufacturing and services. This sectoral shift tends to be mirrored in the pattern of employment, so that over time the labor force in the nonagricultural sector increases while employment in the agricultural sector declines (Kuznets, 1967). As labor moves to the usually higher-productivity industrial sector, overall productivity rises and incomes expand (Lewis 1954, Ranis and Fei, 1961). As incomes rise, the demand for services increases. In many countries the share of the service sector in GDP rises almost linearly with the income level. Moreover, Eichengreen and Gupta (2012) reveal that in OECD countries service sector labor productivity as a share of average labor productivity tends first to rise at lower-income levels, then decline over an intermediate range, before increasing again. The second surge is most likely caused by the rise of modern services (business services, telecommunication, finance, and so forth). In many fast-growing developing countries, especially in Asia, the reallocation of workers from low productivity to high productivity sectors has contributed positively to growth during the last twenty years (Rodrik and McMillan, 2012).

1.8.   **All MENA countries in the sample, with the exception of Saudi Arabia, experienced aggregate productivity gains due to labor reallocations between sectors from 2000-2005.** Labor productivity growth expressed as change in output per worker can be decomposed into within-sector change and reallocations "across" sectors or structural change (see Table A.8 in the Appendix). We note that the following results are based on measurements of average, not marginal labor productivity.[9] However, we approximate marginal sector productivities based on wage data from harmonized household surveys for Egypt and Tunisia (World Bank, I2D2 database). The results show productivity gaps are smaller when approximating marginal productivity with wage data instead of average value added per worker, but they remain significant (see Table A.11 in the Appendix). The contribution of labor reallocations (that is, structural change) to aggregate productivity growth was strongest in Syria and Egypt (Figure 5.3, right). In Syria, the country with the highest structural change in the MENA region, reallocation of labor contributed about 1.8 percentage points to aggregate productivity growth (which was 2.7 percent). In Egypt, it contributed 1 percentage point to aggregate productivity growth, which was negative (-2.2 percent) due to low within-sector productivity growth. The negative contribution in Saudi Arabia is a result of the influx of non-Saudi workers, many of whom were hired for low value added service activities. In Tunisia, the contribution of labor reallocation to growth (i.e., structural change) slowed after a wave of privatization came to an end in 2005.

1.9.   **However, within-sector productivity growth was the lowest among all regions**. Figure 1.2 (left panel) illustrates that aggregate productivity growth among the seven MENA countries was the lowest among developing regions, due to low within-sector productivity growth. Figure 1.2 (right panel) demonstrates that the regional average hides substantial variations across the seven MENA countries. Within-sector productivity growth has been negative in Egypt since 1982, primarily driven by declining labor productivity in mining, manufacturing, and wholesale and retail trade. Within-sector productivity growth was also negative in Saudi Arabia and West Bank and Gaza between 2000 and 2005. In West Bank and Gaza, labor productivity fell steeply in agriculture, wholesale and retail trade, and transport and

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[9] See Hsieh and Olken (2014) for a detailed discussion under which conditions the average and the marginal products of capital and labor move together.

communication. Within-sector productivity growth was high in Jordan and Morocco. In Jordan, it was driven by manufacturing (through labor shedding), transport and communication, and finance (by attracting new workers); in Morocco, by agriculture, mining, and community, social, personal and government services.

Figure 1.2 Structural change in 2000-2005 across regions (left) and among MENA countries (right)
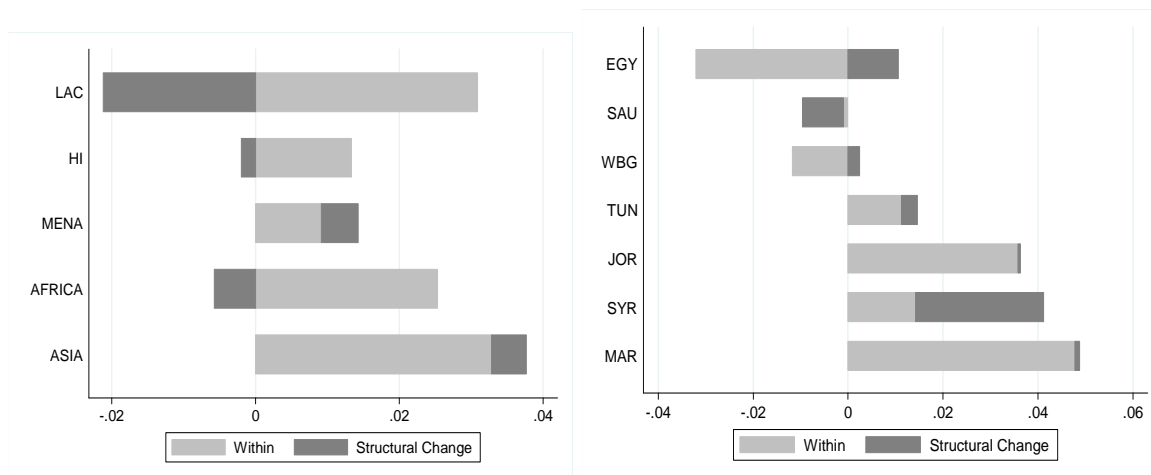
*Notes:* WB staff calculations; data source see Appendix.

1.10.   **Lack of data prevented accounting for human capital in the growth decomposition. In Tunisia, where data is available, human capital accounted for a significant share of the labor productivity, but the analysis also reveals important misallocation of human capital.** Several countries in the MENA region have undergone a steep increase in educational attainment during the last two decades. To understand better how recent increases in Tunisia's educational attainment have affected the reallocation of human capital across sectors, we replicate the structural change analysis for the years 2005 to 2010, using data on output per unit of human capital.[10] Accounting for improvement in education of the labor force nuances some of the previous findings. For example, while both agriculture and the public sector employed 18 percent of the total working population in 2005, the share of imputed human capital was 12 for agriculture but 27 percent for the public sector. Human capital productivity growth within the agricultural sector was negative, implying that growth of human capital exceeded overall employment growth. Overall, human capital exceeded employment growth by about 50 percent, accounting for a significant share of the labor productivity increase. Moreover, the adjusted productivity measure also reveals significant misallocation of human capital. In 2009, 75 percent of Tunisia's human capital augmented labor was employed in sectors with below average productivity, 24 percent in public administration alone, with 12 percent in the public works program.

1.11.   **Consistently, firm census data suggest that firm turnover in MENA is driven by structural change rather than creative destruction.** Bartelsman et al. (2004) suggest a way to assess if firm churning is driven by structural change (resource reallocations between sectors) or creative destruction (resource reallocations among firms within a sector). In the former case, the correlation between entry and exit

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[10]   For the years 2005 to 2010, we have data on the amount of employees by sector with a primary, secondary, or post-secondary degrees. We assign 0, 6, 12 and 16 years of education to employees with no degree, primary degree, secondary degree, and post-secondary degrees, respectively. Using a standard Mincerian technique and assuming a 10% return to each year of schooling, we assign each employee a human capital equal to $e^{(.1*years)}$.

rates across sectors should be negative; in the latter, positive (i.e., new firms enter and old firms exit the same 2-digit sector). Figure 1.3 reveals that countries at a later stage of development have higher positive within-sector correlations, indicating that the sectoral structures in these countries have converged so that the main force behind firm turnover is creative destruction. In contrast, in less developed countries the correlations tend to be lower. Tunisia, Morocco, and West Bank and Gaza are among the lowest, suggesting that sectoral adjustment due to structural change is still ongoing.

Figure 1.3 Correlation between (employment weighted) entry and exit rates across 2-digit sectors
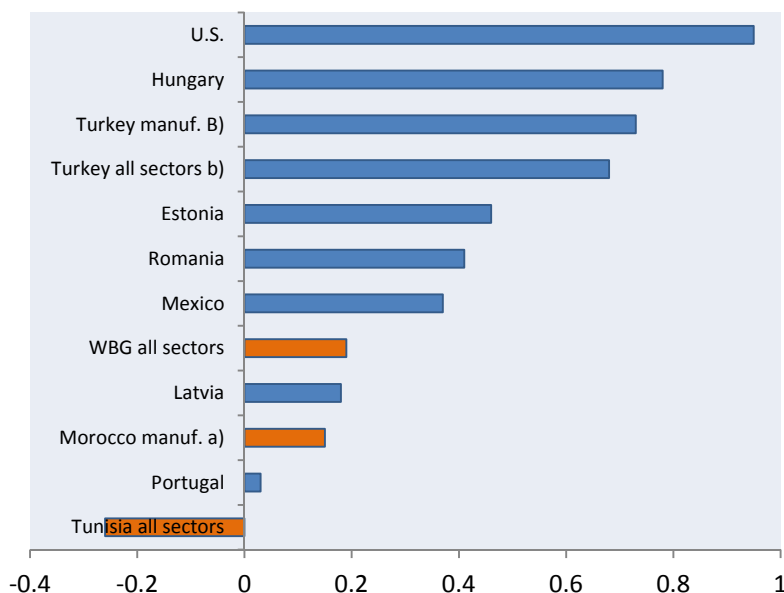
Notes: The entry/exit rates are weighted by employment; correlation coefficients are significantly different from 0 at the 10% level in Tunisia, Estonia, Turkey, Hungary, and the U.S.; a) entry in /exit out 10+ employees; b) Entry in / exit out 20+ employees. Correlations are measured between 2005 and 2010 in Turkey, 1996-2006 in Morocco, 2004-2012 in West Bank and Gaza, and 1990s for all other countries.


Box 1.1 Is structural change in Morocco gender-biased?

In the following, we disaggregate the relative changes in sectors' employment shares by gender to examine if structural change in Morocco increased the probability of female and/or male employment in higher productivity sectors. The analysis is based on World Bank (2014d). Figure 1.4 plots the relative labor productivity of different sectors on changes in the employment share in these sectors. The sizes of the circles represent the size of the sector. Sectors above the (horizontal) dashed line have above-average labor productivity, while sectors to the left of the (vertical) dashed line increased their employment share. The left panel shows the changes in the labor share among women (on the x-axis), while the right panel illustrates that the changes in the labor share among men (on the x-axis).

The results show that structural change did not benefit women and men equally. The graph below compares the reallocation (changes in labor shares) of women and men across the different sectors. There are some important similarities. The high productivity communications and finance and real estate sectors increased their employment shares for both women and men, but the numbers of new jobs in these sectors are very **small in proportion.** These benefitted mostly educated women and men in cities. The overall number of jobs provided in these two sectors is small, so relatively few employees benefitted from this trend. In contrast, employment trends are very different for the majority of uneducated women living in rural areas. About 60 percent of women in the labor force work in agriculture; more than 77 percent of them worked as family helpers, and 44 percent work part-time. The share

even slightly increased from 59 percent in 2000 to 61 percent in 2011 (Figure 1.4, left). Conversely, it declined for men (Figure 1.4, right) Given that the agriculture sector is by far the largest employer in Morocco (39 percent of the total labor force in 2011), this employment trend outweighs any other. Finally, note that the aggregate labor share in agriculture still declined, since the overall labor force participation of men is 2.8 times that of women.

