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Employment Growth Patterns in South Asia

Some Evidence from Interim Enterprise Survey Data

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Abstract

This paper analyzes firm growth patterns in South Asia, using establishment level data from an Interim Enterprise Survey. The survey was conducted by the World Bank in 2009 and 2010 and covers seven countries in the region. The first finding suggests that size in the base year gains importance for employment growth and firm age is statistically insignificant for growth. This contradicts the thought that young and small firms are the bearers of growth. Second, establishments in larger localities expanded faster, confirming the observation of urban centers as growth poles. Third, establishments in areas of severe conflict performed worse than establishments in other areas. Interestingly, the distribution of growth rates shows that both firm growth and fast-growing firms exist in conflict regions.

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Employment growth patterns in South Asia

Some evidence from Interim Enterprise Survey data [1] [2]

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Key words: employment growth, firm growth, firm size, Gibrat's law, expansion, South Asia, conflict, war, security, urban, rural

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Background: Why is employment growth important for South Asia?

South Asia's impressive GDP growth of the last decade has also created employment. Yet, the region has been afflicted by asymmetrical structural change. Performance differed widely across informal versus formal status, across firm sizes, across sectors (manufacturing and services), and across location (leading versus lagging regions) in recent decades, with adverse effects on employment creation. Even though available data indicate that enterprise dynamics have improved over the past two decades, and South Asian economies are more able to reallocate resources to more productive activities, several challenges remain (see The World Bank, 2011; Dutz et al, 2011).

Small and large firms make for most employment, while medium sized companies are under-represented in South Asia. There is evidence of a persistent "truncated competition", with the constrained market selection process having generated a lack of medium sized firms. This may point to difficulties of new entrants and microenterprises to grow into the 10 to 99 worker size category. Industrial survey data for Bangladesh, India and Sri Lanka for the manufacturing sector exhibit this bi-modal distribution, with the lion's share of workers engaged in micro enterprises (less than 10 employees) and in large firms (over 100 employees) – characteristic of a "missing middle" employment problem. Employees in microenterprises make up 18 to 30 percent of total employment, while employees in large firms account for between 35 and 65 percent (Dutz et al, 2011).

South Asia requires jobs to accommodate a young workforce that already struggles on the labor market. The demographic pyramid already shows a significant share of young people who are already demanding jobs. Current employment rates, however, are low, and the situation is expected to worsen since the labor force is forecasted increase significantly by 2050 (Bloom et al. 2010). In addition, the region is struggling with post conflict and conflict situations. Employment opportunities are central to reduce tensions there, since they offer potential combatants alternatives outside the conflict.

Rural regions have missed out on employment generation, and there is a persistently high share of informal and unorganized employment. There is evidence for a strong divide between urban growth poles and rural regions, which are lagging behind in both economic growth and social indicators (The World Bank, 2011). For instance, small and medium sized firms in Bangladesh and Sri Lanka failed to grow, increasing the "missing middle" problem. Similarly, larger firms in India have created most jobs in urban areas. At the same time, the informal sector of India has grown from approximately 47% to an estimated 62 percent of non-household manufacturing employment in the period of 1989 to 2005 (Dutz et al, 2011). Hence, this paper will discuss the following topics:

- The missing middle indicates that established companies are performing better than new firms. Hence, we will analyze if there is a link between size and age, and firm growth patterns.
- Census evidence shows that urban areas have been growing faster than rural areas (The World Bank, 2011). This suggests a disadvantage of being rural. In particular, we explore if rural and small (large) firms doing relatively worse (better) than their urban counterparts?
- South Asia is a conflict ridden region, however, to varying degrees. We seek to establish a link between conflict and employment growth at the establishment level.

Data source and indicators

This paper uses the Interim Enterprise Survey of South Asian countries by The World Bank (INTERIM ES). The survey was conducted in 2009 and 2010. The Enterprise Surveys of the World Bank generate establishment-level quantitative information. The stratification of the survey considers representativeness across firm size classes (large firms were oversampled), sector (primary, secondary and tertiary), and regions[4]. The survey is not representative at the industry level. The sample covers 744 observations in Afghanistan (2010), 500 in Bangladesh (2010), 250 in Bhutan (2009), 482 in India (2010), 368 in Nepal (2009), 440 in Pakistan (2010), 484 in Sri Lanka (2010).

The data set contains a rich set of variables. These include information on the survey country and region, industry (2-digit ISIC Rev. 3.1; clustered into 15 industry groups) and sector, information on whether a company invested into physical assets, firm age, and the size of the location. In addition, there is information on ownership structures, export activities, financial structures, and the perception of obstacles such as electricity, access to finance or corruption. Furthermore, the questionnaire of the Interim Enterprise Survey considers employment data of the survey year, as well as recall data from three years prior to the survey year.

The survey instrument that was implemented has two drawbacks. First, it does not contain enough information to conduct a productivity analysis at the firm level. Second, the data are cross sectional, i.e. it is not possible to track firms over time, or create a panel variable.

There are various indicators of employment growth, whose characteristics typically affect results and make the choice of indicators key to any analysis. Growth can be defined in terms of employment, sales and net assets. Each of these indicators is geared to a different aspect of firm growth. The choice of the growth indicator – in terms of employees, sales and net assets – can lead to quite different results (Heshmati 2001), since expansion processes may be rather different.[5] This paper focuses on employment, and uses two indicators which are commonly found in firm growth literature. First, a relative growth indicator puts the extent of employment growth in relation to the firm size in the base year. Second, a synthetic indicator suggested by Birch (1981, 1987) controls for bias towards firm size.

Since the choice of the indicator affects the analysis of the relationship between size and growth, and qualitatively does not change the results, we will for the country and industry analysis focus on relative growth rates. In the sections on size and growth, and the effect of location and growth, we will also consider the Birch indicator.

Let $E_{i,t}$ denote the number of permanent, full time individuals working for the interviewed establishment i in the survey year t, and $E_{i,t-3}$ the number of permanent, full time individuals working for the establishment i three years ago. Formally, the basic growth indicators are:

[4] It is unclear if Afghanistan is representative, since a total population of firms (e.g. census data) is unavailable. Pakistan is not representative, because enumerators could not enter certain regions due to security concerns. In addition, in India only Andhra Pradesh, Delhi, Gujarat Maharashtra and Tamil Nadu were covered.

[5] Among the three indicators, employment generation seems to be best suited for cross-country comparisons, as employment data is less influenced by other aspects, such as volatility or different legislation leading to different reporting behavior. Moreover, employment generation is of strong political interest.

Relative growth $(E_{i,t-3} - E_{i,t-3)}) / E_{i,t-3)}$ is biased towards small firms, as small units are much more likely to exhibit high rates of proportional growth than large firms.

