Employment Strategy Papers

The employment intensity of growth:
Trends and macroeconomic determinants

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Acknowledgements

Preface

In recent years, the Employment Strategy Department's Trends Unit has invested considerable time and effort into broadening its information base of cross-country comparable national labour market information, with an initial emphasis on unemployment, employment, labour force participation, employment by economic sector, employment status and poverty among the world's workers. Particular attention has been paid to obtaining data for subgroups of the population, such as women and youth. Additionally, substantial efforts have been undertaken at the ILO to develop economic models designed to produce econometrically rigorous estimates of these types of labour market indicators at the national, world and regional levels. Previous Employment Strategy Papers including Schaible (2000), Majid (2001), Berger and Harasty (2002), Crespi (2004) and Kapsos (2004) document this work.

This present paper utilizes the expanded data sets developed throughout these previous undertakings in order to provide country, regional and global estimates of the employment intensity of economic growth over the period 1991 to 2003. The paper examines employment elasticities for the general employed population, but also for different demographic groups such as women and youth and for the three broad economic sectors including agriculture, industry and services. The paper provides the first comprehensive world and regional aggregate estimates of the employment intensity of growth, and, with estimates of employment elasticities for 160 economies, the largest set of cross-country comparable employment elasticities to date.

The global employment elasticity figures presented in the paper reveal a recent decline in the employment intensity of growth, which is most likely a reflection of poor employment performance following the global economic slowdown that took shape in 2001. At the regional level, the most employment-intensive growth was registered in Africa and the Middle East. This result highlights both uses and drawbacks of the employment elasticity as an analytical tool. Examining the region's high employment elasticity together with its relatively low output growth reveals that labour productivity growth has remained extremely low. As a result, the number of working poor has continued to rise in the region. In order to form a relatively complete picture of labour market trends, it is thus crucial to examine employment elasticities together with additional labour market and macroeconomic indicators, such as GDP and labour productivity growth, unemployment rates, labour force participation and poverty rates, among others. Meanwhile, the results presented in this paper show that in Asia and the Pacific and particularly in East Asia, rapid economic growth has resulted in large gains in labour productivity, contributing to rising living standards while also fostering robust employment growth. The regional results also provide indications of ongoing structural economic change, particularly in the developed economies, but also in the transition economies, Latin America and the Caribbean and throughout parts of Asia and the Pacific.

The paper's findings related to determinants of employment elasticities themselves are highly relevant in policy discussions aimed at promoting employment and productivity

for economic growth and poverty reduction. Importantly, the paper finds no evidence across economies of a link between measures of the extent of employment protection in an economy and its job intensity of growth. While subsequent work is certainly needed to examine this issue in greater detail, the finding could have significant implications in the areas of social dialogue, collective bargaining and social protection.

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1. Introduction

Employment-related economic indicators, particularly those that measure the ability of economies to generate sufficient employment opportunities for their populations, often provide valuable insights into economies' overall macroeconomic performance. Among the most widely publicized indicators along these lines are unemployment rates, employment-to-population ratios, and labour force participation rates. Another labour market indicator that, perhaps owing to its somewhat less accessible title, receives less attention in the literature is the *employment intensity of growth,* or *elasticity of employment with respect to output*.[1] The most basic definition of this indicator is that it is a numerical measure of how employment varies with economic output – for instance, of how much employment growth is associated with 1 percentage point of economic growth. Though discussed less frequently than other key labour market indicators, employment elasticities can provide important information about labour markets. In their most basic use, they serve as a useful way to examine how growth in economic output and growth in employment evolve together over time. They can also provide insights into how employment generation varies for different population subsets in an economy, and assist in detecting and analysing structural changes in employment over time.

Many of the previous empirical studies of employment intensity have been limited to single country- or region-specific cases. Moreover, most of these country or regional case studies do not provide comparative breakdowns of elasticities among subsets of the population, such as women and youth. This present paper seeks to address these gaps in the literature by taking advantage of an extensive cross-country panel dataset containing total employment disaggregated by age group and sex, along with available national GDP data, to generate estimates of total, youth, male and female employment elasticities for 160 countries.[2] In addition, while some studies have produced fairly comprehensive cross-country estimates of employment elasticities for single economic sectors, little work has been done to examine international trends in employment intensity across the three main economic sectors (agriculture, industry and services) over time. In order to address this gap, this study utilizes a cross-country panel of employment data disaggregated by economic sector along with corresponding sector value-added data to estimate historical employment elasticities by sector for 139 countries. As a result of the extensive country coverage for both sets of elasticities, the paper also examines global and regional historical trends in these indicators. Finally, primarily due to lags in the data, estimates of employment elasticities currently in the literature are at least several years dated, with many a decade old or more. In order to provide more recent evidence on trends in employment intensity – which is a very dynamic phenomenon – the estimates generated in this paper cover the period 1991 to 2003.

The first broad objective of this present study is to outline the data and methodological requirements for generating estimates of employment elasticities. Second, the paper

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[1] The terms "employment intensity of growth", "job intensity of growth" and "employment elasticity" are used interchangeably throughout the paper.
[2] Employment is expressed as the total number of employed persons. This definition was chosen in favour of total number of hours worked due to better overall data coverage in the former.

provides a picture of recent historical differences among regions with respect to their employment intensity of growth for the total employed population, the youth cohort and by sex and economic sector. The sector elasticities are utilized to identify the extent to which structural economic change is taking place throughout the various regions of the world. The final objective is to form a better understanding of the key determinants of employment elasticities themselves. A multivariate econometric model is developed to address: (1) why countries with similar economic growth patterns often have substantial differences in their employment intensity; and (2) why employment intensity often varies substantially within countries among different subgroups of the population.

It is important to note at the outset that the trends in employment intensity presented in this paper are indicative of the response of employment in terms of *quantity* of employed persons to GDP growth. While this is an important macroeconomic indicator in its own right, the tools at hand are limited in that they say nothing about overall changes in the *quality* of jobs or growth in the number of "decent" jobs. Another caveat that should be raised relates to making value judgements on employment elasticities. While differences in opinion clearly exist in terms of whether employment-intensive or productivity-intensive growth is more desirable from an economic development perspective, this paper takes as a central assumption that employment growth and productivity growth *must be jointly pursued* in order to maximize the potential for realizing economic development objectives such as poverty reduction (ILO, 2005a).

The paper proceeds as follows: Section 2 outlines the data and methodology used for calculating the various employment elasticities; Section 3 presents world and regional aggregate elasticity figures broken down by age, sex, and economic sector; Section 4 presents the econometric model designed to detect some of the macroeconomic correlates of historical elasticity levels, and subsequently looks at whether these determinants vary in type or magnitude across demographic groups; Section 5 concludes and discusses the implications of the paper's findings.

2. Methodological background and data used

Calculating country employment elasticities

The most basic definition of employment elasticity is the percentage change in the number of employed persons in an economy or region associated with a percentage change in economic output, measured by gross domestic product. Within this broad definition, two methodologies are frequently utilized for calculating elasticities. The first technique, given in equation 1 below, gives the *arc* elasticity of employment, ε_i:

$$\varepsilon = \left(\frac{(E_{i1} - E_{i0}) / E_{i0}}{(Y_{i1} - Y_{i0}) / Y_{i0}} \right) \tag{1}$$

The numerator simply gives the percentage change in employment in country i, E_i, between periods 0 and 1, while the denominator gives the corresponding percentage change in output, Y_i. While this methodology is computationally very simple, Islam and

Nazara (2000) and Islam (2004) have demonstrated that year-over-year employment elasticities calculated using this method tend to exhibit a great deal of instability and may therefore be inappropriate for comparative purposes. As a result, this paper utilizes a second method, a multivariate log-linear regression model with country dummy variables, D_i, interacted with log GDP for generating the *point* elasticity. This is given in equation 2.

$$\ln E_i = \alpha + \beta_1 \ln Y_i + \beta_2 (\ln Y_i \times D_i) + \beta_3 D_i + u_i \tag{2}$$

In equation 2, the elasticity of employment with respect to GDP in country i is given as $\beta_{1+}\beta_2$. This is calculated by differentiating both sides of equation 2 and solving for $\partial E / \partial Y$:

$$\left(\frac{\partial E}{E}\right) = (\beta_1 + \beta_2)\left(\frac{\partial Y}{Y}\right) \rightarrow \frac{\partial E}{\partial Y}\left(\frac{Y}{E}\right) = \beta_{1+}\beta_2 \tag{3}$$

Using this econometric method, $\beta_{1+}\beta_2$ represents the change in employment associated with a differential change in output. Thus, an elasticity of 1 implies that every 1-percentage point of GDP growth is associated with a 1-percentage point increase in employment. An elasticity of 0.4 implies that every 1-percentage point of GDP growth is associated with employment growth of 0.4 percentage points, and so forth.

In order to capture differences in the employment-output relationship among different subsets of the population, ten separate elasticities were calculated for each country. The first four correspond to different demographic groups including the total employed, youth, females and males. Equation 2 was used to generate these four elasticities, in which E_i represents total employment for the respective group while Y_i represents total GDP.[3] Employment elasticities by economic sector (agriculture, industry and services) make up the remaining six elasticities. The first three sector elasticities were also calculated using equation 2, whereby E_i represents employment by sector and Y_i represents total GDP. The last three sector elasticities were generated using equation 4:

$$\ln E_i = \alpha + \beta_1 \ln V_i + \beta_2 (\ln V_i \times D_i) + \beta_3 D_i + u_i \tag{4}$$

E_i again represents employment by sector and V_i represents value added by economic sector. Thus, equations 2 and 4 were used to calculate two types of elasticities: the elasticity of employment with respect to total output, and secondly, with respect to value added in the given economic sector. As will be shown in the next section, examining these two specifications together is particularly useful for showing patterns of structural economic change, as well as for providing insights into the relationship between productivity growth and employment growth in various economic sectors.

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[3] Total GDP is also used in the calculation of youth, female and male elasticities. As a result, the elasticities by demographic group do not provide an indication of how employment for a given group varies with the group's respective output. Ideally, this would also be calculated, but data limitations (the absence of GDP broken down by age and sex) prohibit such a calculation.