**Figure 1.4 Reallocation of labor by gender across sectors from 2000-2011**
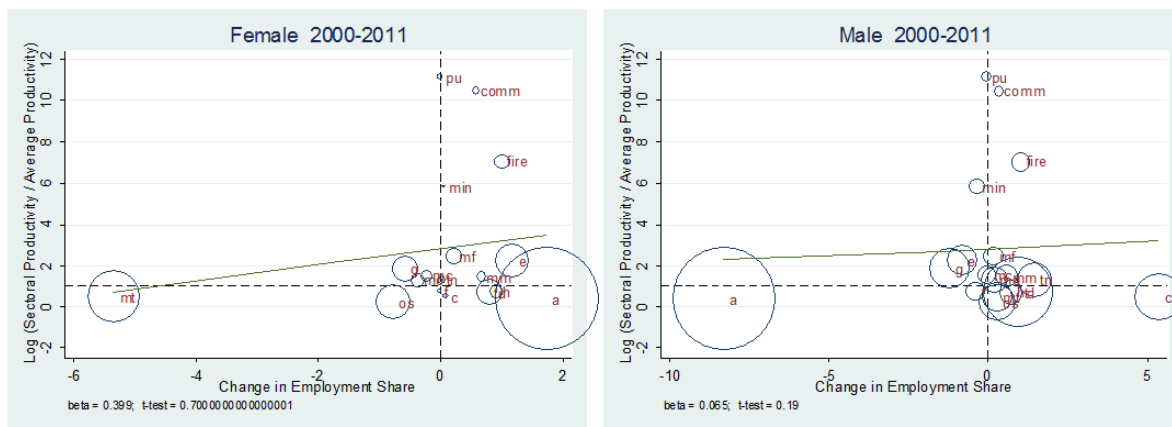
Notes: from World Bank (2014d). Sectors: a (agriculture), f (fisheries), min (mining), mf (manufacturing, food), mt (manufacturing, textiles), mc (manufacturing, chemicals), mm (manufacturing, mechanical & electrical), mo (manufacturing, other), pu (public utilities), c (construction), td (trade), h (hotels & restaurants), tn (transportation), comm (communications), fire (finance, insurance, real estate & business services), g (government), e (education & health), os (other services).

MENA has had weak job performance. Most workers are employed in small-scale low productivity activities; this employment structure persisted and increased somewhat over the past decade.

1.12.   **MENA's labor market failed to absorb the fast growing labor force.** Formal sector workers as a share of working-age population in MENA is much lower than in other middle-income regions such as Latin America and the Caribbean (LAC), or Eastern Europe and Central Asia (ECA); Figure 1.5. While the measured share of informal labor is lower than in LAC, the share of the working-age population dropping out of the labor force is much higher, especially among women. Less than a quarter of all working-age women in the MENA region participated in the labor force in 2012 (see also World Bank, 2014b).

Figure 1.5 Demographic Change (left); Composition of working-age population (right)
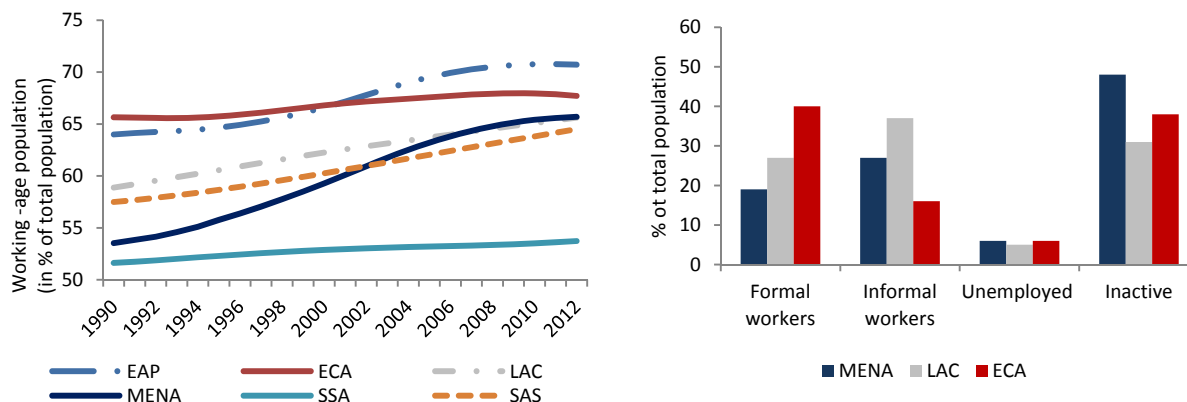
Notes: Authors' calculations based on WDI (left); World Bank, 2013, Based on ILO-KILM database (right).

1.13.   **Small-scale activities provide the majority of jobs in MENA, albeit with some noteworthy differences across countries**. Figure 1.6 illustrates the distribution of employment across firm size categories in the different MENA countries. The share of employment in micro establishments with less than five employees dominates the private sector in Egypt and West Bank and Gaza, reaching almost 60 percent. It is significantly lower in Jordan (40 percent), Tunisia (37 percent), and lowest in Turkey (34 percent). In contrast, Tunisia (36 percent)[11] and Jordan (33 percent) have the highest concentration of workers in large establishments, while Turkey has the highest share of workers in medium-size establishments (29 percent), also exceeding its share of workers in large ones (26 percent). The share of jobs in establishments with at least 1,000 employees is below 10 percent in all five countries, which starkly contrasts with the employment situation in high-income countries. For example, in the U.S., 48 percent of all employees work in firms with more than 10,000 employees. Overall, Figure 1.6 highlights that small scale activities in micro enterprises are an important source of employment in MENA countries. The high share of jobs in micro establishments is alarming given that businesses with less than ten employees are much more likely to be informal in MENA (World Bank, 2011). Moreover, informality in MENA is associated with a lower level of productivity relative to other regions at comparable levels of development.

**Figure 1.6 Employment share by firm size**
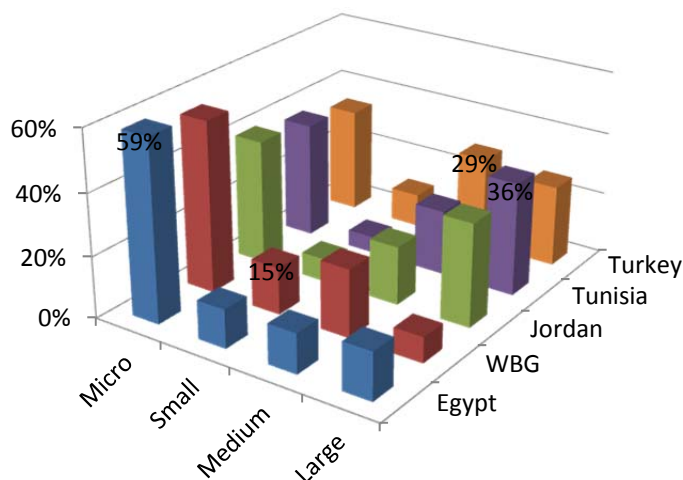
Notes: Authors calculation based on census data. The graph shows the share of employment by firm size according to the following classification: micro firms have less than 5 employees, small firms have between 5 to 9 employees, medium firms have between 10 to 99 employees, large firms have 100 employees or more. Periods covered by country: Turkey (2006), Tunisia (1996-2010), Jordan (2006), Egypt (2006), Palestine (2004, 2007, 2012). The employment shares in Tunisia are based on firm data while it is establishment data for the other countries. Lebanon is not included as the nature of the census data is different; its coverage limited to firms with a tax ID.

1.14.   **The concentration of jobs in micro establishments is also a reflection of MENA's sectoral structure; low productivity services provide the most jobs.** Most of these services are likely to represent subsistence activities rather than a vibrant informal sector Figure 1.7 illustrates the distribution of

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[11]   For more details, see World Bank (2014d). In contrast to all other countries, the employment distribution in Tunisia is based on firms instead of establishments; hence the share of jobs in large establishments is potentially slightly overstated. We note, however, that this bias is expected to be small since, for instance, in Egypt only one percent of establishments were not firms, but part of larger entities in 2006.

employment by sectors; economic sectors are approximately sorted by their share of formal sector employees. The majority of domestic private sector jobs are small-scale; they are often low productivity service sector activities. In Egypt and West Bank and Gaza, around 40 percent of all jobs are in these sectors. All three sectors hold primarily what are often informal one or two-person firms in MENA (see World Bank, 2011). For instance, the average establishment size in retail trade is below 2 percent in all of the countries, varying from 1.2 in Tunisia to 1.9 percent in Egypt (including one wage worker and the owner). Moreover, labor force survey data in Egypt (ELMPS) indicate that 70 percent of employment in retail trade is informal: jobs without a formal contract or social insurance (World Bank, 2014). Retail trade, personal services, and hotels and restaurants still account for 28 percent in Jordan. In Lebanon and Tunisia, the highest share of jobs is in business services (which are included in other services). Business service firms have, on average, only slightly larger firm sizes than retail service firms in all MENA countries.

**Figure 1.7** **Distribution of employment across non-agriculture sectors**
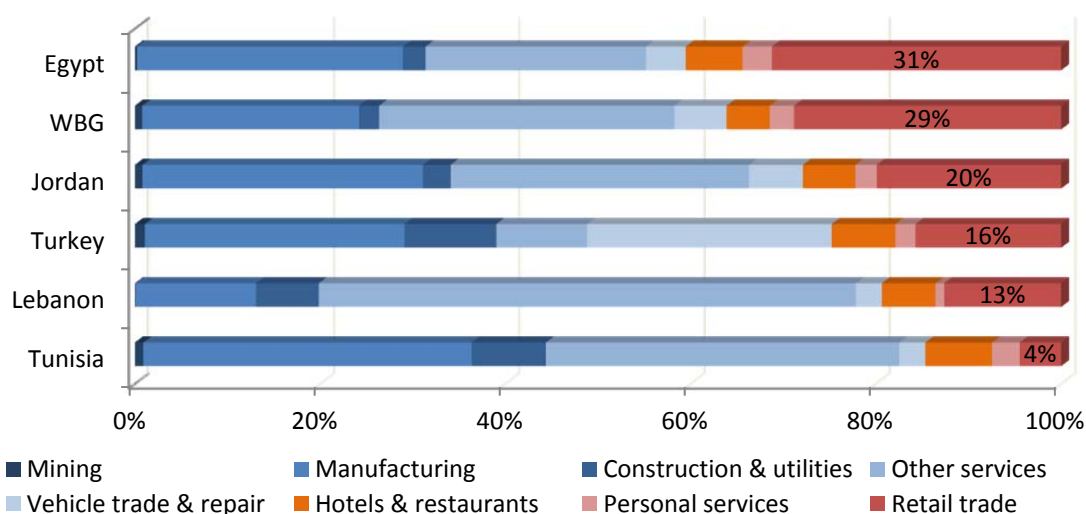
Notes: Authors calculation based on firm census data.