Birch (1981 1987) and Schreyer (2000) suggested a synthetic indicator – in the following called a 'Birch' indicator: $(E_{i,t-3} - E_{i,t-3}) * (E_{i,t-3} / E_{i,t-3})$. The purpose is to control for the bias of indictors towards larger or smaller firms.

Only growth of existing firms will be considered. Mergers and acquisitions are not included. Employment can be generated by start-ups or destroyed by firms exiting the market. The INTERIM ES does not contain any information on firm entry and exit, which is why the analysis focuses on existing establishments. Furthermore, it is important to differentiate firm's expansion strategies. Firms can grow from within, or through the acquisition of another business. It is important to differentiate between these two. While internal growth is achieved by creating new employment, growth by acquisition is achieved by adding existing employment. This paper solely considers internal growth.

Furthermore, firm age is defined as t-(t-3); dummy variables will be used for urban areas –defined as localities with more than one million inhabitants, and for conflict regions, defined as Afghanistan and Pakistan.

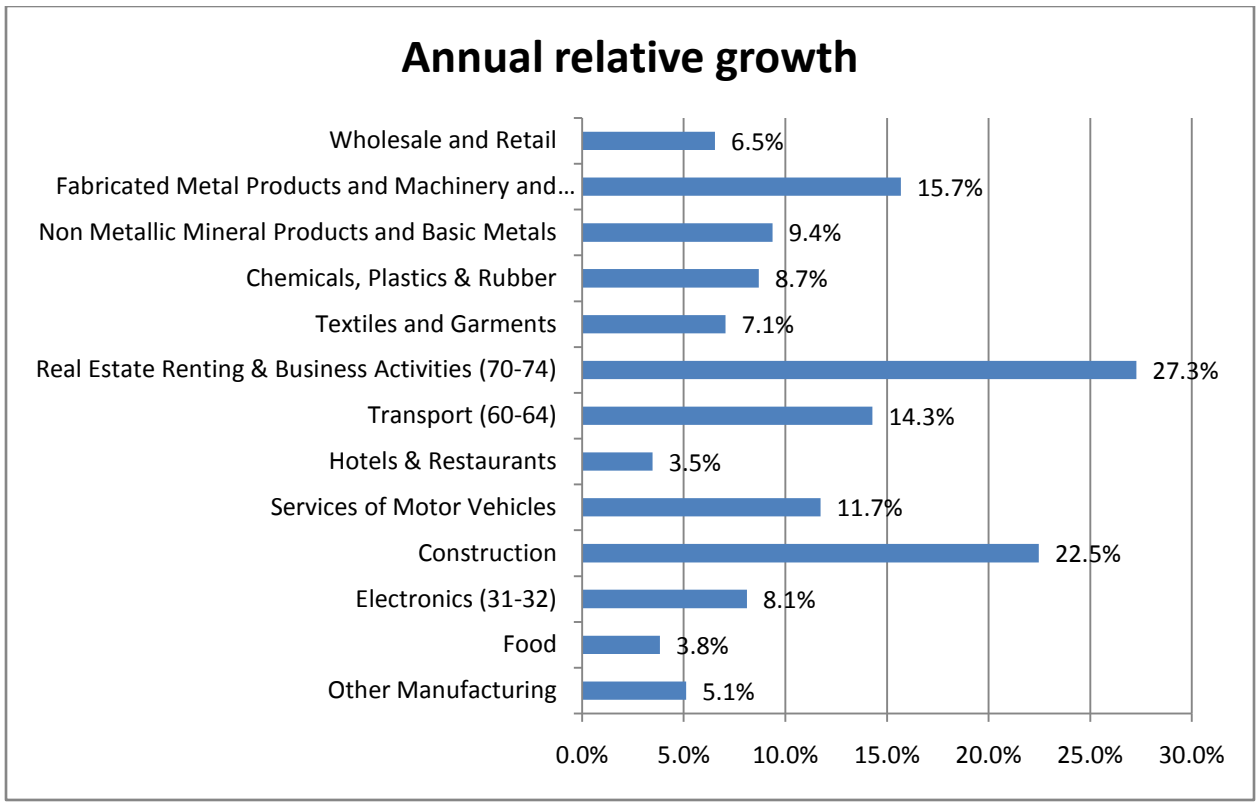
Descriptive employment growth diagnostics

Employment growth at the industry level

Employment growth differed greatly across industries. The expansion patterns of the economies of South Asia have been quite different. The annual average relative growth rate of the entire INTERIM ES dataset is approximately 9.9%, which is high by international standards. The median growth rate is nil, which is a common finding in growth literature (see for instance Coad and Holzl, 2009 for an overview of distribution of growth rates). There is great variance of growth rates, both across industries and across countries. This reflects different business cycles, variance in the investment climate that asymmetrically affects industries, and points at differences in the availability of industry specific conditions such as technological capabilities or management skills.

There is great variance across industries. We find that the highest mean of the annual relative growth rate was in real estate renting and business activities (27.3%), construction (22.5%), fabricated metal products and machinery and equipment (15.7%). While the median is driven by some few firms that expanded rapidly – sometimes referred to as 'gazelles' – there is also evidence of a broader expansion of these industries. The median of the relative for both construction, and real estate and business renting is 4%, and for fabricated metal products and machinery and equipment it is 3%. The slowest employment expansion occurred in hotels and restaurants expanded (3.5%), the food industry (3.8%). Similarly, the median firm of those two industries did not grow. Notably, there was no significant difference between services and manufacturing in the relative growth rate (see figure 1).

Figure 1: Descriptive statistics across industries in SAR



Source: INTERIM ES, Own calculations

Industries with fewer than 30 observations in the Region were excluded; growth rate over three years; unweighted[6]

The share of expanding firms dominated shrinking or stagnant companies. With the exception of food, the share of firms increasing their size was the largest across all industries, which also implies that more firms were growing than shrinking. Particularly broad was the expansion in real estate and business renting, chemicals, plastics and rubber and fabricated metal products and machinery and equipment. The largest share of companies that were decreasing in size was in textile and garments (see table 1).

[6] In longitudinal establishment-level data studies, a pervasive finding is that idiosyncratic factors dominate the distribution of growth rates of output, employment, investment, and productivity across establishments. Seemingly similar plants within the same industry exhibit behave quite differently in terms of real activity at cyclical and longer-run frequencies. Even in the fastest-growing industries, a significant fraction of establishments decline substantially. Similarly, a large fraction of establishments in the slowest-growing industries grow dramatically. Hence, the underlying gross microeconomic changes in activity dwarf the net changes that we observe in published aggregates (Haltiwanger, 1997). Weights which rely on the stratification of random samples and that aim at reproducing aggregate dynamics may distort performance analysis at the micro level.