At this point, it is important to raise a cautionary note regarding the relationship between employment elasticities and labour productivity. There is a fundamental arithmetic identity that links these concepts, which is given by:

$$Y_i = E_i \times P_i \tag{5}$$

where Y_i and E_i are, as before, output and employment, while P_i is equal to labour productivity (output per worker). Equation 5 implies that for small changes in output, the following holds:

$$\Delta Y_i = \Delta E_i + \Delta P_i \tag{6}$$

That is, for a given amount of output growth, ΔY, any increase in the rate of employment growth must be met by an equal and opposite decrease in labour productivity growth. In the context of this paper, the significance of this employment elasticity-productivity relationship is great: in formulating conclusions about elasticities, one must necessarily consider the productivity side of the relationship. If we divide equation 6 by output growth, ΔY, we derive the following:

$$\varepsilon = 1 - \frac{\Delta P}{\Delta Y}, \text{ where } \varepsilon = \frac{\Delta E}{\Delta Y} \tag{7}$$

Using equation 7 with different GDP growth scenarios clarifies the relationship between employment elasticities, ε, and actual employment growth and productivity growth. A summary of this relationship is provided in Table 2.1.

Table 2.1. Interpreting employment elasticities[4]

Employment elasticity	GDP growth	
	Positive GDP growth	Negative GDP growth
$\varepsilon < 0$	(-) employment growth (+) productivity growth	(+) employment growth (-) productivity growth
$0 \leq \varepsilon \leq 1$	(+) employment growth (+) productivity growth	(-) employment growth (-) productivity growth
$\varepsilon > 1$	(+) employment growth (-) productivity growth	(-) employment growth (+) productivity growth

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[4] This table corresponds to interpretations that can be made when output exactly corresponds with employment (e.g. total output and total employment, or agriculture value added and employment in agriculture). The relationships between productivity, employment and output may not hold in cases in which employment corresponds to a population subgroup (such as youth or women) and where total output is used instead of output for the population subgroup.

The cells of the table can be interpreted as follows:

- The upper left box shows that in countries with positive GDP growth, negative employment elasticities correspond with negative employment growth and positive productivity growth. For instance, in an economy growing at 2 per cent per annum with an employment elasticity of -0.2, the average rate of employment growth is approximately -0.4 per cent, while the average rate of productivity growth is 2.4 per cent.

- The middle left box shows that in economies with positive GDP growth, employment elasticities between 0 and 1 correspond with positive employment and productivity growth and higher elasticities within this range correspond to more employment-intensive (lower productivity) growth. Hence, an economy growing at 2 per cent per annum with an employment elasticity of 0.6 is experiencing average annual employment growth of about 1.2 per cent and average annual productivity growth of 0.8 per cent. This box typically represents the ideal, whereby job growth is occurring hand-in-hand with gains in productivity.[5]

- The lower left box shows that in economies with positive GDP growth, elasticities greater than 1 correspond with positive employment growth and negative productivity growth.

- The three boxes in the right column indicate that the interpretation of employment elasticities vis-à-vis employment growth and productivity growth is exactly the opposite in cases in which the corresponding GDP growth rate is negative.

Shortcomings of employment elasticities

Several shortcomings of using employment elasticities as an analytical tool should be borne in mind before attempting to draw inferences from them regarding employment performance. First, equations 2 and 4 reveal that the current methodology utilized to produce employment elasticities only takes into account information pertaining to historical employment and output growth. As a result, it is likely that the estimated employment elasticities, represented by $\beta_1 + \beta_2$, suffer from omitted variable bias, as no other variables that may influence either employment performance or overall economic performance are controlled for in this simple model. Nevertheless, the elasticities presented in this paper do provide a clear indication of how employment and output have historically varied together over time. The results should thus be interpreted as evidence of correlation rather than of causality.

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[5] Kahn (2001) asserts that employment elasticities in developing economies should ideally be around 0.7 until these economies attain upper-middle-income status. He demonstrates that employment elasticities gradually fall as a country becomes more developed and more labour scarce. Kahn argues that labour-abundant economies, and especially those with relatively high incidences of poverty, need to achieve relatively higher employment intensity than do less labour-abundant economies.

Second, employment elasticities within a given country or even at the regional level can display a large degree of volatility from one period to the next. While regression techniques help to "smooth" results by giving average incremental changes over time, employment elasticities can still display large fluctuations from one period to the next. Volatility in the estimates has several potential sources including real changes in the relationship between employment growth and output growth, changes in only one of these two variables, or mere statistical "noise". The first case is not worrisome, as it is indicative of real changes in the underlying relationship between the variables under examination. The second case applies especially in cases in which output growth is very small. Indeed, countries with GDP growth close to zero may exhibit large swings in employment elasticities arising from relatively small changes in the underlying variables. It is therefore important to keep the country or region's relative GDP performance in mind when interpreting elasticities. Finally, the third case arises mainly due to small sample size issues. Because the elasticities calculated in this paper are for relatively short time periods, the relatively small number of observations for each period in each country can result in statistical "noise" and thus in a lower degree of certainty in the elasticity estimates themselves. The pooled data approach taken up in equation 2 provides some relief to this problem in the form of adding additional degrees of freedom, yet it is important to note that the individual country-level elasticities presented in the paper as point estimates do have a degree of statistical uncertainty.

Lastly, there is a danger in terms of assuming that seemingly favourable trends in employment intensity are indicative of positive overall macroeconomic performance in a given country or region. While it is indeed crucial to get the employment side of the macroeconomic picture right, success in this regard by no means automatically translates into other favourable outcomes, such as poverty alleviation. It is therefore important to assess trends in employment elasticities together with other important macroeconomic variables, such as trends in output growth, inequality, real wages, poverty rates, and others. Yet despite these significant issues and shortcomings, the sections that follow discuss in detail the very useful information that can be ascertained by examining trends in the employment intensity of growth.

Data used

In terms of data requirements for the present analysis, several sets of information are required to produce the various elasticities examined in this paper. Data on employment, unemployment and employment-by-sector were taken from the ILO's Global Employment Trends (GET) database (ILO, 2005b). Employment and unemployment figures contained in the database are based on the ILO Key Indicators of the Labour Market (KILM) database (ILO, 2003a), while labour force estimates are derived from the ILO LABPROJ database (ILO, 2003b). UN Population Division data (2002 revision) were used as overall population benchmarks (UN, 2002). All national GDP and sector value-added figures utilized in the paper are expressed in constant local currency units (LCUs). These were taken from the World Bank's World Development Indicators 2004 database (World Bank, 2004).

The time period under examination is 1991-2003, which is divided into the three periods of 1991-95, 1995-99, and 1999-2003. These periods were chosen because each witnessed distinct regional macroeconomic events that played large roles in shaping overall employment outcomes. The first period contains the initial transition phase following the dissolution of the former Soviet Union. The second period captures the East Asian and Mexican financial crises. The final period captures the bursting of global equities market bubbles and the sharp contraction in economic growth throughout much of the developed world, as well as the financial crises in Argentina and the Russian Federation and the economic recovery in South-East Asia.

3. World and regional trends in employment elasticities

Previous estimates

While there have not been any previous estimates of employment elasticities with precisely the same geographic coverage and time periods as those used in this paper, the results of several previous studies are useful for broad comparative purposes. Mourre (2004) provides estimates of economy-wide employment elasticities in the Euro area and the United States, covering the periods 1986 to 1990 and 1997 to 2000. He finds that employment elasticity in the Euro area increased from 0.4 to 0.6 while it fell from 0.6 to 0.4 in the US between the first and second periods.[6] He also examines the job intensity of growth in different economic sectors and finds that the Euro-area's market-related service sector exhibited very high employment elasticities between 1997 and 2001, which likely contributed to the rise in the region's overall employment elasticity. In their analysis of employment intensity in G7 economies, Padalino and Vivarelli (1997) find evidence of a "structural difference" between North America, Europe and Japan with regard to employment elasticities, with North America historically characterized by more employment-intensive growth.

Saget (2000) examines data from 11 Transition Economies in Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS) for the period 1989-98. She detects three types of elasticity patterns in the region. First, in countries such as Poland, Hungary and Slovenia, employment growth appears closely linked with GDP growth, as evidenced by relatively high employment elasticities. In the second group, including the Baltic States, the Slovak Republic and the Russian Federation, the elasticity is much lower. In the third country group, made up by Bulgaria, Romania and Ukraine, no statistically significant relationship between employment and GDP was detected. Saget concludes that the high share of national output in the informal economy is likely to be accountable for the weak relationship in the third group, simply because the GDP figures used were not representative of actual output. In addition, she finds that after 1994 the CEE economies had low employment elasticities, reflecting both poor employment performance and gains in productivity necessitated during the transition to a more market-oriented system.

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[6] These estimates were generated using the arc elasticity formula given in equation 1.

Mazumdar (2003) provides regional employment elasticities for the manufacturing sector for East Asia, the OECD economies, Latin America and the Caribbean (LAC) and sub-Saharan Africa for the two time periods 1971-80 and 1981-92. He finds that in manufacturing, elasticities declined in each of these regions between the two periods, while the OECD and LAC countries experienced negative manufacturing employment elasticities in both periods. Padalino and Vivarelli (1997) also examine elasticities in manufacturing and found negative elasticities in all cases except Japan over the 1980-94 period.[7]

While many of the historical results correspond to different time periods and different regional groupings, they can indeed provide useful background information and facilitate some comparisons with the present results. Keeping these previous results in mind, the next sections provide the details of the current estimates of global and regional employment elasticities.[8]

Global results

Table 3.1 provides global employment elasticities by age and sex along with the average annual global GDP growth rates for the three time periods under investigation.[9] The aggregated figures are based on country-level elasticities that were generated using the methodologies outlined in the previous section.[10]

Table 3.1. Global employment elasticities by age group and sex, 1991-2003

	1991-1995	1995-1999	1999-2003
Total	0.34	0.38	0.30
Youth	-0.02	0.11	0.06
Female	0.40	0.44	0.33
Male	0.30	0.34	0.29
GDP growth (%)	2.9	3.6	3.5

The results shown in this table shed light on global trends in employment and productivity between 1991 and 2003. First, for every 1-percentage point of additional GDP growth, total employment has grown between 0.3 and 0.38 percentage points during the three periods between 1991 and 2003. This implies that around two-thirds of the economic growth realized between 1991 and 2003 can be attributed to gains in productivity, while one-third resulted from increased labour supply. Of the three periods, employment growth was strongest in the period from 1995 to 1999, which was also the period with the strongest global economic growth. Significantly, during the most recent

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[7] Kahn (2001) takes an extensive look at regional and country-level trends in manufacturing employment elasticities.

[8] Many other studies have investigated the relationship between employment growth and output growth, without explicitly discussing employment elasticities. This literature is excluded from the present discussion.