1.15.   **The concentration of employment in small and micro-firms decreased slightly in recent years, but it is still higher than in the late 1990s in certain countries.** The share of jobs in medium and large establishments increased somewhat in the oil-importing middle-income MENA countries (apart from Egypt) between 2005 and 2012, albeit at a much slower pace than in Turkey. Figure 1.8 shows that the share increased by almost 10 percent in Turkey at the end of the 2000s, compared to less than 5 percent in MENA countries. In Egypt and Tunisia, the share of employment in large establishments declined over the longer time horizon, reflecting stagnation in formal sector job growth preceding the recent crisis**.** Figure 1.8 highlights that employment declined in Egypt by 7 percent (from 23 to 16 percent) between 1996 and 2006. In contrast, the dominance of small-scale activities in micro establishments with less than 10 employees increased over time (from 62 percent in 1996 to 72 percent in 2006).[12]

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[12]
    These trends are consistent with survey data from the ELMPS showing an increase in the share of Egyptians working in the informal economy between 1998 and 2006 as well as between 2006 and 2012, respectively: jobs that provide neither social insurance nor a formal labor contract increased from 53 percent in 1998 to 61 percent in 2012. See World Bank (2014). The report also shows that the trend to more informal work materialized in all sectors. In addition, there has been a shift towards irregular work in the second half of the 2000's.
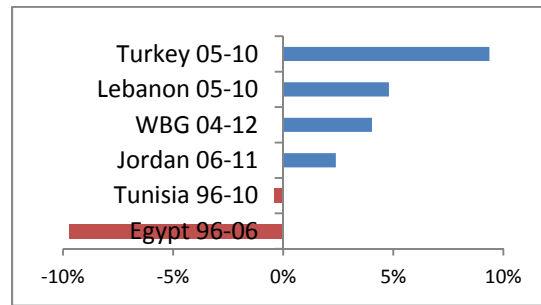
Notes: Authors calculation based on census data. Note: Medium and large establishments are defined as having more than ten employees. The graph shows the change over the time periods 1996-2006 in Egypt, 1996-2010 in Tunisia, 2006-2011 in Jordan, 2004-2012 in WBG, 2005-2010 in Lebanon, and 2005-2010 in Turkey.

Most firms in MENA had weak employment growth; a few fast-growing firms account for a large share of job creation.

1.16.   **Small firms did not grow**. Micro firms with less than ten employees almost never enter larger size categories. This finding is illustrated in the case of Tunisia in Table 1.1 which summarizes the probabilities that firms transitioned among different size categories (or exited them) in 2007-2011. For instance, of all one-person firms in Tunisia in 2007, 22 percent exited by 2011, 76 percent remained one-person firms, and only 2 percent hired at least one more worker. Overall, Table 1.1 highlights that micro firms with less than ten employees almost never grow beyond ten employees. In particular, Table 1.1 reveals that the probability of all non-farm micro firms to grow beyond ten employees 4-5 years later is 2 percent in the West Bank and Gaza (6 percent in the West Bank alone), 3 percent in Tunisia, and 12 percent in Lebanon. The very low probability that micro firms will transition to larger size categories is striking. This finding is consistent with those of the World Bank (2014) which showed that most micro firms are informal, and that informal firms have a very low chance to formalize in MENA.
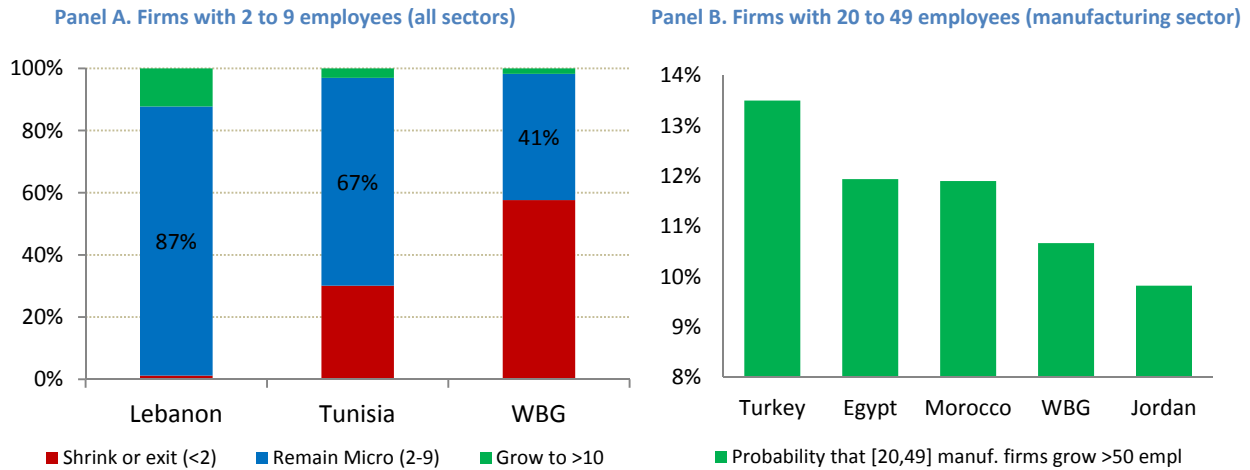
1.17.   **The probability that medium-size manufacturing establishments grow to become large establishments four years later is low across MENA countries.** Figure 1.9 (right panel) shows that this probability for firms with 20-49 employees is 13.5 percent in Turkey, 11.9 percent in Egypt and Morocco, 10.7 percent in West Bank and Gaza, and 9.8 percent in Jordan.

Table 1.1 Employment transition matrix

Tunisia				
Transitions 2007-2011				
Status in 2011				
Status in 2007	**Exited**	**1-person**	**Micro**	**SME**	**Large**
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1-person	22%	**76%**	2%	0%	0%
Micro	9%	21%	**67%**	3%	0%
SME	6%	11%	16%	**64%**	4%
Large	6%	11%	3%	15%	**65%**

Notes: Authors calculation based on census data. Note: Micro: 2-9 employees, SME: 10-99 employees, Large: >=100 employees.

Figure 1.9 Employment transition by firm size

Panel A. Firms with 2 to 9 employees (all sectors)

Panel B. Firms with 20 to 49 employees (manufacturing sector)
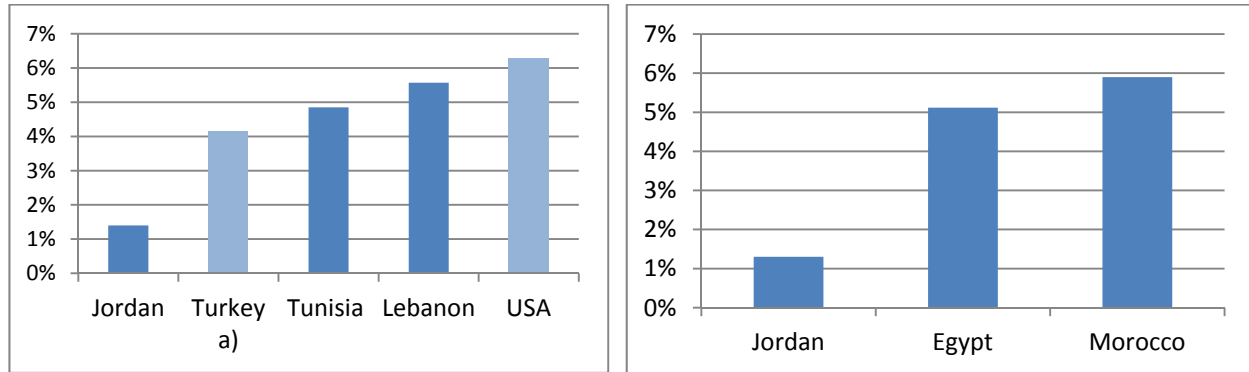

Notes: Authors calculation based on firm census data. The graph shows the employment transition matrices by firm size; Panel A shows results for firms with 2 to 9 employees (all sectors); Panel B shows the probability that a firm with less 20 to 49 employees grows beyond 50 employees or more. The size transition probabilities are measured from 2006-2010 in Turkey, 2006-2011 in Jordan, 2007-2011 in Tunisia and Egypt, 2007-2012 in West Bank and Gaza, 2005-2010 in Lebanon, and for all five-year periods between 1996 and 2006 in Morocco. Due to data constraints the transition probability for Jordan is for incumbents only; excluding entrants and exiters.

1.18.   **A few fast-growing firms (the "*gazelles*") account for a high share of job creation in MENA.** Gazelles are defined as firms that double their employment over a four year period.[13] The analysis is restricted to firms with more than 10 employees in the base year.[14] Figure 1.10 shows the incidence of gazelles across MENA countries, the U.S., and Turkey. Lebanon has the highest share of gazelles (5.6 percent) out of the MENA countries. The shares are only slightly lower in Tunisia and Turkey. Jordan has the lowest incidence of gazelles (1.4 percent). However, gazelles accounted for a high share of employment growth in MENA. Figure 1.11 shows the share of jobs created by gazelles and non-gazelles. Gazelles accounted respectively for about 64 and 42 percent of total net job creation in Jordan and Tunisia. In contrast, Turkey's job creation was broader-based across all firms, as gazelles only contributed 15 percent to job growth. Gazelles accounted for all net job creation in the manufacturing sector in Morocco, offsetting job destruction by all other formal manufacturing firms. In Egypt, manufacturing net job creation was negative between 2007 and 2011, driven by substantial job destruction among non-gazelle establishments, while in Jordan manufacturing net job creation was positive, whereby non-gazelles created more jobs (60 percent) than gazelles (40 percent).

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[13] The US gazelles are based on a somewhat stricter definition: firms whose sales and employment have at least doubled over the same four year period (Spencer, 2011).

[14] This definition avoids considering micro businesses as gazelles that increased employment, for instance, from two to four over a four-year period by hiring two more family members.

Figure 1.10 Incidence of Gazelles in all sectors (left) and manufacturing (right)

Notes: Authors calculation based on census data. Gazelles are defined as firms with at least ten employees in the base year that double employment over any four year period. Data for Turkey only includes firms with at least 20 employees. The periods cover 2005-2010 in Lebanon and Turkey, 2006-2011 in Tunisia and Jordan, 2004-2008 in the U.S., 2003-2006 in Morocco, and 2007-2011 in Egypt.

Figure 1.11 Share of jobs created by Gazelles and non-Gazelles in all sectors (left) and manufacturing (right)
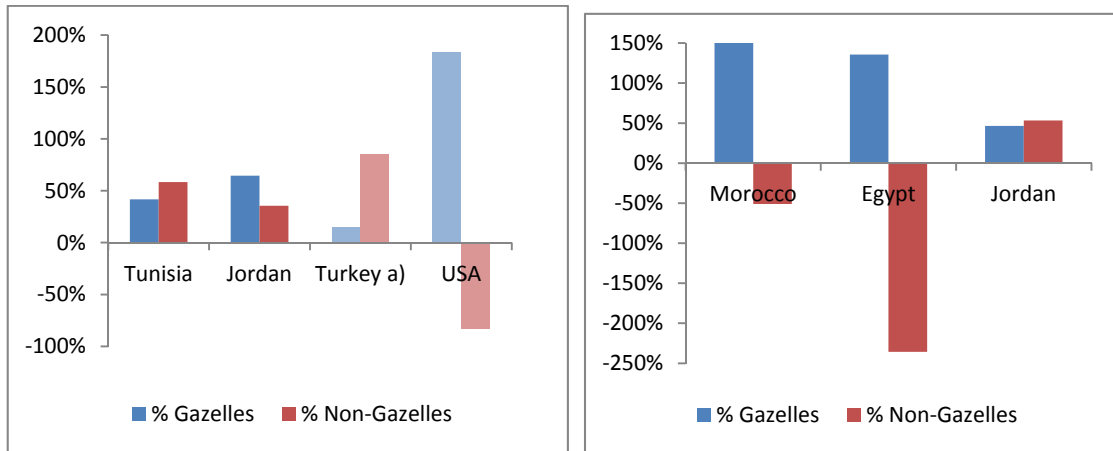
Notes: Authors calculation based on census data. Gazelles are defined as firms with at least ten employees in the base year that double employment over any four year period. Data for Turkey only includes firms with at least 20 employees. The periods cover 2005-2010 in Lebanon and Turkey, 2006-2011 in Tunisia and Jordan, 2004-2008 in the U.S., 2003-2006 in Morocco, and 2007-2011 in Egypt.