Table 1: Share of firms that decrease, increase and are stagnant at the country level

	Change in employment		
Industry	**Decreased**	**Stagnant**	**Increase**
Other Manufacturing	25%	31%	44%
Food	23%	41%	36%
Electronics (31-32)	23%	31%	46%
Construction	23%	24%	52%
Services of Motor Vehicles	17%	32%	51%
Hotels & Restaurants	21%	32%	47%
Transport (60-64)	15%	32%	53%
Real Estate Renting & Business Activities (70-74)	21%	12%	67%
Textiles and Garments	36%	21%	43%
Chemicals, Plastics & Rubber	18%	28%	54%
Non Metallic Mineral Products and Basic Metals	19%	33%	48%
Fabricated Metal Products and Machinery and Equipment	19%	26%	55%
Wholesale and Retail	18%	33%	48%

Source: INTERIM ES, Own calculations

Industries with fewer than 30 observations excluded; growth rate over three years; unweighted

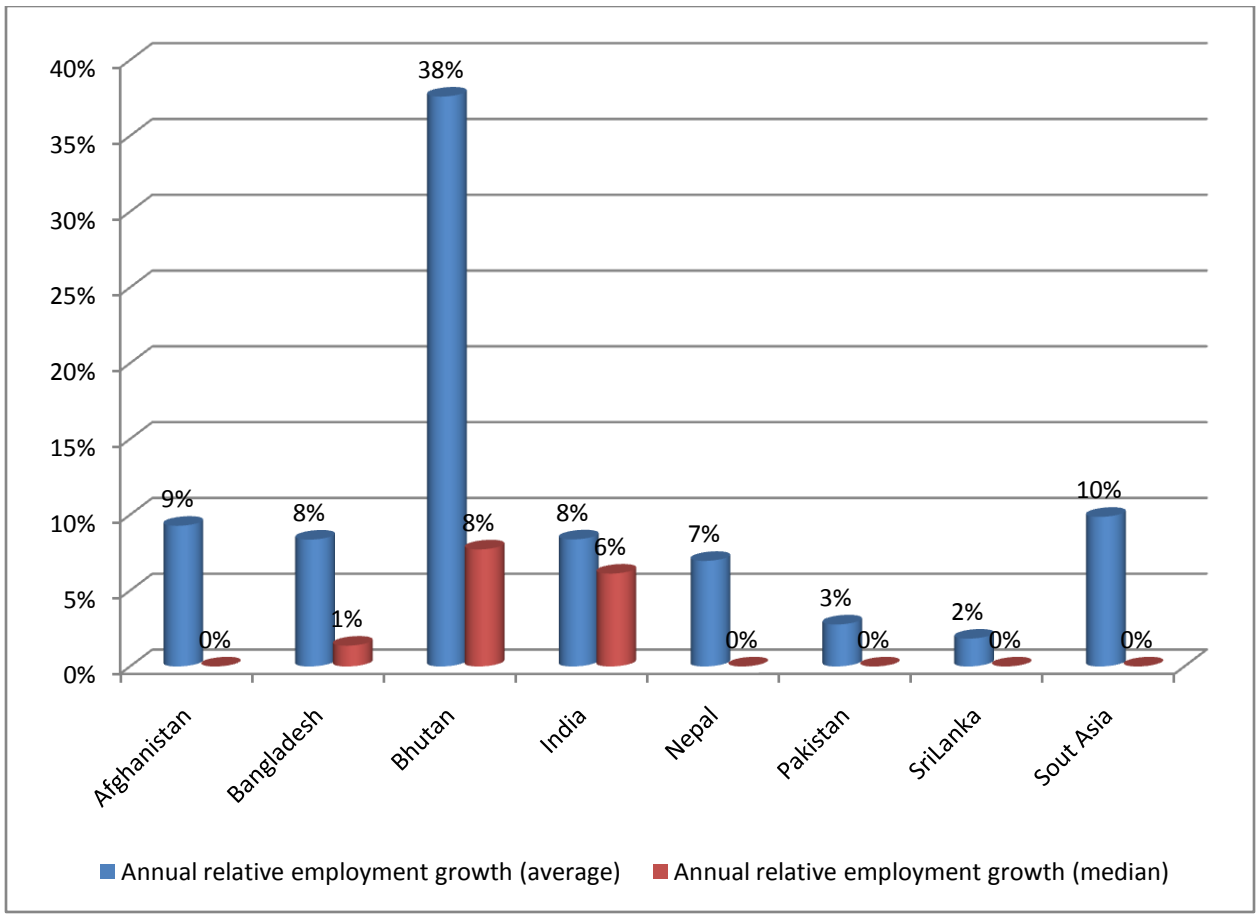
South Asia's employment levels are very dynamic. The growth performance of firms in the sample was impressive, and suggests that companies are very dynamic. This finding that in many industries the median employment growth is greater than zero is striking. Evidence from developed economies such as the US as well as from Europe (incl. catching-up Eastern Europe) states not only that the median growth rate is nil, but also that most firms do not grow (e.g. Schreyer, 2000; Hoelzl and Friesenbichler, 2008).

Employment growth at the country level

The median firm is typically stable in size. Average growth rates differ from country to country. The median firm did not grow in most countries, with the exceptions of Bhutan (8%), India (5%) and Bangladesh (1%). Firms that expanded their employment number by far outweighed firms that decreased in size. While firms of most sampled countries increased their employment between seven and nine percent on an annual average, companies in Pakistan and Sri Lanka expanded by 3% and 2%, respectively. The notable exception is Bhutan, where firms increased by an annual average of 38% (see figure 2).[7]

[7] The result for Bhutan confirms the rapid expansion of the private sector which has been documented in the most recent Investment Climate Assessment on the country (The World Bank, 2010), which found that the median firm in Bhutan increased 25 percent in employment between 2006 and 2008. Large firms of 100 workers or more reported the fastest increases employment.