[9] A list of countries included in the global and regional estimates is provided in Appendix 1. The actual country-level elasticities by age group, sex and economic sector are provided in Appendix 2.

[10] Aggregations of elasticities and GDP growth rates were carried out as described in Appendix 3.

period there has been a slight decline in the rate of GDP growth coupled with a reduction in the employment intensity of growth.

In terms of differences in global elasticities along demographic lines, the figures show that the youth cohort (aged 15-24) has experienced low and stagnant employment elasticities. This has important implications: taking the most recent historical youth employment elasticity of 0.06 along with the forecasted average annual growth rate in the world's youth labour force of 0.5 per cent per between 2003 and 2015 (ILO, 2004c), a quick calculation reveals that global GDP growth of around 10 per cent is required just to generate enough jobs to maintain *constant* youth unemployment. Thus, the very low youth employment elasticity indicates that the employment intensity of economic growth for the world's youth population is insufficient and that in order to avoid a substantial increase in the number of unemployed youth, economies will need to develop plans for translating economic growth into employment gains for their young labour force entrants.[11]

Another interesting demographic observation that can be made at the world level is that female employment elasticities have exceeded male elasticities in each of the three periods. As will be discussed further in the analysis of regional results, it appears that this is due in part to a convergence, or "catching up", in terms of women's labour force participation relative to men's. Yet, higher female elasticities could also be indicative of greater relative responsiveness of female employment to both economic growth and economic contraction, whereby women suffer more than men in terms of employment lost during economic downturns. Furthermore, given that the trends in employment intensity presented in this paper do not provide an indication of changes in job quality, another plausible explanation is that women may tend to be engaged in lower-wage and lower-productivity (i.e. lower quality) jobs. Sex-based segregation of occupations is another potential explanation, whereby women may tend to work in more labour-intensive sectors than men.

Table 3.2 provides a picture of historical global employment elasticities and value-added growth by economic sector. This is based on country-level results generated using equation 4. The GDP elasticity shows the percentage point change in sector-specific employment associated with a 1-percentage point change in overall GDP. The value-added elasticity gives the percentage point change in sector employment associated with a 1-percentage point change in output in the corresponding sector. These two figures taken together can be useful indicators for measuring broad historical structural economic changes.

There is a large and diverse literature on the mechanics of structural change and the corresponding stages of economic development. Fisher (1939) and Clark's (1940) initial observations that economies move from predominantly agrarian production to secondary and tertiary economic activities during the process of economic development remain

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[11] This argument does not, however, account for the possibility of exogenous changes (perhaps owing to ageing of populations, particularly in the developed world, or changes in youth labour force participation rates) impacting on the youth employment elasticity in the coming years.

informative in the present context.[12] While the process of structural change is clearly a long-run phenomenon, the 12-year period under examination is sufficient to provide insights on current trends in employment and output by economic sector. In this regard, the sector GDP elasticity indicates whether employment is growing or shrinking in a given sector, both overall as well as relative to other sectors. The sector value-added elasticity gives an indication of the extent to which growth in a given sector is being driven by productivity or employment. The former may be indicative of labour-substituting production and the potential for a future sector-specific labour surplus.

Table 3.2. Global employment elasticities and value-added growth rates by economic sector, 1991-2003[13]

	Agriculture	Industry	Services
Sector GDP elasticity	0.24	0.21	0.61
Sector value-added elasticity	0.41	0.28	0.57
Average annual value-added growth rate (%)	2.0	2.1	3.0

Beginning with the GDP elasticity, it is clear that at the global level, all three sectors have experienced employment growth over the full period, though the elasticity of services employment to GDP was nearly three times as large as the corresponding figure for agriculture and services. This implies that at the global level there is evidence of structural change, as employment is being generated in the service sector at a considerably faster rate than in the other sectors. However, this structural change has not been associated with a net loss in jobs in manufacturing or agriculture.

In terms of value-added growth and value-added elasticities, the service sector was both the fastest growing sector and the sector with the most job-intensive growth. Indeed, for every 1-percentage point of growth in service sector value added, employment increased by 0.57 percentage points (while the corresponding growth in productivity was 0.43 percentage points). On the other hand, in the agriculture sector and especially in the industrial sector, value-added growth has been driven more by gains in productivity than by gains in employment.

These global results are useful for recognizing broad trends and for highlighting the uses of the employment elasticity as a labour market indicator. The remainder of the section provides a more detailed view of the figures by looking at region-specific trends in employment intensity.

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[12] The level of sector disaggregation utilized in this paper is quite broad and therefore ignores potentially important within-sector heterogeneity, as well as between-sector interrelationships and interdependence (see Andersen and Corley, 2003). However, these broad categories were chosen due to their overall data coverage and cross-country comparability.

[13] Value added growth rates correspond with the 139 countries for which sector value added elasticities were calculated. These countries are indicated by an asterisk in Appendix 1.

Developed Economies[14]

Table 3.3. Employment elasticities by age group and sex and average annual GDP growth in the Developed Economies, 1991-2003

	Total			Youth			Female			Male			GDP growth		
	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003
Western Europe	-0.09	0.36	0.42	-3.38	-0.30	-0.35	0.32	0.56	0.77	-0.38	0.22	0.16	1.5	2.5	1.7
North America	0.67	0.44	0.23	0.75	0.41	0.13	0.66	0.49	0.32	0.68	0.39	0.15	3.1	4.1	2.4
Japan	0.34	0.20	-0.24	0.06	-1.55	-2.29	0.15	0.32	-0.11	0.47	0.12	-0.32	1.1	1.0	1.6
Australia and New Zealand	0.55	0.35	0.57	0.41	-0.24	0.32	0.69	0.44	0.72	0.45	0.27	0.44	4.0	4.1	2.8

Turning to the results in Table 3.3, it is clear that the developed economy sub-regions witnessed very diverse employment outcomes. The employment elasticity from 1991 to 1995 in **Western Europe** reflects the region's very poor overall employment generation in the period. Over the four years, unemployment rates rose 2.1 percentage points in Western Europe, while the number of unemployed increased by over 25 per cent (ILO, 2005b). Between 1995 and 1999, Western Europe witnessed faster overall economic growth together with an increase in the employment intensity of growth. The employment picture thus improved, which was evidenced by a drop of nearly 1 million in the total number of unemployed. Employment intensity in the final period increased further, with the region's unemployment rate declining by another 1 percentage point. However the very low economic growth rate in the region between 1999 and 2003 began to impact both on employment and productivity growth in the latter half of the period.

Interesting patterns emerge when examining elasticities in Western Europe by sex. Most prominently, female employment elasticities have exceeded male elasticities in each of the periods. The underlying causes appear to relate to differences between women and men in the region with regard to historical labour force participation and unemployment rates. First, while male labour force participation rates have fallen over each of the periods, female participation has risen considerably over the full 12-year period (ILO, 2005b). Second, the female unemployment rate was lower in 2003 than in 1991, whereas the male unemployment rate was slightly higher at the end of the period (ILO, 2005b). These figures indicate that in terms of aggregate employment, the situation in Western Europe has improved considerably for women seeking work.

The employment elasticity and economic growth figures in **North America** show a near opposite pattern to those in Western Europe, echoing Padalino and Vivarelli's (1997) finding of a structural difference between the two regions. Economic growth rates in North America exceeded those in Western Europe in each of the three periods and the region experienced relatively more employment-intensive growth during the first two periods, resulting in a decline of nearly 2.5 million unemployed between 1991 and 1999. However, the bursting of the global equities market bubble, the terrorist attacks of

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[14] The regional and subregional groupings utilized in this paper are derived from those published in the ILO *Global Employment Trends Brief* (2005c).

September 11th, 2001, and the ensuing recession in the United States reversed these positive labour market trends. From 1999 to 2003 economic growth in North America was only about one-third as employment intensive as during the 1991 to 1995 period, while the rate of economic growth declined sharply. Not surprisingly, unemployment grew by over 3 million between 1999 and 2003.

When comparing differences in elasticities between the demographic groups in Western Europe and North America, it is clear that economic growth has been more employment-intensive for youth in North America. Western Europe's negative youth employment elasticities reflect demographic change (declining youth populations), coupled with falling participation among youth in labour markets – not a systematic rise in youth unemployment rates. In North America, youth populations are growing, while participation in the labour market among youth has remained rather steady. The youth employment elasticities in the first two periods were high enough to translate into declines in youth unemployment rates. However, in the most recent period, the employment intensity of growth among youth has declined sharply and youth unemployment rates have consequently been on the rise. In addition, these figures do not provide an indication of the *quality* of jobs being created for youth.

Female employment elasticities indicate that gender-related differences clearly exist when comparing the North American and Western European labour markets. This is most visibly indicated by the smaller gap between male and female employment elasticities in North America than in Western Europe. The main reasons for this appear to be the smaller gender gap in labour force participation and unemployment rates in North America (ILO, 2005b).

Japan has experienced low and falling employment elasticities, a trend that is clear in each of the demographic subgroups. Accordingly, unemployment rates in the country have risen throughout the three periods, with higher increases registered by the youth cohort. Labour force participation rates among both women and men have declined, highlighting the adverse effects of a decade of economic stagnation. **Australia and New Zealand**, on the other hand, enjoyed relatively favourable growth and employment outcomes between 1991 and 2003. Growth in employment and output was particularly robust during the first two periods, in which aggregate employment grew by over 15 per cent and unemployment rates declined by over 3 percentage points (ILO, 2005b). The latter period witnessed continued employment growth, though growth in output slowed.

Table 3.4. Employment elasticities and growth in value added by economic sector, Developed Economies, 1991-2003

	Agriculture		Industry		Services		Average annual value-added growth rate (%)		
	GDP	Value added	GDP	Value added	GDP	Value added	Agr.	Ind.	Serv.
Western Europe	-1.08	-1.39	-0.50	0.49	0.74	0.62	1.0	1.1	2.5
North America	-0.02	-0.09	0.26	0.27	0.60	0.53	3.5	3.0	3.7
Japan	-2.04	0.95	-0.83	-0.14	0.76	0.49	-2.1	-0.4	2.1
Australia and New Zealand	0.18	0.14	0.26	0.37	0.61	0.56	3.6	2.8	4.3

In contrast with the global trends in sector-specific employment elasticities, in the developed economies the sector-specific data provide a clear picture of ongoing structural change accompanied by net employment losses in agriculture and industry. In Western Europe, as evidenced by the GDP elasticities, there has been a pronounced reduction in employment in both agriculture and industry, in parallel with growth in the service sector. The value-added elasticities in the region point to labour-substituting productivity growth in agriculture, growth in industry shared roughly equally between employment and productivity growth and growth in the dynamic service sector biased more towards employment growth than productivity growth. The structural trend in North America has been similar, albeit less pronounced, to that in Western Europe.