2.   Young firms and productive firms create more jobs

Analysis of from firm-level data shows that it is younger firms and more productive firms that create more jobs in MENA, as in fast-growing and high income countries.

1.19.   **Evidence from other regions suggests that younger and more productive firms create more jobs.** Age, size, and productivity are fundamental determinants of firm employment growth. Understanding their relative importance in explaining job creation is critical to determine the policy mix for stimulating private sector growth. There is growing literature analyzing these questions (Box 1.2). For instance, Haltiwanger et al. (2010) find that in the U.S. net employment growth is associated with firm age and not firm size. The literature also identifies productivity as an important determinant of firm growth in developing countries (e.g., Berman and Machin, 2004; Vivarelli, 2012). Another strand of the literature highlights the importance of firm growth over their life cycle; Hsieh and Klenow (2012) show that U.S. firms increase their size (number of employees) and productivity by a factor of 8 over their life cycle

(within the first 35 years). In contrast, Mexican firms double and Indian firms do not increase their employees over the same period (both approximately double their productivity).

Box 1.2 Who creates more jobs?

Young firms are an engine of job creation. There is a large and growing literature linking employment growth to firm dynamics. Studies typically find that younger and smaller firms have higher employment growth rates than older and larger firms (e.g., Mansfield, 1962; Hall, 1987; Hart and Oulton, 1996; and Ayyagari et al., 2011). Likewise, Davidsson and Delmar (2006) show that most of the growth of younger and smaller firms is organic, while for larger and older firms, job growth primarily comes through acquisitions. Hsieh and Olken (2014) contribute to the debate on firm size and job creation, showing that large firms have higher average products of capital and labor, which suggests that large (not small) firms are growth constrained. Haltiwanger et al. (2010) nuance these findings, showing that net employment growth is associated with firm age and not firm size in the U.S., implying that young firms, especially startups, are the drivers of job creation. However, as young firms tend to be small, there is also a positive bivariate correlation between firm size and net job growth in the data. Furthermore, Hsieh and Klenow (2012) corroborate the importance of firm age growth. The authors show that U.S. firms increase their number of employees and productivity by a factor of 8 over their life cycle (within the first 35 years). In contrast, Mexican firms double and Indian firms do not increase their employees over the same period (both approximately double their productivity).[15] Again, the study highlights the importance of firm age as a determinant of firms' potential to create jobs.

Among the pool of young firms, a small number of fast-growing firms appear to create most new aggregate jobs in high-income countries. A recent stream of the literature linking employment growth to firm dynamics suggests that a small group of fast-growing firms, often referred to as *gazelles*, are the main drivers of aggregate job creation (e.g., Bottazzi and Secchi, 2007). In other words, a handful of firms experience a period of accelerated employment growth while most other firms hardly grow at all. Empirical studies for various developed countries find that 5-10 percent of the firms deliver 50-80 percent of aggregate employment creation (e.g., Acs et al., 2008; Coad and Hoelzl, 2010). These fast-growing firms can be found in all industries and are usually young firms that are more innovative and take more risks (Henrekson and Johansson, 2010; Bars et al., 2006; Goedhuys and Sleuwaegen, 2009).

Most microeconomic studies find a positive relationship between productivity and employment creation (van Reenen, 1997; Blanchflower and Burgess, 1998; Piva and Vivarelli, 2004; Coad and Hoelzl, 2010; and Vivarelli, 2012). In this regard, it is useful to distinguish between product and process innovation. Product innovation is generally found to increase labor demand and hence firm-level employment growth. Process innovation is associated with productivity growth which might, however, compensate labor. Indeed, the findings for process innovation are less clear-cut and also indicate job destruction in some cases, especially in the short run (e.g., Harrison et al., 2005; Hall et al., 2008).

Among developing countries, studies suggest that the adoption of foreign technologies increases firms' demand for labor, especially for skilled labor. Product and process innovation in developing countries take the form of diversification into new products and the adoption of foreign technologies (or organizational structures), respectively. Both processes have been found to increase the demand for labor in developing countries. Foreign technology adoption has been found to increase the demand for skilled labor, referred to as "skill-biased technological change" in the literature (e.g., Berman and Machin, 2004). Conte and Vivarelli (2010), Hanson and

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[15] The fact that older plants in India and Mexico are small may not have a large effect on aggregate outcomes if there are fewer surviving old plants. The authors show, however, that exit rates in India and Mexico are generally not higher than in the U.S.

Harrison (1999), and Fuentes and Gilchrist (2005) find that imported skill-biased technological change is an important determinant of the recent increase in the relative demand for skilled labor in developing countries.

Thus, these findings highlight a positive relation between productivity and employment in developing countries. Innovation, which takes the form of diversification into new products and the adoption of foreign technologies in developing countries, is found to increase the demand for labor, leading to a positive relation between productivity and job growth in developing countries.

Are the firm characteristics associated with job growth different in MENA countries?

1.20.   **Job creation in MENA is dominated by young firms.** Micro-startups create most jobs. These findings are illustrated in Figure 1.12, which shows net job creation by firm size and firm age in Tunisia and Lebanon. Almost all net job creation in Lebanon and Tunisia was generated by young firms at their start-up period; i.e. in the first four years after they were established. In both countries, it was primarily micro-startups with between 1-4 employees that created most jobs. For instance, micro-startups generated about 66,000 jobs in Lebanon between 2005 and 2010, accounting for 177 percent of net job creation. The second largest number of jobs (12,000) was created by young large firms with 200-999 employees. In Tunisia, micro-startups created 580,000 jobs between 1996 and 2010, accounting for 92 percent of all net job creation.

Figure 1.12 Net job creation by firm size and age
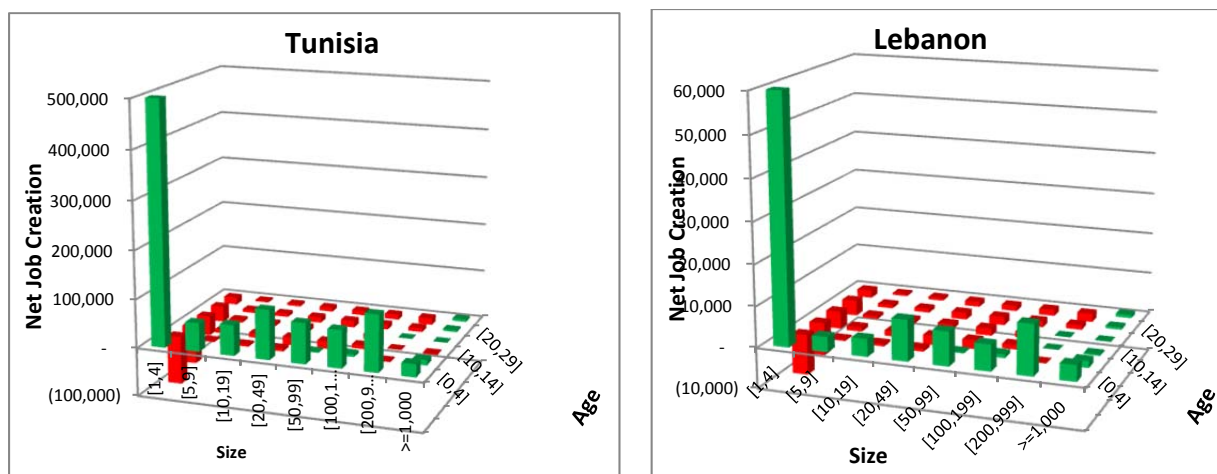
Notes: Authors calculation based on census data. Note: The graphs how net job creation in Jordan from 2006-2011, Lebanon from 2005-2010, and in Tunisia from 1996-2010. Size-age categories that created jobs are in *green* while categories that destructed jobs are in *red*.

1.21.   **However, these aggregate performance data mask important differences in the sectoral patterns of job creation across countries.** In all MENA countries with available data, job creation was driven by retail trade, business services, or personal and community services. World Bank (2011) shows that job creation in micro-firms in these sectors is often part of the informal economy, which is less productive in MENA than in other developing regions. Table 1.1 reports that many new jobs in micro establishments are in retail trade and personal services, which are dominated by informal firms. The average firm size in both sectors is below one wage worker in all MENA countries. In Egypt, these two sectors generated more than 700,000 and 400,000 new jobs from 1996-2006, respectively, accounting for

over 80 percent of total net job creation. Labor force survey data (ELMPS) show that this trend continued between 2006 and 2012.

1.22. **Certain higher productivity activities such as real estate and finance, tourism, and manufacturing also contributed to job creation.** In Jordan, potentially higher productivity real estate and finance, chemicals and pharmaceuticals, and the food sector, accounted for 28 percent of total net job creation between 2006 and 2011, counterbalancing somewhat the trend towards jobs in the informal sector (Table 1.2). In Tunisia, 46 percent of total net job creation between 2006 and 2012 was concentrated in real estate and transport services, manufacturing of machinery and electrical equipment (mostly electric cables and switches), food products, and transport vehicles. The sectoral pattern of job growth in Turkey is different; there 77 percent of job growth between 2005 and 2010 was in real estate business services and construction, and other manufacturing.

Table 1.2 Sectors with the highest rate of job growth across countries

Egypt 1996-2006		WBG 2004-2012		Jordan 2006-2011		Tunisia 1996-2012		Turkey 2005-2010	
Sector	Δ Jobs	Sector	Δ Jobs	Sector	Δ Jobs	Sector	Δ Jobs	Sector	Δ Jobs
Retail trade	39%	Retail trade	26%	Retail trade	18%	Real est, busi serv	16%	Real est, busi serv	37%
Business serv	17%	Personal serv	9%	Hotels & rest	18%	Machin, electr equ	12%	Construction	25%
Other manuf	12%	Hotels & rest	7%	Health, social	17%	Retail trade	12%	Other manuf	15%
Hotels & rest	9%	Business serv	7%	Education	13%	Transports	10%	Hotels & rest	10%
Personal serv	6%	Finance	6%	Business serv	12%	Textiles	9%	Food & beverages	6%

Notes: Authors calculation based on firm census data.