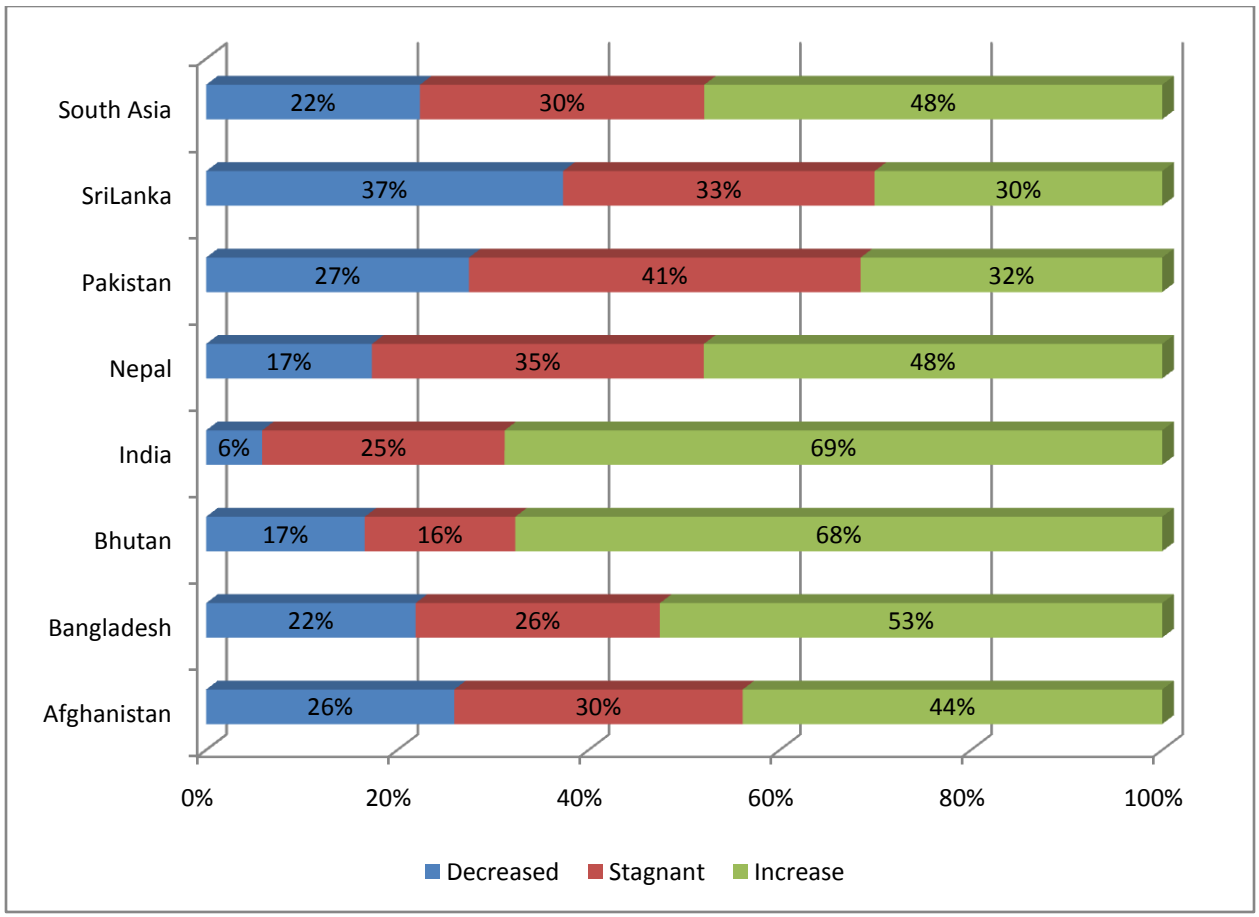
Figure 2: Firm growth at the country level



Source: INTERIM ES, Own calculations
Industries with fewer than 30 observations excluded; growth rate over three years; unweighted

The share of surveyed firms that expanded differs greatly across countries. In most countries, more firms increased their employment than downsized. For instance, only a third of the companies in Sri Lanka increased their employment, while 69% in India or 68% in Bhutan increased in size. The largest share of firms that were decreasing in size was in Sri Lanka (37%), which is also the only country in which more firms of the sample decreased their size than expanded (see figure 3).

Figure 3: Share of firms that decrease, increase and are stagnant at the country level



Source: INTERIM ES, Own calculations

Statistical 'outliers' drive the overall dynamics - few firms that expand rapidly account for most of the net job creation in South Asia. A number of 'outliers' make for the bulk of gross job creation. For instance, the top 10% of the distribution of relative growth rates increased employment by 75% compared to the base year, and the top 5% by 140%. Similarly, the fastest growing 10% of the distribution account for 86% of all new jobs, and the top 5% for 76% of all new jobs. Notably, the period for which this growth rate was calculated was 2006/07-2009/10, i.e. amidst the financial crisis of industrialized countries. On the contrary, there are some firms that are shrinking dramatically. The bottom 10% of the distribution of relative growth rates reduced employment by 33%, and the fastest shrinking 5% shed half of their staff.[8] Both, firm growth and firm decreases suggest that substantial changes in staff figures are a temporary phenomenon. If they continue for a longer period, firms would either exit the market, or theoretically grow to infinity. Hence, there are natural limits to growth (e.g. Dobbs and Hamilton, 2007).

[8] Qualitatively, these findings hold for other growth indicators, and also at the sector, industry and country level.

Firm growth and size at the country level

The missing middle phenomenon implies that there are differences in employment growth patterns across size classes of firms. The firm demography of the region shows that medium sized firms are underrepresented. This indicates that small companies do not grow into a certain size class, while at the same time larger firms are assumed to drive the employment dynamics. Exploring this question, we split the available data into four size classes (permanent, full time employees) at the country level: micro (0-4), Small (5-19), Medium (20-99), large (more than 100). We then show the medians of the relative employment growth indicator as well as the Birch growth indicator, which controls for the bias in favor to smaller companies. In addition, we include several variables that are associated with firm growth - investment into physical assets, size and age.

The employment growth performance differs across size classes. Large firms grow significantly faster in South Asia than other companies. The relative growth indicator across size classes reveals that at an annual average, large companies are growing significantly faster in Sri Lanka, Bhutan, Afghanistan, Pakistan and Bangladesh. The median of the Birch indicator – which provides a weighting of the relative growth by the firms' expansion in absolute figures - shows that large companies account for the bulk of new employment in all countries of the sample.

There is a lot of variance of firm age across countries and size classes. The median large firm in India is 25 years old, 26 in Sri Lanka and 20 in Nepal; in Afghanistan the median age of large firms is only 7 years. On average, firm age increases within size classes, especially in India, Nepal, Pakistan and Sri Lanka, and to a lesser extent for Afghanistan. Only in Bhutan is the median age of large firms lower than the age of small and medium sized companies.

Investment in physical assets is related to employment growth. Despite some country variance across countries, **t**he share of investing firms of a size class is correlated with employment growth, and strongly increases with firm size. Large firms invest significantly more than small companies in all countries.