In North America, GDP growth has been associated with a marginal decline in employment in agriculture, and there is evidence once again that the sector is experiencing labour-substituting productivity growth, though at a more moderate pace. Despite widespread reports of jobless growth and the decline of manufacturing in the United States, for the full 1991 to 2003 period, employment in industry did grow modestly, and productivity gains in the sector have not been associated with job destruction. Finally, as in Western Europe, the service sector in North America has experienced the most robust growth – both in terms of value-added growth and employment growth.

Japan has witnessed job losses and declining output in both agriculture and industry, with the service sector experiencing both a positive growth in employment and a positive growth in output of 2.1 per cent per annum. These trends point to structural change as well as to the country's stagnant employment and output growth throughout the years under consideration. Australia and New Zealand stand in contrast to the experiences in the other developed regions, as employment growth was considerably more balanced between the three sectors, as evidenced by the elasticities with respect to both GDP growth and value added.

Transition Economies

Table 3.5. Employment elasticities by age group and sex and average annual GDP growth in the Transition Economies, 1991-2003

	Total			Youth			Female			Male			GDP growth		
	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003
Central and Eastern Europe	0.24	0.01	-0.19	0.00	-0.22	-1.26	0.09	-0.11	-0.31	0.35	0.10	-0.11	2.0	3.0	3.5
CIS	0.19	0.28	0.18	0.22	0.35	0.15	0.23	0.26	0.22	0.15	0.31	0.14	-10.9	-0.1	7.2

The Transition Economies underwent substantial labour market and overall macroeconomic adjustments during the 1991 to 2003 period. Yet despite experiencing severe macroeconomic shocks during the transformation towards more market-based economic institutions, **Central and Eastern Europe (CEE)** was able to achieve positive average rates of economic growth in each of the three periods. The **Commonwealth of**

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Independent States (CIS) stood in stark contrast, with average annual economic growth rates of negative 10.9 per cent in the first period and continued negative growth in the second period. However, the CIS has begun to recover, and has registered considerably faster economic growth rates between 1999 and 2003.[15]

A look at trends in employment elasticities in the two regions reveals further divergence. In Central and Eastern Europe, there has been a steady deterioration in the region's employment intensity of growth and the last period's positive annual GDP growth rate of 3.5 per cent went hand in hand with job shedding. Accordingly, in CEE it is clear that productivity growth has benefited at the expense of employment growth throughout much of the period following the disintegration of the Soviet Union. Youth have fared the worst in each of the three periods – youth unemployment rates have risen sharply while their labour force participation has fallen. However, the size of the youth population has also remained relatively stagnant, rising by only 0.4 per cent per annum over the period, which somewhat mitigates the need for new employment generation for youth (ILO, 2005b). Finally, in contrast with the global figures, women in CEE have fared worse than men with respect to these employment trends.[16]

In the CIS, following two periods of very adverse employment outcomes, the most recent period has witnessed substantial improvements in employment generation. Youth have also fared the worst in the CIS, with total youth employment shrinking on average by 1.6 per cent per annum. Meanwhile, the youth population grew by over 1.3 per cent during the period, so the need for new job creation for youth remains great. The overall comparative trends between female and male employment elasticities in the CIS are not markedly different. Women fared somewhat worse initially in terms of job destruction, but employment among women rose faster in the last period than among men.

Table 3.6. Employment elasticities and growth in value added by economic sector, Transition Economies, 1991-2003

	Agriculture		Industry		Services		Average annual value-added growth rate (%)		
	GDP	Value added	GDP	Value added	GDP	Value added	Agr.	Ind.	Serv.
Central and Eastern Europe	-0.51	-1.06	-0.11	0.09	0.51	0.47	0.7	2.9	3.4
CIS	0.23	0.41	0.65	0.42	0.02	0.15	-1.2	-4.1	-0.5

The sector-specific elasticity trends in CEE reveal ongoing structural change. As GDP has grown in the region, jobs have been shed in both agriculture and industry, while employment in the service sector has expanded. Every 1-percentage point of GDP growth has been associated with a reduction of 0.51 percentage points in agricultural employment and 0.11 percentage points of employment in industry. Value-added growth in agriculture and industry has been fully driven by productivity growth – an increase in agriculture value added has actually been associated with a *decline* in employment in

[15] For helpful background information on these regions, see "Global Employment Trends Supplement for Europe and Central Asia, February 2005", Geneva, ILO (2005).

[16] For further discussion of factors contributing to labour market outcomes in CEE during the region's transition to a market-based system, see Nesporova, 2003.

agriculture. Employment and productivity contributed roughly equally to growth in service sector value added, as evidenced by the sector's value-added elasticity of 0.47.

In the CIS, both employment and productivity have declined in agriculture and industry, while there has been little correlation between GDP growth and employment growth in the service sector. Every 1-percentage point reduction in GDP was associated with a decline of 0.23 percentage points in agricultural employment and a reduction of 0.65 percentage points in industrial employment. The value-added elasticities indicate that both employment and productivity declined in each of the sectors. In both the agriculture and industry sectors, every 1-percentage point reduction in value-added output has been associated with a reduction of around 0.4 percentage points in employment (and hence a reduction of 0.6 percentage points in labour productivity). In services, the decline in value added has been met by an even greater relative fall in productivity than employment. However this sector also experienced the highest growth rate.

Asia and the Pacific

Table 3.7. Employment elasticities by age group and sex and average annual GDP growth in Asia and the Pacific, 1991-2003

	Total			Youth			Female			Male			GDP growth		
	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003
East Asia	0.14	0.14	0.18	-0.23	-0.45	0.07	0.16	0.17	0.18	0.13	0.12	0.18	11.6	7.4	7.7
South-east Asia and the Pacific	0.39	0.20	0.42	0.12	0.31	0.10	0.38	0.20	0.49	0.39	0.20	0.37	7.4	1.6	4.8
South Asia	0.40	0.49	0.36	0.10	0.27	0.06	0.49	0.61	0.30	0.37	0.44	0.38	6.0	5.8	5.1

The Asia and Pacific region has unquestionably witnessed the most dynamic growth and development of all of the regions of the world between 1991 and 2003, with average annual GDP growth over the three periods ranging between 7.4 per cent and 11.5 per cent in East Asia, and between 5.1 and 6.0 per cent in South Asia. Yet, the region also struggled through the Asian financial crisis during the second period, through its adverse effects on countries in South-East Asia. This is evidenced by South-East Asia's sharp drop in output growth in the 1995 to 1999 period.

Trends in employment elasticities provide further detail on both the region's successes as well as its struggles with the Asian crisis. In **East Asia**, total employment elasticities have remained quite low in comparison with global figures. Combined with high GDP growth rates, this implies that the region has experienced robust productivity growth. However, unemployment rates have remained fairly steady. Consequently, the region's growth has been sufficiently employment-intensive, while allowing for rapid increases in living standards through productivity growth.[17] Youth employment elasticities stand in contrast to the overall results, as jobs were shed among youth in each of the first two periods. However, it appears that this is the result of youth leaving the labour force (e.g. for continued education and training) rather than a systematic adverse employment

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[17] For a discussion of employment and productivity growth performance in East Asia, see ILO, 2005.

trend for the cohort (ILO, 2004c). There has been very little difference in employment intensity among women and men, which is not particularly surprising given the relative gender equality in terms of both labour force participation and unemployment rates in the region (ILO, 2005b).

Owing to the Asian financial crisis, **South-East Asia** experienced a large degree of volatility in overall economic and employment performance in the three periods. From 1991 to 1995, the region's output grew by over 7.4 per cent and the overall employment elasticity of 0.39 was high enough to translate into a reduction in total unemployment. In the period corresponding with the financial crisis, the region's overall employment elasticity fell, indicating that the reduction in output was met with a greater relative decline in employment growth than in productivity growth. However the sharp increase in the youth employment elasticity during the crisis indicates that youth employment was disproportionately adversely affected by the crisis. The most recent period has witnessed a substantial increase in employment intensity in the region, coupled with a more moderate rise in output. In each of the periods, there has been little difference between the sexes with regard to employment intensity.

South Asia's strong growth between 1991 and 2003 has given rise to higher living standards, declining poverty rates and faster overall development in the region. Yet, the region remains one of the poorest in the world. Employment intensity trends in South Asia have been more similar to South-East Asia than East Asia. One likely explanation for this is that while East Asia's working-age population expanded by around 18 per cent between 1991 and 2003, owing to different fertility patterns, the working-age population in both South-east Asia and South Asia grew by about 32 per cent. Thus, for a given rate of GDP growth, South-east Asia and South Asia require a higher relative employment elasticity to maintain stable unemployment. The differences in elasticities by sex are starker in South Asia than in the other Asian regions. One potential explanation for this is South Asia's substantially larger initial gender gap in labour force participation and the subsequent catching-up by women in the labour market. This question will be explored further in the discussion on elasticity determinants in Section 4. Overall, the employment intensity of growth in South Asia has allowed for relatively solid employment growth, while also allowing for rapid increases in labour productivity. As will be shown below, however, a slightly different picture emerges when examining the sector elasticities.

Table 3.8. Employment elasticities and growth in value added by economic sector, Asia and the Pacific, 1991-2003

	Agriculture		Industry		Services		Average annual value-added growth rate (%)		
	GDP	Value added	GDP	Value added	GDP	Value added	Agr.	Ind.	Serv.
East Asia	0.10	0.23	0.07	0.06	0.47	0.50	3.7	12.5	8.8
South-East Asia	0.01	0.20	0.82	0.68	1.08	0.99	2.1	5.4	4.6
South Asia	0.38	0.71	0.41	0.37	0.46	0.36	2.9	5.9	6.9

Breaking down these regional results by economic sector provides some additional information on overall trends. The value-added growth rates reveal that East Asia and

South-East Asia's growth has been led by growth in industry, which grew at an average annual rate of 12.8 per cent in the former and at 5.4 per cent in the latter, followed by growth in services, which grew at 8.8 per cent in East Asia and 4.6 per cent in South-East Asia. Service-sector growth in South Asia, at 6.9 per cent, slightly outpaced the 5.9 per cent average annual growth rate in the region's industrial sector.