1.23. **Even after controlling for sectoral heterogeneity, young firms are still the engine of job creation in MENA countries.** We follow the methodology of Haltiwanger et al. (2010) for the U.S. to test whether, after controlling for sector effects, young firms create more jobs regardless of their size Figure 1.4 illustrates the rate of aggregate net job creation by firm size categories. The figure shows the coefficient estimate from a regression of firm employment growth on the various firm size categories (controlling for sector and year dummies). The dashed-blue lines show the impact of the different firm size categories on job growth when neglecting the joint distribution of firm size and age.[16] It suggests that smaller firms create the majority of jobs in Lebanon and Tunisia.[17] However, once the joint distribution of firm size and age (solid-red lines) is accounted for, the results change dramatically: smaller firms create fewer jobs than large firms. This indicates that the association between firm size and employment growth depends critically on firm age. A similar pattern can be observed among firms in Turkey (it is only possible to identify the same firms over time when they have at least 20 employees). Considering this finding, is it the case that young firms systematically create jobs regardless of their size? Figure 1.14 plots the relation

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[16] The results are based on regressions of the (Davis-Haltiwanger-Schuh) job growth rate following the methodology of Haltiwanger et al. (2010) for the U.S. All regressions control for 2-digit sector and year dummies. The census data include all firms and economic sectors apart from agriculture (as in the U.S. data). Thus, the results measure the aggregate job creation rate. The graph plots the coefficient estimates of the firm size dummies of two regressions. First, job growth is regressed on firm size dummies and controls only (blue-dashed line). Second, job growth is regressed on firm size dummies and controls as well as firm age dummies (red solid line).

[17] The census data from the other MENA countries are not appropriate to apply the Haltiwanger methodology. Firm age in West Bank and Gaza is not included while in Egypt the census data are not in panel format. In Jordan and Morocco the census data are only in a panel format for a sub-set of firms (e.g., manufacturing sectors).

between aggregate job creation and firm age (when accounting for the joint distribution of firm size and age). The findings shows that independent of firm size, young firms grow faster and create more jobs, particularly during their first four years of activity.

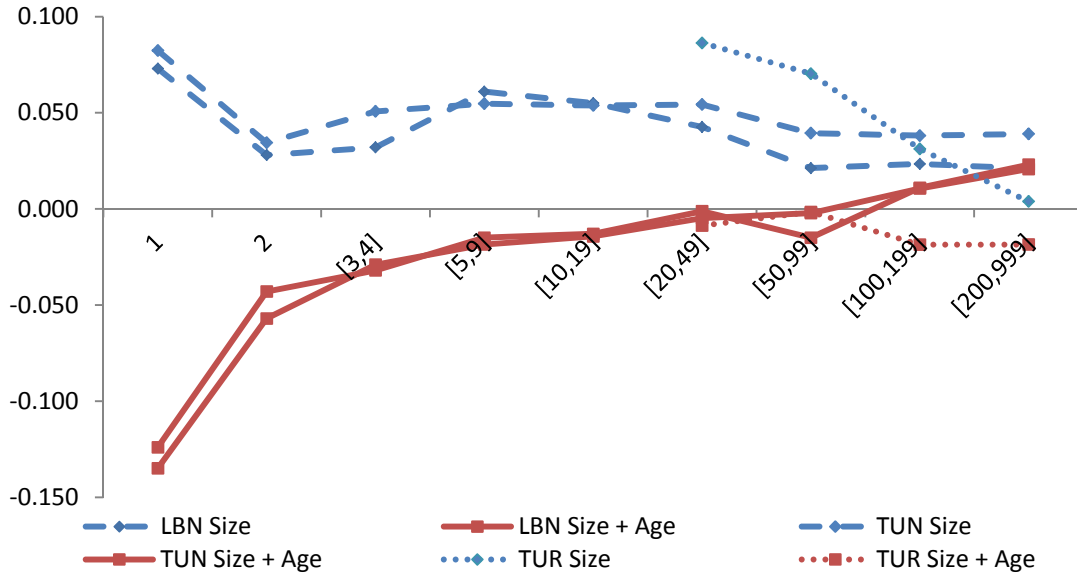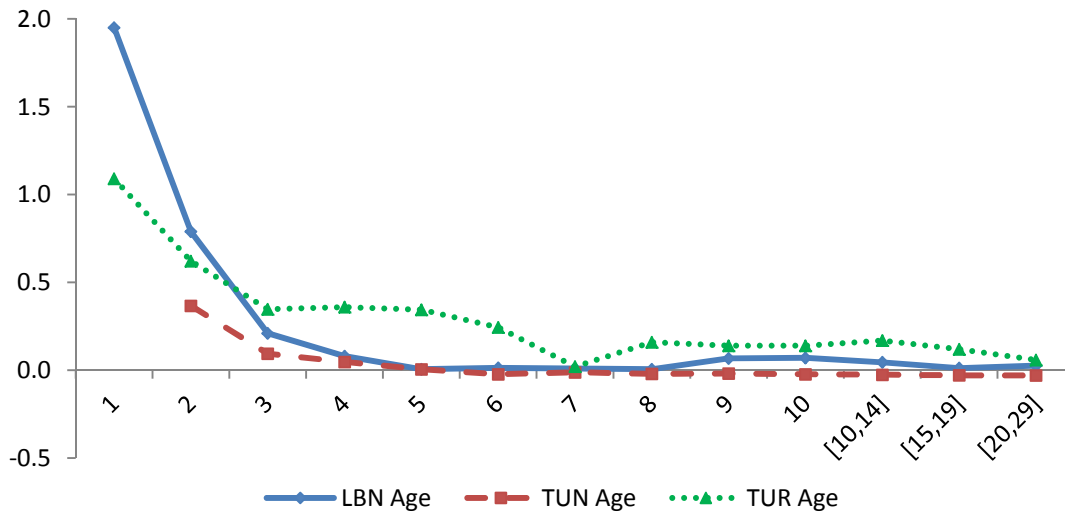Figure 1.13 Net job creation by Firm Size (before and after controlling for firm age)

Figure 1.14 Net job creation by Firm Age (after controlling for firm size)

Notes: Authors calculation based on census data. The figure shows the results of a weighted regression of net job creation, measured by the Davis-Haltiwanger-Schuh growth rate, on firm size and age dummies, controlling for sector and year. Figure 1.13 plots the coefficients on the dummy variables representing the different firm size categories before (blue dashed line) and after (red line) controlling for firm age. Figure 1.14 plots the coefficient on the dummy variables representing the different firm age groups after controlling for firm size. The omitted category in Figure 1.13 and Figure 1.14 are respectively firms with at least 1000 employees and firms above 30 years.

1.24. **Following entry, aggregate net job creation rate is highest during the first four years of a firm's activity**. The analysis is extended to additional MENA countries Figure 1.15 by plotting the employment growth of entry cohorts in the first ten years after they started operating. It confirms that employment

growth is strongest in the first four to five years after firm entry and tends to level off thereafter. In Jordan, establishments from all non-agriculture economic sectors double their size in the first five years after entry, while manufacturing firms in Morocco are 1.7 times larger. The effects are comparable to growth rates of entrants in manufacturing and all other sectors in the first four years of operation.

Figure 1.15 Employment growth is strongest in first 4-5 years after firm entry
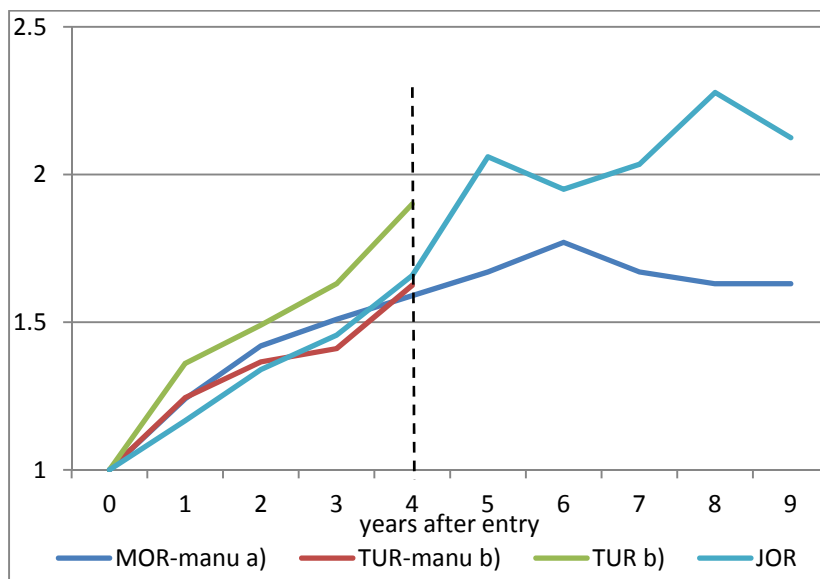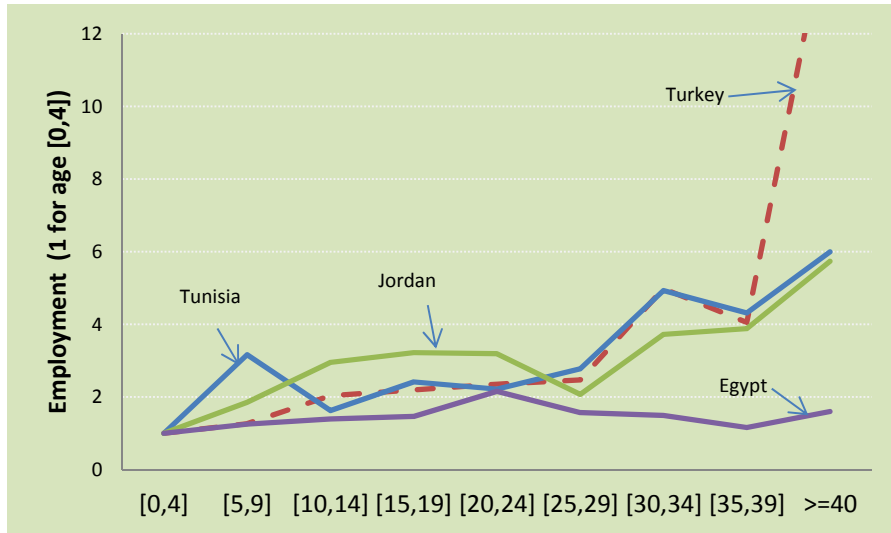

Source: Authors calculation based on census data. The figure shows the number of employees for entry cohorts in the first years of entry. Employment is normalized to one for the entry year (age equal to zero). a) Entry implies firm size exceeds 10 employees; b) entry implies firm size exceeds 20 employees. Employment is measured for the following firm entry cohorts: Morocco: 2000, Jordan: 2006, Tunisia: 2002, Turkey: 2006.

1.25.   **Average employment growth over firm's life cycle in MENA is relatively weak.** The analysis follows Hsieh and Klenow (2012), which shows the relationship between employment and establishment age among surviving firms based on cross-section census data (Figure 1.16).[18] The average weighted number of employees for the youngest age cohort (0-4 years after entry) is normalized to one. In contrast to Hsieh and Klenow (2012), the data allows the illustration of this relation among private establishments based on all economic (non-farm) sectors, instead of the manufacturing sector only. Figure 1.16 shows that after 25 years in operation, surviving firms approximately doubled their number of employees in Egypt, Jordan, Tunisia, and Turkey, with typically higher growth for younger age cohorts. Thereafter, employment for older age cohorts (founded before 1980) declined in Egypt, but increased in the other countries, most strongly in Turkey. For all MENA countries, the relation between employment and age is strongest in manufacturing, which also has the highest share of formal firms (Figure A.1 in the Appendix).

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[18] Note that the analysis shows the relationship between average plant employment and age based on cross-section census data which conflates size differences between cohorts at birth and employment growth of a cohort over its life cycle. Thus, when interpreting the results as reflecting dynamics over time, it is implicitly assumed that the relative size differences between different age cohorts are time-invariant.