Table 2: Descriptive statistics across size classes at the country level

Country Survey year	Size class	Employment	Share of firms that invested	Age	Annual relative employment growth (median)	Birch indicator (median)
Afghanistan 2010	Micro	3	24%	6	0%	0.0
	Small	8	44%	6	0%	0.0
	Medium	22	63%	6	5%	2.7
	Large	120	65%	7	11%	38.6
Bangladesh 2010	Micro	3	50%	6	0%	0.0
	Small	10	32%	8	2%	1.1
	Medium	30	41%	12	0%	0.0
	Large	155	49%	13	2%	10.8
Bhutan 2009	Micro*					
	Small	7	33%	13	6%	1.2
	Medium	30	59%	16	8%	7.6
	Large	147	82%	11	27%	108.0
India 2010	Micro	3	38%	10	0%	0.0
	Small	9.5	31%	9	6%	1.2
	Medium	35	49%	11	6%	6.3
	Large	230	67%	25	6%	54.5
Nepal 2009	Micro*					
	Small	7	30%	10	0%	0.0
	Medium	30	50%	15	0%	0.0
	Large	212.5	73%	20	2%	16.7
Pakistan 2010	Micro	3	10%	15	0%	0.0
	Small	8	23%	16	0%	0.0
	Medium	35	43%	20	0%	0.0
	Large	250	72%	25	2%	21.5
Sri Lanka 2010	Micro	3	9%	15	0%	0.0
	Small	8	20%	15	0%	0.0
	Medium	35	33%	20	0%	0.0
	Large	250	71%	26	3%	16.7

Source: INTERIM ES, 2009/10; Own calculations

** The size class of 0-4 employees of Bhutan and Nepal had fewer than 30 observations.*

Employment growth across age classes

Older firms grow slower than younger firms by relative measures. Yet, the bulk of employment generation in absolute figures occurs in companies that are older than 26 years. Firms in the age class of over 25 years grow significantly slower than younger firms. However, they also create significantly more employment than firms in other size classes. Firms older than 26 years represent 21% of the sample; however, they create approximately half of all jobs, since they are significantly larger than companies of other age classes. Young firms that are not older than five years account for 17% of all observations, and generated 16% of the net employment (see table 3).

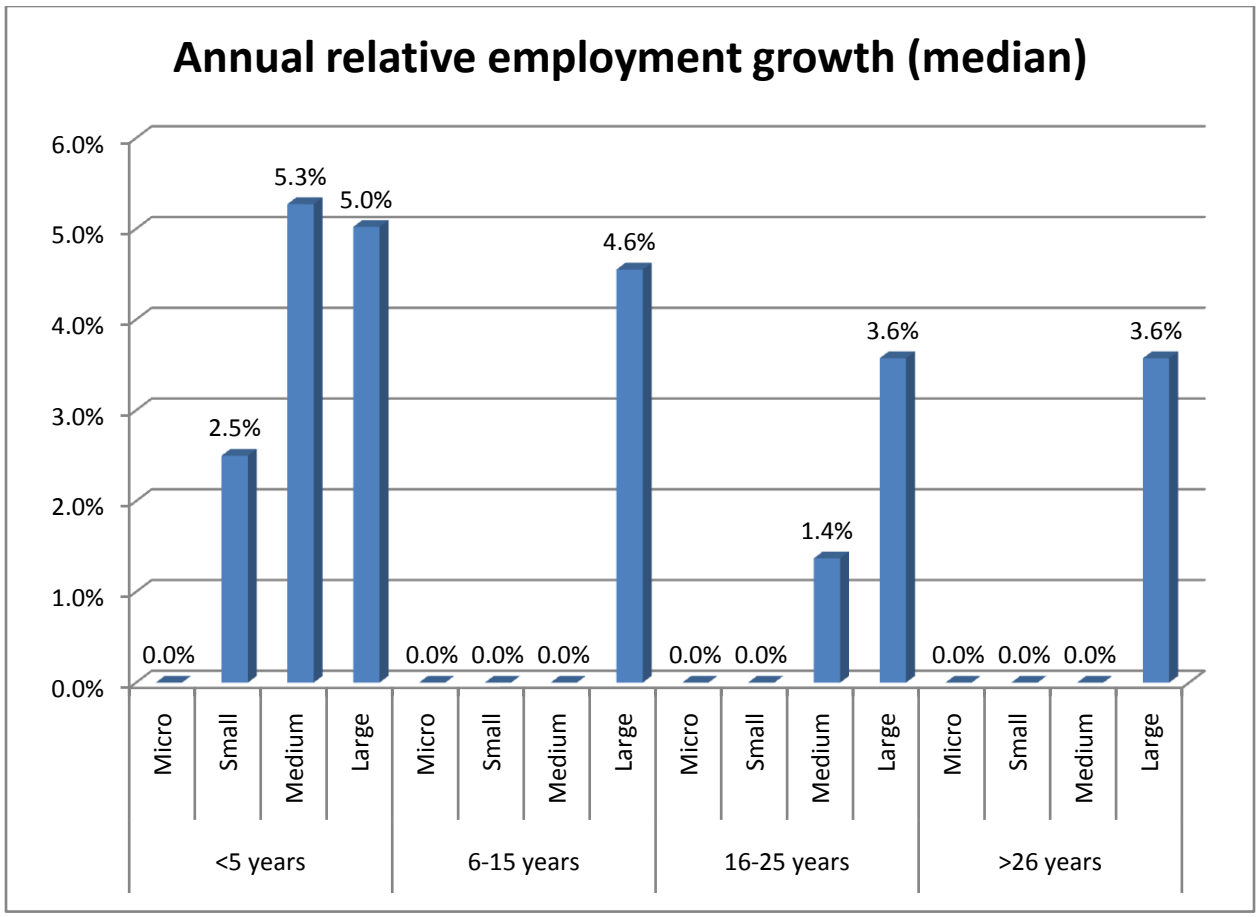
Table 3: Firm growth across age classes

Age class	Employment (median)	Employment (mean)	Share of investing firms	Age (median)	Annual relative emp. growth (median)	Annual relative emp. growth (mean)	Birch index (mean)
5 years or younger	12	47	41%	4	2%	18%	78
6-15 years	16	73	43%	10	0%	9%	22
16-25 years	22	145	45%	20	0%	8%	49
>26 years	40	273	46%	35	0%	7%	103

Source: Interim Enterprise Survey, 2009/10; Own calculations

Evidence across size and age classes confirms that large firms drive employment growth. The median growth rate of large firms declines across age classes slightly declines, but remains significantly higher than the growth rate of other size classes across the board. Only companies which are younger than 6 years and medium sized outperform large companies of the same age class. These findings are independent to the choice of the median or mean (see figure 4).