In terms of sector employment-to-GDP elasticities, in East Asia a 1-percentage point increase in GDP was associated with an increase of 0.1 percentage points in agricultural employment, 0.07 percentage points in industrial employment and 0.47 percentage points in employment in services. In South-east Asia, a 1-percentage point increase in GDP was associated with essentially no growth in agricultural employment, 0.82 percentage points in industrial employment and 1.08 percentage points in services employment. These figures are indicative of an ongoing structural movement toward a larger share of industry and service-sector employment in the region. Finally, in South Asia a 1-percentage point increase in GDP was associated with an increase in agricultural employment of 0.38 percentage points, an increase in industrial employment of 0.41 percentage points and an increase in service-sector employment of 0.46 percentage points. Thus, of the three regions, South Asia is exhibiting the least degree of structural economic change away from agriculture and into industry and services.

The value-added elasticities indicate that East Asia's industrial output growth is being led by robust productivity gains. The same is true to a lesser extent for the region's agricultural sector, while growth in services has corresponded with roughly equal gains in employment and productivity. It is important to note, however, that the very rapid growth that has taken place in all three sectors in East Asia facilitated both sufficient employment generation as well as rapid productivity gains. This trend has led to a "virtuous cycle" of employment growth, productivity growth and poverty reduction in the region (ILO, 2005). In South-east Asia, agricultural growth has been driven more by productivity growth, while growth in industry and particularly services has been led by employment growth. South Asia provides a contrast, as growth in agriculture has been driven mainly by employment growth, while around two-thirds of industrial and services output growth has been due to growth in labour productivity.

Latin America and the Caribbean

Table 3.9. Employment elasticities by age group and sex and average annual GDP growth in Latin America and the Caribbean, 1991-2003

	Total			Youth			Female			Male			GDP growth		
	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003
Latin America	0.65	0.70	0.45	0.38	0.04	-0.23	0.96	1.01	0.49	0.49	0.52	0.43	3.5	2.7	1.4
Caribbean	0.43	0.37	-0.42	0.32	0.61	-0.94	0.53	0.59	-0.51	0.40	0.23	-0.35	1.9	5.2	2.5

The Latin America and the Caribbean regions achieved modest to moderate rates of economic growth from 1991 to 2003. In Latin America, GDP growth was fastest in the period from 1991 to 1995 and subsequently decelerated in each of the following periods.

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The region has weathered two major financial crises – one occurring in Mexico primarily in the second period and the other in Argentina during the final period. Growth rates in the Caribbean have also experienced volatility, with the best growth performance registered between 1995 and 1999.

Overall, economic growth in **Latin America** has been more employment-intensive than growth in the Caribbean. One potential reason for this, which will be investigated in greater detail in the next section, is that the Latin America region has faster overall population and labour force growth than the Caribbean. To this end, in order to maintain stable unemployment, Latin America requires greater employment intensity for a given level of growth. Youth unemployment remains a problem in both regions. In Latin America, youth employment elasticities have fallen in each of the periods. Accordingly, youth unemployment rates have risen over the full 12-year period (ILO, 2005b). Economic growth has been more employment intensive for females than for males throughout each of the periods, though this difference has narrowed. This trend is likely due in part to a substantial narrowing of the labour force participation gap between men and women over the course of the 12 years.

Employment elasticities in the **Caribbean** have also shown a trend decline. Following declining unemployment rates in each of the first two periods, the region's overall unemployment rate rose between 1999 and 2003. Youth unemployment rates, though high, declined during the first two periods. However the final period also witnessed deterioration in the employment picture for youth. Female unemployment rates in the Caribbean are considerably higher than the corresponding rates for men (ILO, 2004b; Elder and Schmidt, 2004). The higher relative female employment elasticities during the first two periods translated into fairly large reductions in these rates, but the employment picture for women also deteriorated during the 1999 to 2003 period.

Table 3.10. Employment elasticities and growth in value added by economic sector, Latin America and the Caribbean, 1991-2003

	Agriculture		Industry		Services		Average annual value-added growth rate (%)		
	GDP	Value added	GDP	Value added	GDP	Value added	Agr.	Ind.	Serv.
Latin America	-0.16	-0.33	0.63	0.54	1.09	1.04	2.5	2.2	2.6
Caribbean	-0.38	-0.11	-0.21	0.05	1.02	0.99	2.5	3.7	3.8

There is evidence of ongoing structural change in both Latin America and the Caribbean, particularly regarding movement away from employment in agriculture and into the service sector, the latter having grown the fastest in both regions. It is important to note that the service sector growth that occurred over the period was led fully by employment growth rather than by productivity growth – a different pattern as compared with other regions of the world. Industry continues to contribute to job growth in Latin America, and the growth in industry value added has been shared almost equally between productivity and employment gains. In the Caribbean, in terms of elasticity trends, it can be said that the industrial sector is in moderate decline vis-à-vis employment, while the majority of value-added growth in the sector has been due to growth in productivity.

Table 3.11. Employment elasticities by age group and sex and average annual GDP growth in Africa and the Middle East, 1991-2003

	Total			Youth			Female			Male			GDP growth		
	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003	1991 - 1995	1995 - 1999	1999 - 2003
Middle East	1.10	1.29	0.91	0.82	1.79	0.98	2.11	2.12	1.09	0.83	1.03	0.85	3.9	3.0	4.1
North Africa	0.30	0.74	0.51	0.24	0.71	-0.34	0.41	1.04	0.59	0.26	0.65	0.50	2.2	4.8	4.1
Sub-Saharan Africa	0.73	0.82	0.53	0.72	0.90	0.62	0.79	0.89	0.57	0.69	0.76	0.50	1.1	3.2	3.2

The sub-regions in Africa and the Middle East[18] have some of the highest employment elasticities of any of the areas under examination, reflecting the sub-regions' unique growth, employment and poverty-related characteristics. In the **Middle East**, overall elasticities were greater than one in each of the first two periods, which means that labour productivity actually declined. Between 1999 and 2003, the region did manage to generate some labour productivity growth (coupled with robust GDP growth of 4.1 per cent per annum), but overall gains in output are still skewed heavily toward employment growth rather than labour productivity growth. There is a large difference in employment elasticities by sex in both the Middle East and **North Africa**, with female elasticities considerably higher than those for males in each of the periods. These two regions have the highest gender gap in labour force participation, implying that the higher elasticities likely reflect a "catching-up" in terms of participation among women.

Youth unemployment remains a serious problem in both the Middle East and North Africa. In the Middle East, youth unemployment rates have remained relatively stable over the three periods. In North Africa, the low youth employment elasticity in the first period is reflective of the rapidly increasing youth unemployment rates during that time. This was followed by a pickup in the employment intensity of growth for youth and a sharp increase in youth employment. During the final period, youth employment has fallen in the region, owing both to rising unemployment and decreased youth labour force participation.

In **sub-Saharan Africa**, relative stability in employment elasticities and the relative homogeneity in elasticity levels across demographic groups highlight the shared struggles among the vast majority of workers in the region with regard to poverty and low productivity employment. Low labour productivity growth has hampered development in the region and the elasticity figures in Table 3.11 point to some improvement in the share of output growth accounted for by growth in productivity. Nevertheless, the region's

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[18] This grouping combines the two ILO Global Employment Trends regions of the Middle East and North Africa and sub-Saharan Africa. This was done primarily due to data considerations. In addition, Israel is included in the Middle East region, whereas it is in the Developed Economy region in the Global Employment Trends publications. This modification was made due to the fact that Israel has experienced more similar trends in employment intensity to its geographic neighbours over the periods under examination than to the other economies in the Developed region.

very high population growth rate necessitates high employment intensity of growth. In terms of overall economic performance, the higher economic growth rates of the last two periods under examination represent a positive trend. Continued growth in output, with gains shared between productivity and employment are required for long-term, sustainable development in the region (ILO, 2005).

Table 3.12. Employment elasticities and growth in value added by economic sector, Africa and the Middle East, 1991-2003

	Agriculture		Industry		Services		Average annual value-added growth rate (%)		
	GDP	Value added	GDP	Value added	GDP	Value added	Agr.	Ind.	Serv.
Middle East	2.06	1.94	1.10	0.26	0.80	0.70	3.9	1.3	4.6
North Africa	0.88	0.55	0.45	0.43	0.77	0.76	2.4	3.2	4.0
Sub-Saharan Africa	0.69	0.82	0.88	0.90	0.89	0.79	2.3	2.0	2.8

Based on the data by sector provided in Table 3.12, there is no evidence of systematic structural economic change taking place in these three regions. Indeed, in the Middle East and in North Africa, the agricultural sector has seen the most job growth of the three sectors. In sub-Saharan Africa, the overall employment intensity of growth has been greatest in the service and industry sectors.

Growth in agriculture value added in the Middle East has coincided with rapid employment growth and declining productivity in the sector. In sub-Saharan Africa, agricultural growth has been driven mainly through employment growth, but the sector has also experienced some productivity gains – though not enough to have a positive impact vis-à-vis poverty reduction. Industry value-added growth has been led by productivity growth in both the Middle East and North Africa, whereas in sub-Saharan Africa it has been driven to a greater extent by employment growth. Notwithstanding the lack of structural change, the service sector has provided the fastest overall value-added growth rates in each of these regions. However, as with overall economic growth, growth in services throughout Africa and the Middle East continues to lag far behind other regions such as Asia and the Pacific.

The world and regional results discussed throughout this section have revealed substantial differences with regard to the employment intensity of growth between subsets of the population and among the different the regions of the world. In order to shed light on the possible factors influencing these diverse outcomes, the section that follows seeks to identify and analyse some of the main macroeconomic determinants of countries' employment intensity of growth.

4. Econometric modelling of employment elasticities

The substantial global coverage of the employment elasticities discussed in the previous section provides an opportunity to conduct a cross-country study of the determinants of the employment intensity of growth. This section utilizes some of the theoretical determinants of employment intensity put forth in the literature together with the main

observations regarding regional elasticity trends discussed in the previous section in order to identify robust correlates of employment intensity. The goal is thus to pinpoint some of the broad macroeconomic factors that might influence individual economies' employment intensity of growth.

There is a large literature that examines macroeconomic determinants of employment and labour productivity growth, but little investigative work has been done to try to identify the relationship between macroeconomic variables and the overall employment intensity of growth explicitly represented by the employment elasticity. Nevertheless, previous findings related to the determinants of both employment and productivity growth are clearly relevant in the present context and thus a brief overview of these findings is warranted.