Figure 1.16 Employment growth over a firm's life cycle (all non-farm sectors)

Source: Authors calculation based on census data. Note: The figure shows the average number of employees for different age-cohorts across establishments in all private non-farm sectors (weighted by employment share of 4-digit sectors following Hsieh and Klenow, 2012). The average number of employees in each age cohort has been normalized to 1 for the youngest age category (age 0-4). The analysis for Turkey and Egypt is based on census data in 2006, for Tunisia in 2012, and for Jordan in 2011. Results for Jordan and Tunisia are similar for other years (e.g., 2006, 2010, or 2012).

1.26.   **More productive firms create more jobs.** Apart from firm age, firm productivity is identified as an important determinant of job growth in fast-growing middle-income and high-income countries. We show this is also the case in MENA countries. Table 1.3 summarizes the results from regressions of job creation rates on base period (log) productivity levels, after controlling for firm size, age, and 2-digit sector dummies.[19] Using (log) value added per worker as a measure of productivity, we find that firms with higher labor productivity experience higher subsequent job growth.[20] The result also provides some partial evidence of creative destruction in MENA economies, in the sense that establishments with higher productivity levels create more jobs.

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[19] The order of magnitudes of the coefficients are not directly comparable in Turkey and Egypt. The analysis tracks the same firms over time if they have at least 20 employees or 10 employees, respectively.

[20] The corresponding coefficients are all statistically significant (at the 1 percent level) apart from Egypt. However, in Egypt, capital stocks of establishments are also taken into account, allowing for calculation of the preferred measure of total factor productivity (TFP) following the method of Caves et al. (1982).

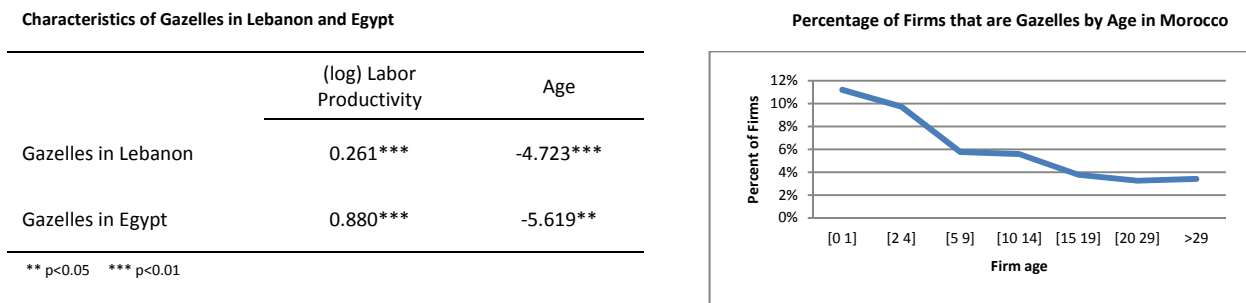Table 1.3 More productive firms create more jobs

Dependent variable: Job creation rate

	Lebanon	Tunisia	Turkey	Egypt	Egypt
	(All sectors)	(All sectors)	(All sectors, 20+)	(Manuf., 10+)	(Manuf., 10+)
Labour Productivity	0.039***	0.029***	0.007***	0.007	
TFP					0.019***
Controlling for firm size and age	Yes	Yes	Yes	Yes	Yes
No. of Observations	141,061	129,516	176,665	7,925	7,988
R-Squared	0.40	0.34	0.03	0.10	0.09

Notes: Authors calculation based on census data. The dependent variable is the Davis-Haltiwanger-Schuh growth rate. Regressions are weighted by the average size of firms over the growth period. *** indicates that a coefficient is significant at the 1 percent level. Job growth is measured annually and productivity is measured in the beginning of the period. In Egypt, data include manufacturing & mining establishments with at least 10 employees; in Turkey, firms with at least 20 employees in all sectors are considered. The estimation periods are 2005-2010 in Lebanon, 2005-2010 in Turkey, and 2007-2011 in Egypt. Labor productivity in Egypt is significant at the 1 percent level when the job creation rate measured over the 4-year period (2007-2011) is regressed on initial labor productivity in 2007.

1.27.   **Consistent with the previous analysis, gazelles (fast-growing firms) are more productive and younger than non-gazelles in MENA.** The left panel of Figure 1.17 shows the results of regressions of (log) labor productivity and age on a dummy variable equal to one for gazelle firms. For the two countries with available data, Lebanon and Egypt, gazelles are significantly more productive than non-gazelles. Moreover, gazelles are found to be about 4.7 and 5.6 years younger than other firms in Lebanon and Egypt, respectively. The right panel Figure 1.17 shows that young manufacturing firms are more likely to be gazelles in Morocco than older firms; about 34 percent of all gazelles are at most four years old, and about 55 percent are less than 10 years old. Moreover, we find that gazelles emerge across all sectors of the economy. For instance, the largest numbers of gazelles in Tunisia are in textiles, construction, and real estate. In Jordan, the highest incidence is in the construction sector. Nevertheless, gazelles also emerge in most other manufacturing or service sectors in both countries.

Figure 1.17 Characteristics of Gazelles in Lebanon, Egypt, and Morocco

Characteristics of Gazelles in Lebanon and Egypt

	(log) Labor Productivity	Age
Gazelles in Lebanon	0.261***	-4.723***
Gazelles in Egypt	0.880***	-5.619**

** p<0.05   *** p<0.01

Percentage of Firms that are Gazelles by Age in Morocco

Notes: Authors calculation based on census data. Gazelles are defined as firms with at least ten employees in the base year that double employment over any four year period. Data for Turkey only includes firms with at least 20 employees. The periods cover 2005-2010 in Lebanon, 2003-2006 in Morocco, and 2007-2011 in Egypt.

3. MENA needs a larger pool of young firms and productive firms

Low firm turnover (firm entry and exit) and weak productivity growth in MENA countries reduce the pool of young firms and productive firms.

1.28.   The previous section showed that job creation in MENA countries is weak, but that the fundamentals of job creation in the region are similar to the fundamentals in fast-growing and high-income countries: younger firms and more productive firms create more jobs. This section shows how low job creation in MENA countries can be directly traced back to a deficit of young firms and more productive firms.

1.29.   **Non-GCC MENA countries have the lowest formal sector entry rates, reducing the pool of young firms that grow and create jobs.** MENA countries have some of the lowest entry densities across all regions (Figure 1.18, left panel). Entry density is defined as the number of newly registered limited liability firms per 1,000 working-age people, and thus captures entry (of specific) formal sector firms. Formal sector entry in GCC countries is higher than in non-GCC MENA countries, but still relatively low by international comparison. Moreover, it declined somewhat between 2004 and 2012. Non-GCC MENA countries – together with South Asia – have the lowest entry rates into the formal sector among all regions.

1.30.   Firm entry densities is particularly low in Algeria, Iraq, Egypt, and Syria, with less than 0.5 newly registered limited liability firms per 1,000 working-age people. Among MENA countries, Oman had the highest rate of limited liability firm creation per capita (Figure 1.18, right panel) between 2009 and 2012. The entry density in Oman was, however, still lower than the average across all 91 (non-financial offshore) developing countries with available data. Among non-GCC countries, Tunisia and Morocco had the highest formal sector entry rates per capita; Algeria, Iraq, Egypt, and Syria had the lowest. The entry densities in many fast-growing developing countries such as Serbia, Brazil, Croatia, Chile, and Bulgaria are between 2 and 8 times higher than in Morocco and Tunisia (the two non-GCC MENA countries with the highest entry densities).

Figure 1.18 Entry density of formal sector (limited liability) firms across regions (left) and countries (right), 2004-2012
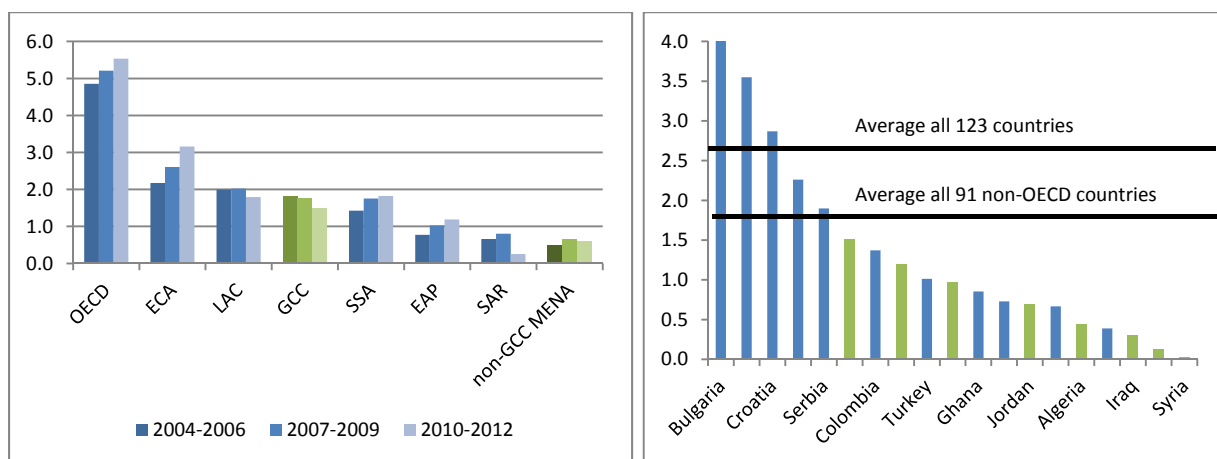
Notes: Authors calculation and Klapper and Love (2013). Entry density is defined as the number of newly registered limited liability firms per 1,000 working-age people (those between ages 15 and 64). The average of 123 (91 non-OECD) countries represents the average entry density in all (non-financial offshore) countries with available data.

1.31.   **Firm turnover rates (entry and exit rates) among MENA countries are low by international standards.** High firm entry rates spurs experimentation, but also increases the likelihood of the marginal firm's failure. Thus, one should expect a positive association between firm entry and exit rates in the data. Figure 1.19 plots the entry and exit rates in manufacturing and service sectors across MENA countries and Turkey. Overall, gross entry and exit rates in MENA countries are remarkably low by international standards. For instance, entry and exit rates in manufacturing in Columbia are about 11 and 12 percent, respectively, almost twice as high as in Morocco. Moreover, firm turnover in the services sector is higher than in the manufacturing sector; this reflects the higher dynamism of services, and also the smaller size and lower productivity firms found in the sector.