Figure 4: Firm growth across age and size classes



Source: Interim Enterprise Survey, 2009/10; Own calculations

The effect of the size of the locality

Growth has been geographically asymmetrical in South Asia. Urban areas in the South Asia have proven to be the bearers of growth. This indicates that SAR countries switch their sectoral composition away from agriculture into industry and as technological advances in domestic agriculture release labor from agriculture to migrate to cities (Henderson, 2003)[9]. This leaves 'lagging areas' with higher poverty rates: the poverty headcount is related to distance, and the mass of poverty is related to density. Aging areas tend to have a higher proportion of poor residents, and the leading areas tend to contain a higher share of the country's poor people, because of the dense population in leading areas (World Development Report 2009).

Urbanization is also reflected in employment growth. South Asia's economic and social transformation has been complemented by rapid urbanization. In the following, we define urban areas as either the capital city or as a city with at least one million inhabitants. Descriptive statistics (see table below) establish a difference in relative employment growth of approximately five percentage points across the

[9] The dataset allows for aggregate data, and not for a deeper discussion of agglomeration effects and congestion costs of urbanization.

region. Relative employment growth was significant at the 95% level in India, Bhutan, Bangladesh, and Sri Lanka. It was insignificant in Nepal and Afghanistan[10]. Notably, the figures below are averages. This indicates that firms with very high growth rates shape the overall picture. At the same time, the median growth rate is often zero, and if not, it is typically higher in urban areas.

Employment growth was higher in urban areas. On an annual average, firms in urban areas in South Asia grew at approximately 10.5%, which is significantly higher than 9% in non urban areas. Similarly, the median relative growth rate is zero in non-urban areas, and is significantly higher in urban regions (1.4%). 45% of companies in urban areas invested into physical assets, which is significantly higher than the 41% in non-urban areas.

Firms located in urban areas were significantly more likely to invest, were on average larger, yet younger. The median age of 23 years in urban areas is much higher than in non-urban areas of 15 years. However, on average, some very old firms - statistical outliers – which are located in non-urban areas render the average company in urban areas significantly younger than in non-urban areas.

Table 4: Firm growth in urban areas at the country level

Country	Size of locality	Employment (Median)	Age (median)	Share of firms investing	Annual relative employment growth (median)	Annual relative employment growth (mean)
Afghanistan	Non-urban	12	6	53%	0.0%	8.5%
	Urban	10	6	44%	0.0%	10.9%
Bangladesh	Non-urban	25	14	45%	1.6%	3.9%
	Urban	30	12	40%	1.3%	9.9%
Bhutan	Non-urban	15.5	13	39%	6.3%	29.9%
	Urban	25	14	74%	14.5%	53.2%
India	Non-urban	50	6	30%	0.0%	2.9%
	Urban	25	14	49%	6.3%	8.7%
Nepal	Non-urban	12	12	42%	0.0%	6.6%
	Urban	20	12	41%	1.4%	7.3%
Pakistan	Urban	20	20	41%	0.0%	2.8%
Sri Lanka	Non-urban	12	17	28%	0.0%	0.2%
	Urban	80	22	48%	0.0%	7.1%
SAR	Non-urban	15	11	41%	0.0%	9.1%
	Urban	23	14	45%	1.4%	10.5%

Source: Interim Enterprise Survey, 2009/10; Own calculations

[10] The sample for Pakistan only consists of firms located in urban areas.

Conflict countries and employment growth

South Asia is a conflict region, with varying degrees of security issues. According to the United Nations Security Levels System, all countries in the South Asia Region are facing security and conflict issues. However, the extent of the conflicts varies. The UN Security Levels System objectively classifies regional security into six categories: minimal, low, moderate, substantial, high, and extreme. The system identifies Bangladesh, Bhutan and Nepal as minimal to low. Sri Lanka is classified as minimal or in some regions moderate, India is similar aside of the Indian administered Kashmir region. Two countries have several regions which are heavily affected by security issues - Afghanistan and Pakistan. Following this classification, we grouped Afghanistan and Pakistan as countries with a severe ongoing conflict, and describe India, Bangladesh, Bhutan, Nepal and Sri Lanka as countries with a moderate security environment. This picture is confirmed by qualitative reports such as the Conflict Barometer (2010).

Differences between severe conflict regions and others are vast, because conflict areas miss out on urban growth. Countries in regions with moderate conflicts grow at an annual average of 11%, which is significantly faster than the 7% relative growth on an annual basis in conflict countries. While growth differences in non-urban areas are not significant, the overall difference is driven by urban areas, where the difference in the average growth rate is 8%.[11]

Firms in non-urban conflict regions are smaller and younger. Companies in rural areas are much smaller and younger in conflict countries than in countries with little or moderate conflict. More generally, firms in the sample that are located in conflict areas are younger than firms in regions with a moderate conflict. Interestingly, the opposite holds for urban firms in conflict areas – these are older than urban firms in non-conflict areas.

Table 5: Firm growth in urban and rural areas in moderate and severe conflict environments

Intensity of conflict	Urban	Employment (median)	Share of investing firms	Age (median)	Annual relative employment growth (median)	Annual relative employment growth (mean)
Moderate conflict	Non-urban	16	36%	15	0%	9%
Moderate conflict	Urban	25	47%	13	4%	13%
Moderate conflict	All	22	42%	14	2%	11%
Severe conflict	Non-urban	12	53%	6	0%	9%
Severe conflict	Urban	15	42%	15	0%	5%
Severe conflict	All	12	46%	8	0%	7%

Source: Interim Enterprise Survey, 2009/10; Own calculations

[11] Only results that are significant at the 95% level are reported in the text.

Results of growth regressions

Econometric specification

In this analysis, we implement quantile regressions, which enable us to consider the entire distribution of firm growth. The quantile regression methodology splits the data into quantiles of the dependent variable, which is the growth rate in our specification. Then, a set of explanatory (e.g. size, conflict) variables attempt to describe the influence of the variables in each of the quantiles of growth intensities, while controlling for the entire distribution, thereby avoiding sample selection distortions. Put differently, we try to identify both the overall influence of an explanatory variable and the difference in the influence across growth intensities. The coefficients can be interpreted in a similar fashion as OLS, viz as the marginal change in the dependent variable due to a marginal change in the exogenous variable conditional on being on the p-th quantile of the distribution. Changing estimated coefficients with varying quantiles is indicative of heteroskedasticity issues (for an overview, see Koenker 2005).[12]

We use quantile regression in order to analyze the determinants of firm growth in South Asia across growth intensities. We set the quantiles at 20%, 40%, 60% and 80% of the sample. The variance-covariance matrix is bootstrapped 500 times. We controlled for extreme outliers by dropping the top and bottom 3%.[13] The regression equation that we use is the following:

$$g_i = \alpha + \beta_1 S_{i,t-3} + \beta_2 CONF_i + \beta_3 URBAN_i + \beta_4 CONF_i * URBAN_i + \beta_5 X + \varepsilon_i$$

$S_{i,t-3}$ the establishment's size in the base year, . $CONF_i$ stands for the regional characteristics of a location in a severe conflict region. URBAN is a dummy variable for establishments which are located in a capital city or in a city with more than one million inhabitants. X_i denotes a series of control vectors, such as age, investment into physical assets, country and sector dummies.