Walterskirchen (1999) finds that increasing labour supply tends to raise employment and reduce productivity. This follows the classic economic notion that higher labour supply will lead to lower average wages and ultimately to an increase in demand for labour input. Beaudry and Collard (2002) examine the link between labour force growth (representing labour supply) and productivity and find a systematic, negative relationship between the two variables. However, they suggest that as countries become more integrated over time in the world economy this effect should diminish, due to convergence in capital flows between countries.

The determinants of employment intensity within the European context are explored by Döpke (2001). In this study, the share of services in real GDP, real labour costs, labour market institutions and exchange rate volatility are given as potential macroeconomic determinants of overall employment intensity. Döpke finds that a greater share of services leads to higher employment intensity and that in most of the countries under examination, there is a significant, negative relationship between real labour costs and employment elasticity. He posits that in general more labour market flexibility leads to more employment-intensive growth, but the related empirical findings are not robust. Finally, he suggests that while there are theoretically attractive arguments in support of the notion that exchange rate fluctuations lower employment intensity, the overall empirical results on this are ambiguous.

Bruno et al. (2001) investigate whether there are linkages between economic openness and labour demand elasticity. They argue that economic openness can allow firms to use more capital equipment in production, which may ultimately lead to a reduction in the responsiveness of labour demand to economic growth. However, they do not find any statistically significant relationship between trade openness and labour demand elasticity.[19]

Mourre (2004) discusses employment performance in the Euro-area economies and finds that the job intensity of growth has been highest in the service sector. His findings

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[19] Freeman (2004) also discusses the potential impact of trade and exchange rate fluctuations on labour markets. He argues that exchange rate volatility and international capital flows play a far more important role than trade in developing-country labour markets.

regarding labour tax rates support the notion of a negative correlation between the rate of labour taxation and long-run employment generation. Finally, he examines the effects of employment protection legislation (EPL) on job-intensity. The effects of EPL are mixed: while in general the sign on EPL is negative, Mourre's overall results are not statistically significant.

The interaction between inflation, labour market institutions and employment performance is investigated in Loboguerrero and Panizza (2003). Inflation can both encourage responsiveness of employment to changes in output (via its effect on reducing downward wage rigidity) and can decrease responsiveness (by increasing uncertainty of relative prices). The authors find that in industrialized economies, inflationary effects tend to have the former effect. Thus, all else equal, inflation in this context would be associated with higher employment elasticities. In developing economies, they find that neither effect appears to have a significant influence on employment performance.

Model specification and data used

For the purpose of the current empirical exercise, the dependent variables used are the total, youth and female employment elasticities corresponding to the full 1991-2003 period under examination in the previous section, which were generated for each country using equation 2. The explanatory variables were chosen based on observations of employment elasticity trends from the previous section as well as from previous findings in the literature. The variables fall into the following six broad categories: labour supply/demographics, economic structure, macroeconomic volatility and uncertainty, extent of economic openness, health, and tax policy and labour regulation. The variables under each of these categories are listed in Table 4.1.

Table 4.1. Variables examined[20]

Category	Variable(s)	Data source
Labour supply/demographics	Average annual growth in working-age population, 1991-2003	ILO LABPROJ, 2003
Economic structure	Share of employment in services, 1991	ILO GET Model, 2005
	Share of employment in industry, 1991	ILO GET Model, 2005
	Gender gap in labour force participation, 1991	ILO LABPROJ, 2003
Macroeconomic volatility & uncertainty	Average annual inflation rate, 1991-2003	IMF, WEO 2004
	Proportion of years with conflict, 1991-2003	IPRI, 2004
Economic openness and export orientation	Average percentage of trade in total GDP, 1991-2003	World Bank, WDI 2004
	Average trade balance, 1991-2003	World Bank, WDI 2004
Health	Malaria deaths per 100,000 inhabitants	WHO 2002
Tax policy and labour regulation	Highest individual tax rate, 1997	World Bank, WDI 2004
	Rigidity of employment index, 2004	World Bank, 2005

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[20] Descriptive statistics for each of the variables examined in this section are given in Appendix 4.

The **average annual growth in working-age population** was chosen as a proxy for labour supply, following the findings of Walterskirchen (1999) and Beaudry and Collard (2002). The main insight in this case is that a more rapidly expanding supply of labour should lead to more employment-intensive (lower productivity) growth.

The **share of employment in services** variable is based on findings of Mourre (2004), Döpke (2001) and Padalino and Vivarelli (1997). These articles find evidence of higher relative employment intensity in the service sector. The **share of employment in industry** variable is used as a control and to test whether there is any statistically significant difference in elasticities between the industrial and agricultural sectors.

The **gender gap in labour force participation** for 1991 was chosen due to the observance in the previous section that female employment elasticities in regions with greater overall gender gaps in participation tend to be higher. The coefficient on this variable is thus an indication of whether or not some degree of convergence in participation is occurring.

The **average annual inflation rate** and **proportion of years with conflict** variables were chosen as control variables to identify whether uncertainty regarding prices and physical security impact the labour market to a greater or lesser extent than overall output.

Following from Bruno et al. (2001), the variables corresponding with **economic openness** and **export orientation** were chosen to identify whether measures of globalization and external balance appear to have any measurable impact on employment intensity.

The **malaria deaths per 100,000 inhabitants** variable was chosen in order to identify whether there is a difference of the impact of the disease on productivity versus employment.[21]

The **highest individual tax** rate and **rigidity of employment index**[22] variables were chosen due to studies by Mourre (2004) and Döpke (2001). These previous findings suggest that the labour tax rates should be negatively correlated with employment intensity, while greater employment protection and rigidity may be negatively correlated with employment intensity.

The first specification used in this paper was constructed with the purpose of maximizing country coverage, and includes 154 countries. As a result, the independent variables in

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[21] Malaria (as well as HIV/AIDS) is known for its negative impact on labour, both in terms of labour productivity and aggregate employment (see for instance Willis, 2005, Fox et al., 2004, and McCarthy et al., 2000). In the present context, the question is whether the impact of malaria appears to be greater on either labour productivity or employment. Malaria was chosen in favour of HIV/AIDS due to better relative data availability.
[22] The "Rigidity of Employment" index is the average of three sub-indices including a "Difficulty of Hiring" index, a "Rigidity of Hours" index, and a "Difficulty of Firing" index. For more information, see: http://rru.worldbank.org/DoingBusiness/Methodology/HiringFiringWorkers.aspx

the model exclude those related to tax policy and labour regulation, as these indicators are available for substantially fewer countries. Ordinary Least Squares (OLS) regression techniques were used throughout each of the models. A Breusch-Pagan test was carried out in which the presence of heteroskedasticity was detected. Consequently, heteroskedasticity-robust standard errors are used throughout each of the specifications.

Empirical results

Table A.4.3 in Appendix 4 provides the results of the first set of regressions, which examine the relationship between the total elasticity and the various explanatory variables. Specification 1 is a bivariate regression of employment elasticity on the average annual growth rate in the working-age population. Specifications 2 through 4 add in the additional variables of interest. The results can be summarized and interpreted as follows:

- The labour supply proxy is positively and very significantly correlated with employment elasticity. A 1-percentage point increase in the average annual growth rate of the working-age population is associated with an increase of 0.24 in the employment elasticity. This result is robust across all specifications.

- The initial share of total employment in services is also significantly and positively associated with employment elasticity. A 10-percentage point increase in this share corresponds with an increase of 0.06 in employment elasticity. The coefficient on the share of employment in industry is not statistically significant and an F-test of whether the coefficient on share of employment in industry is equal to that on the share in agriculture (represented here as the omitted base case variable) led to failure to reject the null hypothesis of equality.

- In terms of the volatility proxies, the average annual rate of inflation is negatively associated with employment elasticity at 1 per cent significance. Importantly, this relationship only has an *economically significant* impact given very high inflation rates.[23] Every 100-percentage point increase in the average annual rate of inflation is associated with a reduction in the employment elasticity of 0.12. The conflict indicator is also significant: all else equal, an economy in conflict over the full 12-year period is expected to have an employment elasticity that is 0.16 lower than an economy without any conflict during the period.

- The economic openness and export orientation variables show no statistically significant relationship with employment intensity. The sign on the trade balance coefficient is positive – implying a tendency for exporting countries to have higher employment elasticities, but the results are far from robust. Thus, the present analysis provides little evidence that globalization and export-orientation have a systematic relationship with employment intensity.

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[23] Muqtada (2003) provides an excellent discussion of the impact of inflation and price stability policies on employment and economic growth outcomes.

- The malaria variable is not significant. Far from implying that malaria is unimportant for employment and labour productivity, this lack of relationship implies that malaria may have a reasonably equal negative impact on both labour quality (productivity) and quantity (employment).

The second set of regressions carried out for this exercise incorporates the labour tax and employment protection variables. Due to data availability limitations of these variables, the sample for these regressions represents a smaller number of countries (100 countries versus 154 in the previous regressions). In order to maximize coverage, the variables that were not statistically significant in the previous set of regressions (economic openness, export orientation and health status) were dropped from this section of the analysis. The findings can be summarized as follows:

- With the exception of the conflict variable, each of the explanatory variables from the first set of regressions remains significant. The magnitude of the working-age population growth rate variable has diminished somewhat, though it is still large and significant throughout the specifications.

- The individual tax rate variable is significant at 10 per cent and carries the expected sign. A 10-percentage point increase in the individual tax rate is associated with a decrease of 0.08 in the employment elasticity.

- The coefficient on the World Bank's employment rigidity index is not statistically significant, and the sign is opposite to that which is hypothesized in the literature. Each of the sub-components of the employment rigidity index (including rigidity of hours, difficulty of hiring and firing and firing costs) was also tested and each was also statistically insignificant. This is certainly an interesting finding – one that runs contrary to the widely held notion that employment protection legislation reduces demand for employment. The lack of negative relationship could be an indication that labour protection does not have a significant, adverse effect on employment performance or it could also be an indication that much employment protection legislation is not, in fact, enforced.[24]

Next, these same models were carried on youth and female employment elasticities. The results from this exercise are given in Appendix tables A.4.5 and A.4.6. With regard to the youth elasticity regressions, the chosen independent variables did not perform very well in general.