Figure 1.19   Firm turnover across countries
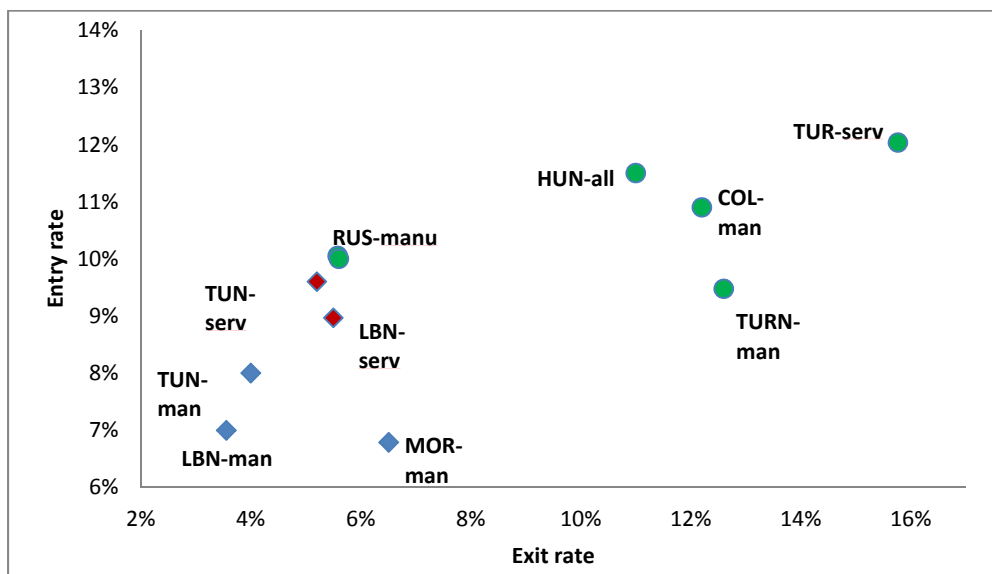
Notes: Authors' calculation based on census data. Entry (exit) in Turkey implies that firm size exceeds (falls below) 20 employees; in Morocco and Columbia exceeding (or falling below) 10 employees.

1.32.   **Even after controlling for cohort effects, firm exit rates among MENA countries are low compared to a benchmark country like Turkey.** Firm cohorts that entered in the manufacturing sector in Tunisia and Morocco in the early 2000s have high survival, and hence low exit rates, in the first five years after entry. Figure 1.20 shows the survival rates across MENA countries and Turkey. Apart from the different periods for entry cohorts across countries, it is important to note that firm exit definitions in Morocco and Turkey are somewhat different (see above). Figure 1.20 reveals substantially higher survival rates in Tunisia than in West Bank and Gaza and Jordan. In other words, fewer entrants are forced to exit after the first five years in operation, indicating low firm turnover in Tunisia. In contrast, about 60 percent of firms that exceeded 20 employees in Turkey in 2006 are projected to have fallen below 20 employees again by 2011.

Figure 1.20 Survival rates five years after entry

Figure 1.20 Survival rates five years after entry
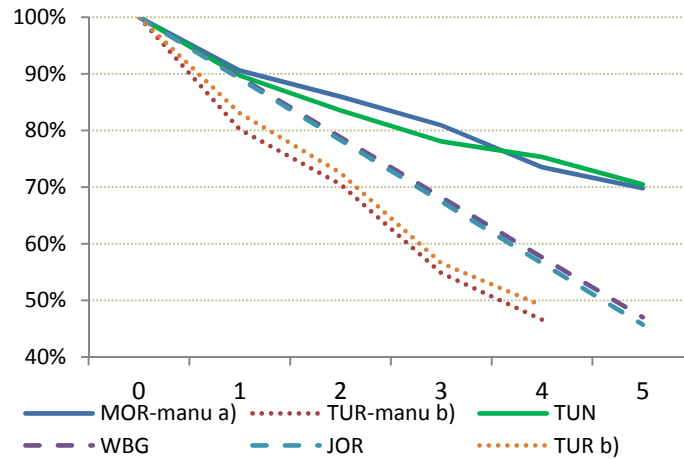
Notes: Authors calculation based on census data. Note: a) exit implies firm size falls below 10 employees; b) exit implies firm size falls below 20 employees. Survival rates are measured five years after entry for the following entry cohorts: Morocco: 2000, Jordan: 2006, Tunisia: 2002, WBG: 2007, Turkey: 2006. The survival rates for Jordan and WBG were only available for the fifth year after entry. The rates for the years one through four were estimated assuming that an equal number of firms exited every year.

1.33.   **The low share of jobs in younger medium or large establishments highlights MENA's challenge of missing young firms.** Figure 1.21 shows the employment distribution by establishment size and age in Egypt, Jordan, Tunisia, and Turkey. It reveals that the share of employment in younger medium or large establishments (i.e. firms with at least ten employees and created less than 15 years ago) is highest in Turkey, significantly lower in Jordan and Tunisia, and particularly low in Egypt. These findings reflect a combination of low firm entry and overall weak employment growth among most young firms and point to severe constraints on business creation and startup growth in MENA.

Figure 1.21 Employment share of young medium or large establishments
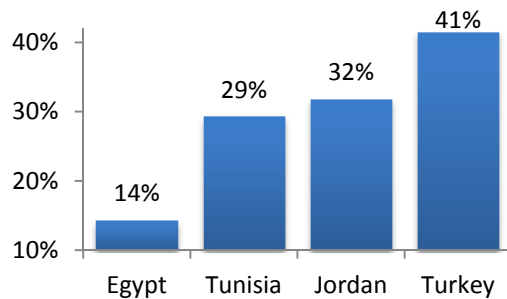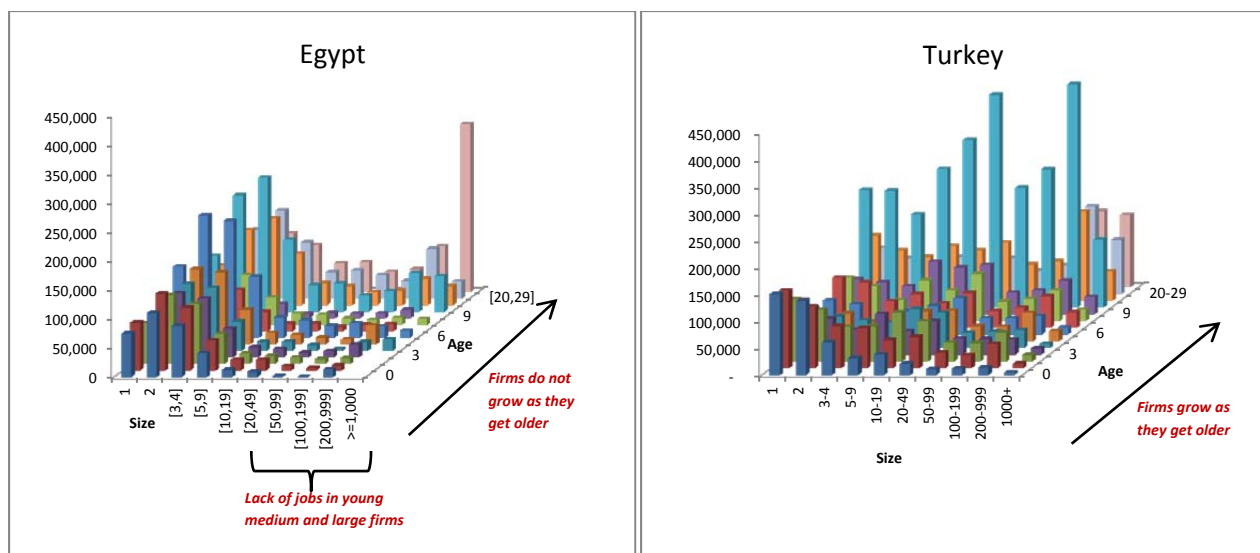

Source: Authors calculation based on census data. Note: Medium and large: at least 10 employees; young: created less than 15 years ago. The analysis is based on the following time period: Egypt 2006, Jordan 2006, Tunisia 1996-2010, and Turkey 2005.

1.34.   **The shortage of medium and large size young firms in Egypt is particularly noteworthy.** Figure 1.22 illustrates the distribution of the total number of employees by detailed establishment size and age categories in Egypt and Turkey in 2006. It reveals that employment in Egypt is concentrated in micro establishments independent of their age, and in the few very old firms, and very large establishments. Very large firms accounted for less than 300,000 jobs out of more than 7 million in Egyptian economic establishments in 2006. This concentration of jobs in small, old establishments suggests that, in contrast to Turkey, small Egyptian firms do not grow over time. Further, the high share of jobs in old firms in Egypt is cause for concern. Either they remain small on purpose (to stay below the radar of scrutiny by public

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officials and large competitors), or they are unproductive and might be forced to exit in a more competitive environment (up-or-out dynamics).

Figure 1.22 Distribution of employment by firm size and age in 2006: Egypt versus Turkey

Source: Authors calculation based on census data. Note: The graphs show the distribution of jobs by size and age across all non-farm establishments in Egypt and Turkey in 2006.

Firm productivity growth in MENA countries has been low

1.35.   **Productivity growth over firms' life cycle is weak in MENA countries and relatively stronger for the youngest cohorts.**[21] Figure 1.23 plots the evolution of firm productivity over establishments' life cycle. The productivity of the youngest cohort is normalized to one so that Figure 15 effectively depicts life cycle productivity. It illustrates that average productivity of establishments in the U.S., and to a lesser extent also in Turkey, increases with age. After 35 years in operation, U.S. establishments increase their productivity eight-fold on average, while those in Mexico, India, and Turkey increase their productivity about two-or three-fold. In contrast, in Tunisia and Egypt establishments barely increase their productivity over their life cycle on average. Notably, firms are more productive at the beginning of their life cycle in both countries, but initial productivity gains disappear for older cohorts.[22] For example, establishment productivity in Egypt increases two-fold, peaking at the age of ten; in contrast, productivity of the surviving cohort 40 years after entry is, on average, only 1.4 times higher than the productivity of the youngest cohort. Similarly, Tunisian firms do not increase their productivity beyond 1.1 times the size of the youngest cohort.

1.36.   **Productivity growth can ensue from within-firm growth or from the reallocation of resources across firms.** We calculated the contribution of both sources of labor productivity growth in MENA

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[21] Again, the analysis is based on cross section census data so that we have to assume that cohorts' life cycle characteristics are time invariant.

[22] Results are similar for manufacturing firms in Morocco, which increase their average productivity almost three-fold five years after entry, while average productivity is lower in the following five years. The results for Morocco are not reported here as the Moroccan (cross section) data only include firms above a certain size threshold (e.g. above ten employees). Note that in Turkey only firms exceeding 20 employees in panel format are included in yearly cross sections.

countries with the latest available data. Olley and Pakes (1996), among others, show that the way resources are allocated in an economy has implications for productivity growth. In the following, our analysis shows how the divergence in establishment dynamics between MENA and more competitive economies is suggestive of a misallocation of resources.

1.37.   **Low efficiency in resource allocation has limited productivity and employment growth.** In the previous sections, we have highlighted that there is some evidence for creative destruction in that establishments with higher productivity create more jobs. This finding points to the existence of dynamics involving resource allocation to more productive firms. We quantified the resource misallocation across firms in MENA countries following the productivity decomposition approach of Olley and Pakes (1996); these results are then compared to emerging economies from other regions. Figure 1.24 shows the Olley-Pakes covariance term, calculated as the difference between the weighted and un-weighted labor productivity across manufacturing firms.[23] The term is a summary measure of the *within-industry* cross sectional covariance between size and productivity and indicates to what extent more productive firms within industries hire more employees.[24] Figure 1.24 shows that the allocative efficiency is lower in Morocco and Egypt than in Chile, Columbia, or Indonesia.[25] The results indicate higher resource misallocation (weaker creative destruction) across firms in MENA countries than in other developing regions.