The regression table below depicts the results that we obtained from this specification. The results are robust to other specifications. For instance, we controlled for region-wide industry and sector cycles, considered the entire distribution, i.e. did not drop extreme outliers, used industry instead of sector dummies, and dropped control dummy variables. Furthermore, we ran these specifications using robust regression as well as sample selection techniques. Other control variables (e.g. quality of human capital stock, multi- or single plant) were not available in the questionnaire of this survey.

[12] Estimates of the quantile regression are more robust than those of the ordinary least square regression, where the mean value of the dependent variable is predicted. This is especially true in the presence of outliers, as well as for distributions of error terms that deviate from normality.

[13] The outlier control did not change the quality of the results. The coefficients for the effect of firm size that we obtained were slightly lower, and significance level increased.

Table 6: Quantile regression results

Observations		2558	Observations		2452
Pseudo R2	.2 Quantile	0.01	Pseudo R2	.2 Quantile	0.02
	.4 Quantile	0.00		.4 Quantile	0.01
	.6 Quantile	0.10		.6 Quantile	0.05
	.8 Quantile	0.22		.8 Quantile	0.04
Birch	**Coefficient**	**P-value**	**Relative growth**	**Coef.**	**P-value**
q20			*q20*		
Employment base year	0.00	0.521	Employment base year	**0.00**	0.024
Investment	**0.86**	0.003	Investment	**0.04**	0.034
Firm Age	**-0.02**	0.066	Firm Age	0.00	0.800
Severe conflict	1.11	0.209	Severe conflict	**0.22**	0.003
Urban area	1.01	0.043	Urban area	**0.05**	0.029
Urban conflict area	-1.27	0.099	Urban conflict area	**-0.17**	0.007
q40			*q40*		
Employment base year	0.00	0.939	Employment base year	0.00	0.231
Investment	0.02	0.914	Investment	0.00	0.763
Firm Age	0.00	0.947	Firm Age	0.00	0.435
Severe conflict	0.02	0.919	Severe conflict	0.00	0.695
Urban area	0.02	0.925	Urban area	0.00	0.770
Urban conflict area	-0.03	0.925	Urban conflict area	0.00	0.718
q60			*q60*		
Employment base year	**0.09**	0.000	Employment base year	0.00	1.000
Investment	**2.16**	0.000	Investment	**0.07**	0.001
Firm Age	-0.01	0.542	Firm Age	0.00	1.000
Severe conflict	0.18	0.811	Severe conflict	0.04	0.581
Urban area	**0.85**	0.054	Urban area	0.03	0.247
Urban conflict area	-1.17	0.142	Urban conflict area	-0.07	0.353
q80			*q80*		
Employment base year	**0.15**	0.000	Employment base year	**0.00**	0.096
Investment	**5.69**	0.000	Investment	0.05	0.127
Firm Age	0.00	0.951	Firm Age	**0.00**	0.006
Severe conflict	2.34	0.347	Severe conflict	0.01	0.925
Urban area	**2.08**	0.017	Urban area	0.03	0.422
Urban conflict area	**-5.17**	0.041	Urban conflict area	-0.07	0.589
Sector dummies	**Yes**		Sector dummies	**Yes**	
Country dummies	**Yes**		Country dummies	**Yes**	

Findings

Evidence on growth patterns showed that firms in conflict areas grow slower than in other countries. This is especially true for urban areas: in countries with severe conflicts were not the growth poles as in other countries of South Asia Region. Furthermore, there is evidence that larger companies grow faster. However, unconditional and even conditional tests of the quality or difference of means do not provide the full picture that can be outlined using the Interim Enterprise survey data.

Descriptive statistics suggest a non-linear relationship between growth intensities and explanatory factors like size or age. If we want to study firm behavior at both ends of the distribution we should use a different econometric method than those methods usually employed (e.g. ordinary least squares, panel or robust regression) when studying firm growth. Traditional methods aim to identify average firm behavior, which assumes an average effect of explanatory variables to hold across the entire distribution of growth rates.

The results show a non-linear relationship, and largely confirm the insights from the descriptive statistics:

- **First, investment in physical assets is a key driver for employment growth** – the faster firms grow the more important investment is.
- **Second, size in the base year gains importance with increasing expansion; age does not matter.** The size of a firm in the base year is positively associated with higher growth for fast growing firms; yet, it has no significant effect on companies with reducing or stagnant staff figures. These results are sensitive to the choice of growth indicator: the relative growth indicator, which favors small firms, finds significant results for fast growing firms, yet, the coefficient is negligibly small and negative.[14] This is an interesting finding, since one would expect the relative growth indicator to be strongly negative for high levels of growth, due to its computational method (see for instance Dunn et al, 1989 on growth patterns and size). This finding points at problems of small firms to grow to a medium size. Interestingly, age has no significant effect.
- **Third, the location of the firm is an important determinant** of its growth performance. Firms in capital cities or cities with more than one million inhabitants were growing significantly faster than establishments in non-urban areas.[15]
- **Fourth, companies in severe conflict areas have also been affected in their growth performance.** Firms in urban areas have expanded significantly lower than their counterparts in areas with a moderate conflict. This result is again driven by the choice of the indicator, since firms in conflict areas are smaller than their counterparts elsewhere.

[14] The coefficient of the relative growth indicator turns zero; this indicator should be negative since it favors smaller companies. Further robustness checks using showed that size is a positively related to growth in Afghanistan, Bangladesh, India, Pakistan and Sri Lanka. The results for Bhutan and Nepal were insignificant.

[15] The coefficient of the urban indicator turns negative and significant if we use the ordinal indicator of size of locality which decreases in size – reflecting the increasing disadvantage of being located in a non-rural area.

These findings are largely consistent with results recently published by the World Bank (2011). In particular, partial correlation analyses of the World Bank confirm that employment growth over a three year period is positively correlated with both the size of the firm and the location in a capital city or cities with over a million people. Furthermore, business environment constraints are perceived significantly higher in armed conflict areas when compared to low-conflict areas, which may affect firms' growth performance. More generally, the report confirms that the entire region is struggling with instability and conflict: the business environment shows that political instability is one of the top three constraints in countries where the question was included in the underlying enterprise survey instruments of the data considered. Also, the report finds a positive relationship between employment expansion and innovation in a broad sense, which is typically linked to physical investment.