The average annual growth rate in the youth population is still positively and significantly correlated with employment elasticity: a 1-percentage point increase in the growth rate of the youth-age population is associated with an increase in the youth elasticity of 0.33. However, while the sign on each of the other variables is the same, none of the remaining coefficients is statistically significant. The same basic results

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[24] The standard definition of employment utilized by the ILO encompasses workers in both the formal and informal economies. As a result, another potential explanation of this result is that employment in the informal economy may not be affected by stringent employment protection legislation.

occurred in the second set of regressions for youth: while the direction of the coefficients remains the same, only growth in the youth age cohort remains significant.

Although more investigative work on this is needed, one potential explanation for the poor performance of the youth indicator is that the indicator being examined is the elasticity of youth employment with respect to *total output* as opposed to *output among youth*. A closer look at the main characteristics of youth employment – for instance, that it is typically less well remunerated and more frequently part-time and informal – makes this outcome somewhat less surprising. In essence, there are clear reasons to believe that changes in youth employment may not be as linked with total output as changes in output among the overall population or among adults (ILO, 2004c).

The first set of regressions of female employment elasticities (given in Appendix table A.4.7) performed well in terms of significance and fairly well in terms of explanatory power. Working-age population growth is once again positive and significant, with an increase in the average annual growth rate of 1-percentage point corresponding with an increase in female employment elasticity of 0.21. The share of employment in services is also significant and the coefficient is larger in this specification than for the one corresponding with the population as a whole. The coefficient on the gender gap variable is large and significant at 1 per cent, reflecting the ongoing "catching up" in participation among women that was observed in the previous section. Indeed, every 10-percentage point increase in the gap in the 1991 labour force participation rate between men and women is associated with an increase of 0.15 in the subsequent employment elasticity for women. The inflation variable remains significant. The conflict variable is not significant in this specification, though the sign remains negative as before. The average trade balance variable is significant at 5 per cent in this specification. This provides evidence that export-orientation may have a positive impact on the employment intensity of growth for women. This finding is in agreement with previous studies that have found evidence of relatively cheaper female labour driving export growth forward.[25] However, this variable was not significant across all specifications and thus inference related to this finding should be made with caution.

Incorporating the labour tax variable into the female elasticity models (the results of which are given in Appendix table A.4.8) produces similar results to those for the total population. Indeed, one important observation is that the coefficient on labour tax is considerably larger in magnitude for female elasticities than for the population as a whole. An increase of 10-percentage points in the labour tax indicator is associated with a decrease of 0.17 in the female employment elasticity. This coefficient is more than twice as large as the corresponding one for the total population, implying that higher taxes on labour appear to provide a greater disincentive to employment for women than for men. Interestingly, the employment rigidity variable is also insignificant for women. Whereas employment protection legislation is commonly believed to adversely affect groups such as women and young workers to a greater extent than the population as a whole, these empirical results find no evidence of this phenomenon at the macroeconomic level.

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[25] See for instance Bhattacharya and Rahman (1999), Lim (1997) and Tennekoon (1997).

Taken together, the empirical results provide many expected outcomes along with one clear surprise. In terms of expected outcomes, throughout each regression, labour supply is strongly positively associated with employment intensity – a finding that is clearly supported by the literature – and one that likely reflects both the relative abundance of cheap labour in tandem with greater wage flexibility in these economies. Uncertainty in the form of hyperinflation is negatively associated with employment intensity, as is armed conflict, though the results on the latter variable are not robust throughout all specifications. Nevertheless, the findings related to these two variables support the hypothesis that uncertainty may have a greater relative impact on employment generation than on economic growth. Globalization does not appear to have a systematic direct link vis-à-vis determining employment intensity levels. The notable exception to this is for female employment intensity, which may be positively associated with export orientation. Taxes on labour are negatively associated with employment intensity – and more so for women than for men. The notable surprise in the results is that greater employment "rigidity", or protection, was not significant in any of the specifications. This finding appears to contrast the relatively widespread notion that employment protection legislation hinders employment performance, and in particular for women and youth.

5. Concluding remarks

This study has utilized the employment elasticity as a tool for detecting broad trends in employment generation, productivity growth, and structural economic change. By examining historical trends in the employment intensity of growth among subsets of the population, it has also sought to provide a clearer picture of the diversity in employment outcomes among these different groups. The paper established a methodology for producing world and regional trends in employment intensity, and the corresponding results were presented for the period from 1991 to 2003. Finally, results were presented from an econometric model aimed at providing insights into some of the macroeconomic determinants of the employment intensity of growth.

The global employment elasticity trends showed that while the share of employment growth in total output growth has been about one-third over the past decade, there was a decline in the employment intensity of growth in the period from 1999 to 2003. This is most likely a reflection of poor employment performance following the global economic slowdown that took shape in 2001. In terms of broad global trends among demographic groups, given expectations in labour force growth, youth employment elasticities are currently too low to avoid substantial future increases in the number of youth without a job. This problem highlights a great need to identify and address ways in which more and better jobs can be made available for young persons entering the labour market. Future analytical work on this matter is clearly warranted. Another significant trend in the global labour market is evidenced by higher female employment elasticities in each of the three time periods than the corresponding elasticities for men. This result appears to indicate a "catching up" in terms of women's labour force participation relative to men's, a finding that is supported by the results in cross-country regressions. However the result

may also be indicative of women's continued disproportionate representation in low-wage and low-productivity jobs.

It is clear from the regional trends presented in the paper that there is a wide variation in the employment intensity of growth in regions throughout the world. Between 1991 and 2003, the most employment-intensive growth was registered in Africa and the Middle East, reflecting these regions' large surplus of labour. However, these regions' relatively low output growth and low productivity growth continue to inhibit their poverty-reducing potential. Meanwhile in Asia and the Pacific and particularly in East Asia, rapid economic growth has allowed the region to realize large gains in productivity, contributing to rising living standards while also maintaining robust employment growth. The paper provides some evidence in support of the notion of a structural divide between North America and Western Europe, with the employment intensity of growth decreasing in the former and increasing in the latter over the course of the three periods under examination. The regional results also provided indications of ongoing structural economic change, particularly in the developed world, but also in the Transition Economies, Latin America and the Caribbean and throughout parts of Asia and the Pacific.

The empirical analysis presented in Section 4 points to a systematic, positive relationship between labour supply and the employment intensity of growth. This result agrees with previous findings in the literature that growth in the supply of labour tends to lead to low productivity growth. The findings also support the notion of a positive relationship between economies' share in services and their employment elasticities. However, whether this represents greater flexibility and dynamism of the sector or rather whether the jobs created in services tend to be of lower quality (and hence lower productivity) requires further investigation. Uncertainty in the form of inflation and armed conflict may lower the employment intensity of growth, though the results related to conflict are not robust across all specifications. Measures of globalization and export orientation showed no strong correlation with employment intensity, except in the case of women. Among women, the results suggest that greater export-orientation may lead to a higher employment intensity of growth. The results found no systematic link between malaria and employment intensity. One proposed explanation of this result is that malaria may have a roughly equal adverse impact on employment growth as it has on productivity growth. The econometric results support the notion that high taxes on labour tend to lower employment intensity, particularly for women, but no evidence was found regarding a link between employment rigidity (employment protection) and the job intensity of growth. This may mean that employment protection policies do not have a broad impact on economies' job creation potential, but it could also be due to a lack of enforcement of employment protection legislation.

More work is clearly needed to identify additional correlates of employment intensity, particularly regarding youth employment. In addition, further investigation of the differences in determinants of employment intensity between developed and developing countries is needed, as the strong relationship between labour supply and the employment intensity of growth raises the hypothesis that there may be substantial differences

between labour surplus and labour scarce economies in this regard. Investigating the correlates of employment intensity in the different economic sectors is another area that deserves attention. Such an analysis would be particularly relevant for developing economies currently undergoing structural change away from agrarian-based production and into higher value-added, more industrial economic activities.

The current findings would also greatly benefit from country-specific and comparative case studies to investigate in greater detail the trends, determinants and implications of countries' employment intensity of growth. Indeed, the regional and global trends in employment intensity presented in this paper are built upon the country-level employment elasticities provided in Appendix 2. While individual country case studies are beyond the scope of the present analysis, this series of country-level employment intensity data should be useful in future related work.

Finally, while the results presented in this study provide an empirical overview of the relationship between output growth, productivity and employment and highlight some of the factors that appear to drive this relationship, the paper does not provide policy conclusions based on these results. This analysis may indeed help to inform future policy discussions, yet much additional work is needed to identify macroeconomic "best practices" for encouraging economic growth and development while striking an optimal balance between employment promotion and productivity growth.

Appendix 1. Countries included in analysis

Table A1.1. Countries by region and sub-region

Developed Economies	Transition Economies (continued)	Latin America and the Caribbean	Africa and the Middle East (continued)
Western Europe	*CIS*	*Latin America*	*North Africa*
Australia*	Armenia*	Argentina*	Algeria*
Austria*	Azerbaijan*	Belize*	Egypt*
Belgium*	Belarus*	Bolivia*	Morocco*
Cyprus	Georgia	Brazil*	Sudan*
Denmark*	Kazakhstan*	Chile*	Tunisia*
Finland*	Kyrgyzstan*	Colombia*	
France*	Moldova, Rep. of*	Costa Rica*	*Sub-Saharan Africa*
Germany*	Russian Federation*	Ecuador*	Angola*
Greece*	Tajikistan*	El Salvador*	Benin*
Iceland*	Turkmenistan*	Guatemala*	Botswana*
Ireland	Ukraine*	Honduras*	Burkina Faso*
Italy*	Uzbekistan*	Mexico*	Burundi*
Luxembourg*		Nicaragua*	Cameroon*
Malta	**Asia and the Pacific**	Panama*	Cape Verde*
Netherlands*		Paraguay*	Central African Rep.*
Norway*	*East Asia*	Peru*	Chad*
Portugal*	China*	Uruguay*	Comoros*
Spain*	Hong Kong, China	Venezuela*	Congo*
Sweden*	Korea, Republic of		Côte d'Ivoire*
Switzerland	Macau, China	*Caribbean*	Dem. Rep. of the Congo*
United Kingdom*	Mongolia*	Bahamas	Equatorial Guinea*
		Barbados*	Eritrea*
North America	*South-East Asia*	Dominican Republic*	Ethiopia*
Canada*	Cambodia	Guyana*	Gabon*
United States*	Fiji*	Haiti*	Gambia*
	Indonesia*	Jamaica*	Ghana*
Japan *	Lao People's Dem. Rep.*	Puerto Rico	Guinea*
Australia*	Malaysia*	Suriname*	Guinea-Bissau*
New Zealand*	Myanmar	Trinidad and Tobago*	Kenya*
	Papua New Guinea*		Lesotho*
Transition Economies	Philippines*	**Africa and the Middle East**	Liberia
	Singapore*		
Central and Eastern Europe	Solomon Islands	*Middle East*	Madagascar*
Albania*	Thailand*	Bahrain	Malawi*
Bulgaria*	Viet Nam*	Iran, Islamic Rep. of*	Mali*
Croatia*		Israel	Mauritania*
Czech Republic*	*South Asia*	Jordan*	Mauritius*
Estonia*	Bangladesh*	Kuwait	Mozambique*
Hungary*	Bhutan*	Lebanon	Namibia*
Latvia*	India*	Oman	Niger*
Lithuania	Nepal*	Saudi Arabia*	Nigeria*
Macedonia, TFYR of*	Pakistan*	Syrian Arab Republic*	Rwanda*
Poland*	Sri Lanka*	United Arab Emirates	Senegal*
Romania*		Yemen, Rep. of*	Sierra Leone*
Slovakia*			South Africa*
Slovenia*			Swaziland*
Turkey*			Tanzania, United Rep. of*
			Togo*
			Uganda*
			Zambia*
			Zimbabwe*

*Included in both total and sector regional elasticity estimates.