Figure 1.23 Labor productivity growth over the lifecycle of manufacturing establishments
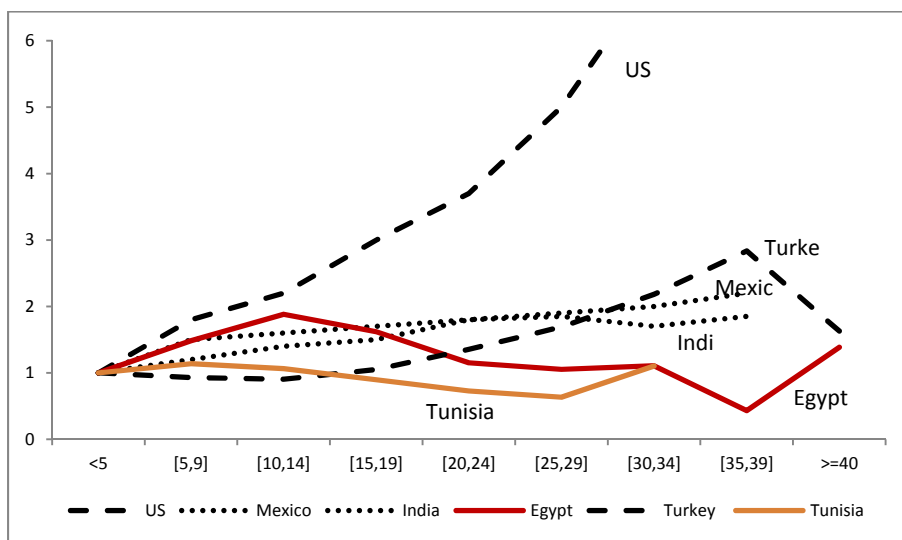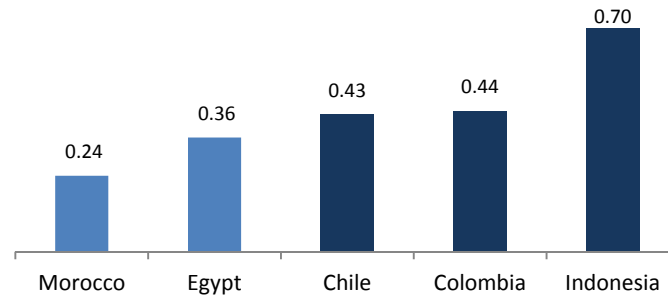

Source: Authors calculation based on census data; U.S., Mexico, and India from Hsieh and Klenow (2012). Note: The figure shows the average labor productivity over different age-cohorts across establishments in manufacturing (weighted by the employment share of 4-digit sectors following Hsieh and Klenow, 2012). The figure is computed using period averages for Egypt (2007-2011), Turkey (2005-2010), US (1992-1997), Mexico (1998-2003), and India (1990-1995), as well as 2009 data for Tunisia.

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[23] See also Bartelsmann et al. 2004 and 2013 or Hsieh and Klenow (2008).

[24] Labor productivity gaps are the weighted average of 2-digit industries (weighted by employment shares).

[25] The data covers firms with more than 10 employees in all countries.

Figure 1.24 **Gap between weighted and un-weighted labor productivity**

Notes: Authors calculation based on census data; data points from Chile, Columbia, and Indonesia are taken from Bartelsman et al. (2004). Labor productivity gaps are the weighted (by employment shares) average of 2-digit industries. Data cover firms with more than 10 employees in all countries.

1.38.   **In contrast to fast-growing developing countries, large firms in the MENA region are not necessarily more productive.** This low allocative efficiency is also reflected in the finding that large firms do not necessarily have higher labor productivity. If large firms are growth constrained (face higher marginal costs of labor and capital), we would expect that they would have higher average levels of value added per worker (and capital), to the extent that average and marginal products of labor (and capital) move together.[26] In turn, small firms would be expected to have higher average labor productivity if they are more growth constrained relative to large firms (for given levels of value added per capital).[27] The left panel in Figure 1.25 shows the average log labor productivity for different firm size categories in Lebanon and Tunisia. Labor productivity hardly varies among firms size categories in Lebanon. In contrast, firm productivity is lower for larger size categories in Tunisia, suggesting that small firms are more growth constrained (for given values of capital).[28] These findings starkly contrast with Turkey (Figure 1.25, right panel) where large firms are much more productive (in terms of labor productivity and TFP). They also contrast with the findings of Hsieh and Olken (2014), who argue that large firms are (more) growth constrained in India, Indonesia, and Mexico on the basis that the average value added per labor and capital is higher among large firms in these countries.

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[26] For instance, Hsieh and Olken (2014) analyze differences in average labor productivity by firm size across countries and discuss the conditions under which the average and marginal products of labor move together.

[27] In an efficient economy, competitive forces lead to a reallocation of resources to more productive firms equating (marginal) productivities across different categories of firms over time. In developing countries, firms are more likely to be growth constrained due to high growth opportunities (from adopting new foreign technologies) paired with market failures (access to finance, markets, etc.) preventing firms from harnessing these investment opportunities.

[28] The same analysis is performed for manufacturing firms in Morocco and Egypt. However, there is no reliable data on firms below ten employees. The findings suggest that larger firms in Morocco are more productive while in Egypt labor productivity is higher and TFP is lower for larger size categories (see below).

Figure 1.25 Productivity by firm size in Tunisia and Lebanon (left) and Turkey (right)

Tunisia log LP — Lebanon log LP

Turkey log LP — Turkey log TFP
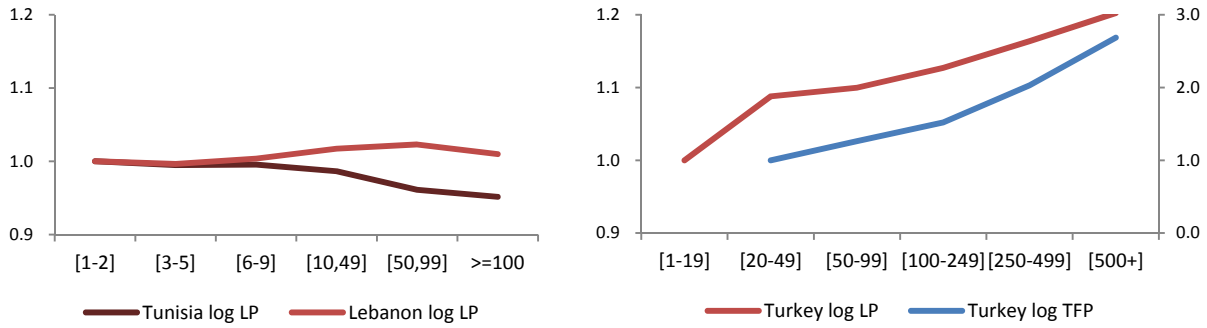
Source: Authors calculation based on census data. Note: Labor productivity is the average value added per employee and average TFP is weighted by value added.

Box 1.3 Firm Dynamics and Productivity Growth in Morocco

Productivity decomposition shows that net firm entry and improvements in allocative efficiency contributed largely to aggregate productivity growth in the Morocco's manufacturing sector between 1996 and 2006. However, the contribution of surviving firms (incumbents) to aggregate productivity growth was close to zero. The methodology proposed in Foster et al. (2001) was used to decompose productivity growth according to the following equation[29]:

$$\Delta p_{st} = \sum_{i \in C} \theta_{is,t-1} \Delta p_{is} + \sum_{i \in C} \Delta \theta_{is,t} (p_{i,t-1} - p_{s,t-1}) + \sum_{i \in C} \Delta \theta_{is,t} \Delta p_{it} + \sum_{i \in N} \theta_{is,t} (p_{i,t} - p_{s,t-1})$$
$$- \sum_{i \in S} \theta_{is,t-1} (p_{i,t-1} - p_{s,t-1}) \quad (1)$$

Where p refers to productivity; θ refers to a firm's share of total sector output (thought of in terms of revenues); and the subscripts t, s, i, C, N, and S refer to time, sector, firm, continuing (surviving) firms, new entrants and exiting firms respectively. The first term on the right hand side of equation (1) refers to the within effect. It represents internal restructuring effects stemming from changes in productivity of surviving firms. The second term shows the between effect for surviving firms. This is positive when the market shares increase for those survivors with above-average productivity in the previous period (t-1). The third term is an additional covariance term that is positive when market share increases (falls) for establishments with growing (falling) productivity. The BHC decomposition combines these two terms together by calculating the between effect as the sum of changes in market share weighted by ending period productivity (period t). The final two terms represent the contributions of firm entry and exit, respectively. These will be positive when there is entry (exit) of above (below) average productivity firms.

The results are summarized in Figure 1.26.[30] The 'within' effect is quite unstable, with large oscillation around a mean of zero suggesting that surviving firms do not make a systematic contribution to aggregate productive growth. Moreover, the lack of upward trends in the within effect point to the fact that surviving firms did not systematically improve their technical efficiency (through adoption of better technologies, management practices, worker training, and so forth) between 1996 and 2006. The between effect is negative over the entire sample

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[29] The decomposition is done using a window of three years to the contribution of entry to aggregate productivity growth. See Sy (2014) for details.

[30] The productivity decomposition cannot be conducted for Egypt, Jordan, West Bank and Gaza as data on firm exit or output are missing. See the data section in the Appendix for more details.

period, but increased in later years suggesting that the allocative efficiency has improved in the Moroccan manufacturing sector while that scope for improvements remains. Between 1998 and 2004, the average productivity growth due to net-entry was .03, or about 43 percent of average growth in the same period. Moreover, the contribution of net-entry to aggregate productivity growth seems to have accelerated between 2000 and 2002. The contribution of net entry to productivity growth was largest in the electrical machinery sector, where the entry rate of large startups was highest in the sample period.

Figure 1.26 Decomposition of firm productivity growth in Morocco's manufacturing sector
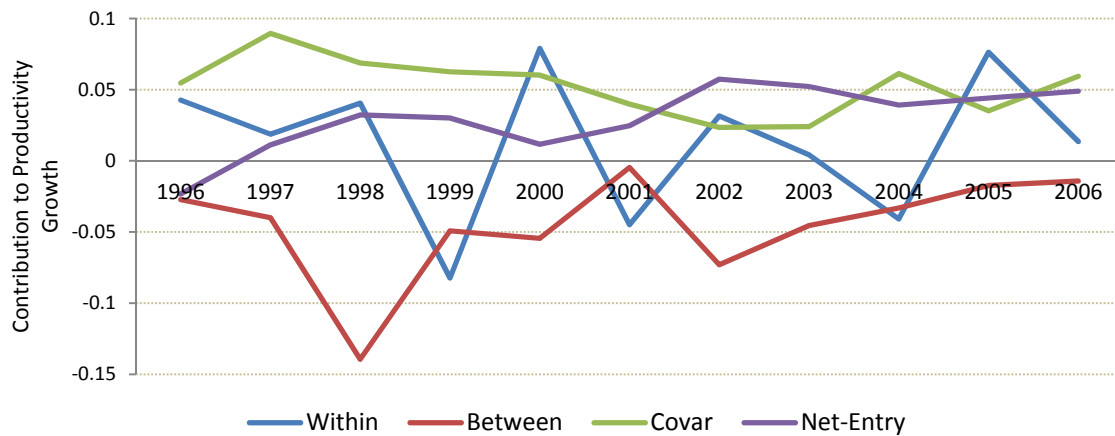
Notes: Authors' calculation based on Morocco manufacturing census. The methodology is explained in detail in the appendix and in Sy (2014).