Summary

South Asia Interim Enterprise Survey data of 2009/10 confirms that South Asia has performed very well – a substantial share of establishments expanded their employment, and expanding firms outweigh the share of establishments that shed employment. Despite the positive aggregate dynamics, this growth was far from uniform. There has been great variance across industries, size classes of firms, countries and regions.

At the sector and industry level, especially real Estate Renting & Business Activities, the transport industry, fabricated metal products, machinery and equipment, chemicals, rubber and plastics and construction performed well. At the country level, especially establishments in the Bhutan sample have increased employment at a significantly faster pace than other countries.

Employment generation is primarily driven by large companies with over 100 employees. This particularly holds for Sri Lanka, Bhutan, Afghanistan, Pakistan and Bangladesh. Similarly, firm age matters for employment generation. Firms older than 26 years represent 21% of the sample; however, they create approximately half of all jobs, since they are significantly larger than companies of other age classes. Young firms that are not older than five years account for 17% of all observations, and generated 16% of the net employment. The age of an establishment does not significantly affect employment growth – neither for shrinking, nor for fast expanding companies.

There is strong evidence that the severe conflicts have a strong impact on firm growth patterns.
Especially urban areas in conflict countries could not participate in the growth of the region as a whole.
Urban growth poles were the true bearers of employment expansion in South Asia.

Policy conclusions

These results should be not be interpreted separately, and implications of the results of this paper should consider other findings. Hence, the implications on economic policies should be embedded in a broader analysis of the region, and get fine tuned in the country and sector environment.

First, the finding that large firms systemically outperform smaller companies in employment growth has serious implications on industrial dynamics. On the one hand, well-established, large firms play a significant role in employment generation. Sustaining their competitiveness is vital for South Asian economies as a whole. On the other hand, the lackluster growth performance of smaller companies and the missing middle indicates that industrial change to new industries may be an issue. SMEs are often the bearers of change, and offer new employment opportunities to the workforce. This also points at issues beyond the investment climate, such as entrepreneurship, the competitive environment of firms, skills and technology.

Second, maintaining growth patterns may involve the need to decrease the geographical gap in growth. Maintaining growth in urban areas requires reducing congestions costs as well as providing a growth enabling environment in non-urban areas (WDR, 2009).

Third, resolving issues of conflict-ridden regions is a precondition for prosperity.

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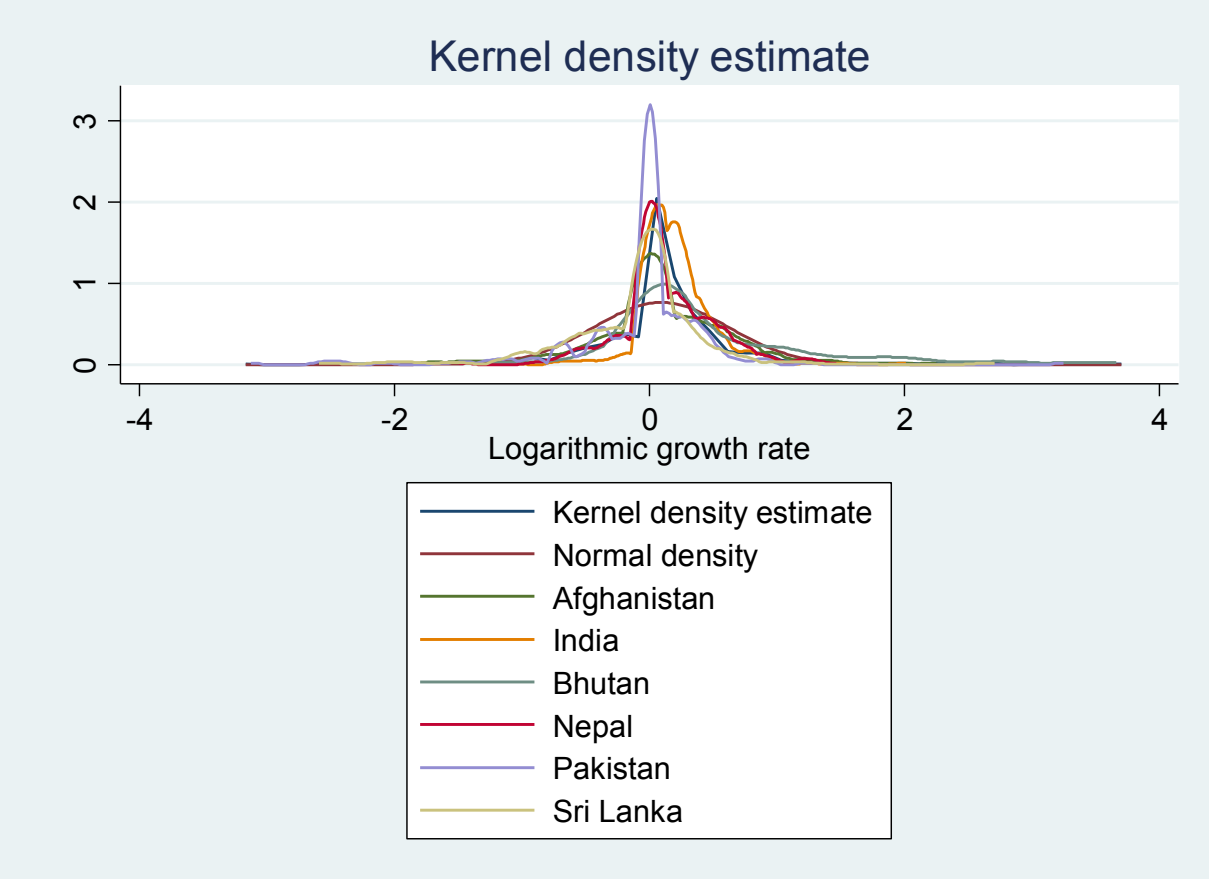
Annex: Kernel density estimates

Kernel density estimations show that the median growth rate is close to nil, while few outliers on both sides create overall dynamics. For presentation purposes this graph draws on a logarithmic growth indicator, which is defined as log ($E_{i,t-3}$) – log ($E_{i,t-3}$). Logarithmic growth is the inverse of an exponential function, which has to be assumed.

Figure 5: Kernel density estimation graphs



Source: Interim Enterprise Survey, 2009/10; Own calculations; density function: Epanechnikov; bandwidth = 0.0374