Appendix 2. Employment elasticities and GDP growth by country

A2.1. Employment elasticities and GDP growth (1991-1995, 1995-1999 and 1999-2003) – Developed Economies

Developed Economies	Total Employment Elasticity			Youth Employment Elasticity			Female Employment Elasticity			Male Employment Elasticity			Average Annual GDP Growth (%)		
	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003
Australia	0.52	0.37	0.56	0.38	-0.02	0.27	0.68	0.43	0.74	0.41	0.32	0.42	4.0	4.4	2.7
Austria	1.22	0.04	0.10	-2.49	-1.12	-1.21	1.92	0.11	0.39	0.71	-0.02	-0.12	1.7	2.7	1.4
Belgium	0.14	0.50	0.57	-3.39	0.05	0.55	0.67	0.98	0.95	-0.20	0.16	0.30	1.5	2.5	1.5
Canada	0.34	0.54	0.44	-0.41	0.22	0.45	0.38	0.63	0.56	0.31	0.47	0.33	2.7	3.8	2.9
Cyprus	0.37	-0.19	1.01	-0.25	-0.84	1.19	0.42	-0.14	1.86	0.35	-0.22	0.45	5.4	3.5	3.8
Denmark	-0.02	0.42	-0.04	-0.58	-0.89	-1.51	-0.43	0.61	0.09	0.32	0.26	-0.15	2.2	2.6	1.7
Finland	0.20	0.44	0.38	-0.19	1.73	0.26	-0.04	0.41	0.54	0.41	0.46	0.23	0.8	4.6	2.5
France	0.07	0.14	0.57	-5.32	-0.91	0.49	0.61	0.17	0.73	-0.36	0.12	0.45	1.1	2.5	1.9
Germany	-0.44	0.04	0.05	-5.29	-0.80	-0.17	-0.20	0.45	0.67	-0.61	-0.27	-0.42	1.3	1.5	0.9
Greece	1.36	0.28	0.27	-0.11	-0.19	-0.62	2.31	0.58	0.47	0.86	0.12	0.16	0.8	3.2	4.2
Iceland	0.26	0.80	0.37	-0.55	1.25	0.40	0.61	0.75	0.50	-0.04	0.84	0.26	0.4	4.8	2.4
Ireland	0.59	0.62	0.40	0.15	0.98	-0.22	1.33	0.80	0.49	0.19	0.50	0.35	5.4	9.7	6.1
Italy	-1.01	0.49	0.74	-4.51	-1.18	-2.36	-0.70	0.77	1.58	-1.17	0.33	0.24	1.2	1.6	1.4
Japan	0.34	0.20	-0.24	0.06	-1.55	-2.29	0.15	0.32	-0.11	0.47	0.12	-0.32	1.1	1.0	1.6
Luxembourg	-0.07	0.22	1.08	-2.11	-0.99	0.82	0.12	0.50	1.36	-0.17	0.05	0.90	2.8	6.8	3.1
Malta	0.38	0.27	2.50	0.81	-0.88	-0.06	0.78	0.63	1.00	0.25	0.14	3.03	5.3	4.1	2.2
Netherlands	0.63	0.67	0.70	-1.39	0.36	0.52	1.27	0.91	1.26	0.20	0.50	0.28	2.0	3.8	1.1
New Zealand	0.71	0.25	0.60	0.52	-1.46	0.58	0.75	0.52	0.63	0.67	0.03	0.58	4.2	2.7	3.2
Norway	0.22	0.53	0.26	-0.64	0.52	-1.17	0.25	0.61	0.41	0.19	0.47	0.12	3.9	3.9	1.3
Portugal	-0.20	0.65	0.40	-2.72	0.73	-2.30	0.11	0.77	0.55	-0.43	0.55	0.28	1.0	4.0	1.2
Spain	-0.24	1.04	0.72	-3.37	0.90	-0.61	0.66	1.34	0.96	-0.69	0.88	0.58	1.2	3.7	2.8
Sweden	-0.16	0.20	0.52	-1.06	-0.05	1.25	-0.32	0.11	0.61	-0.01	0.29	0.45	1.0	3.0	2.3
Switzerland	2.06	0.22	0.10	-6.71	-1.26	-0.36	4.54	0.82	0.54	0.37	-0.21	-0.24	0.1	1.5	0.9
United Kingdom	0.12	0.43	0.37	-1.23	-0.01	0.29	0.29	0.44	0.42	-0.03	0.41	0.33	2.6	2.9	2.3
United States	0.71	0.43	0.20	0.90	0.43	0.09	0.69	0.48	0.29	0.72	0.39	0.12	3.1	4.1	2.3

A2.2. Sector employment elasticities, sector value-added growth and GDP growth (1991-2003) – Developed Economies

Developed Economies	Agriculture Elasticity, 1991-2003		Industry Elasticity, 1991-2003		Services Elasticity, 1991-2003		Sector Value-added Growth and Total Growth, 1991-2003 (Average Annual %)			
	GDP	Value Added	GDP	Value Added	GDP	Value Added	Agriculture	Industry	Services	Total
Australia	0.27	0.22	0.20	0.27	0.60	0.55	3.9	2.9	4.3	3.9
Austria	-0.95	-0.29	-0.57	-0.46	0.90	1.06	3.5	2.3	1.8	2.0
Belgium	-0.14	-0.06	-0.11	-0.11	0.74	0.85	3.4	1.7	1.8	1.8
Canada	-0.58	-0.61	0.56	0.56	0.53	0.55	0.3	2.9	3.3	3.1
Denmark	-2.02	-1.68	-0.03	0.02	0.50	0.49	2.6	2.1	2.5	2.4
Finland	-1.23	-1.67	0.32	0.19	0.45	0.53	2.0	4.2	2.2	2.9
France	0.70	0.76	-0.70	-0.65	0.63	0.60	2.0	1.5	2.2	2.0
Germany	-2.78	-2.08	-1.57	2.22	0.95	0.59	1.7	-0.4	2.4	1.5
Greece	-0.89	0.31	0.00	0.10	1.00	0.91	-0.5	2.2	3.1	2.5
Iceland	0.10	-0.30	0.39	0.29	0.92	0.75	-0.9	3.6	3.7	3.3
Italy	-2.38	-3.53	-0.07	-0.14	0.57	0.51	0.6	1.1	1.8	1.5
Japan	-2.04	0.95	-0.83	-0.14	0.76	0.49	-2.1	-0.4	2.1	1.1
Luxembourg	-3.88	3.25	-0.17	-0.25	0.55	0.48	0.6	3.2	5.2	4.7
Netherlands	-0.72	-1.10	0.12	0.19	0.90	0.80	1.6	1.4	2.9	2.4
New Zealand	-0.10	-0.10	0.56	0.83	0.70	0.63	2.6	2.3	3.8	3.3
Norway	-0.61	-0.55	0.29	0.34	0.51	0.49	1.3	2.9	3.5	3.3
Portugal	0.50	-2.30	0.73	0.57	0.26	0.31	-0.2	2.6	2.1	2.1
Spain	-0.76	-0.59	0.87	0.94	1.10	1.08	0.1	2.2	2.9	2.5
Sweden	-1.67	4.58	-0.34	-0.20	0.30	0.41	-0.2	4.1	1.7	2.4
United Kingdom	1.16	-1.95	-0.38	-0.75	0.61	0.49	-1.3	1.0	3.3	2.5
United States	0.07	-0.01	0.23	0.24	0.61	0.53	3.8	3.0	3.7	3.5

A2.3. Employment elasticities and GDP growth (1991-1995, 1995-1999 and 1999-2003) – Transition Economies

Transition Economies	Total Employment Elasticity			Youth Employment Elasticity			Female Employment Elasticity			Male Employment Elasticity			Average Annual GDP Growth (%)		
	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003
Albania	0.00	-0.65	0.66	-0.26	-1.83	1.15	-0.04	-0.71	0.73	0.03	-0.62	0.61	5.0	4.9	6.4
Armenia	0.10	-0.34	0.24	0.33	-0.15	0.84	0.16	-0.12	0.28	0.05	-0.52	0.20	-12.0	4.9	10.5
Azerbaijan	-0.01	0.00	0.16	0.15	-0.55	0.00	-0.01	0.10	0.13	-0.01	-0.07	0.19	-18.3	6.0	10.8
Belarus	0.18	-0.03	-0.05	0.47	0.06	-0.21	0.18	0.03	0.02	0.18	-0.09	-0.11	-9.8	6.4	5.5
Bulgaria	1.99	0.19	0.50	3.30	0.77	1.25	1.92	0.27	0.60	2.06	0.11	0.40	-1.1	-2.3	4.6
Croatia	0.33	-0.22	0.47	0.33	0.10	0.25	0.24	0.07	0.26	0.40	-0.44	0.64	-2.2	3.7	4.1
Czech Republic	-0.40	-0.31	-0.04	-0.57	-1.58	-2.88	-0.92	-0.74	-0.12	0.03	0.02	0.02	1.9	0.7	2.9
Estonia	0.58	-0.34	-0.01	0.69	-0.77	-0.19	0.63	-0.28	0.02	0.53	-0.40	-0.03	-7.2	4.3	6.1
Georgia	0.08	-0.20	-0.09	0.19	-0.44	-0.16	0.11	-0.33	0.32	0.05	-0.07	-0.52	-22.7	6.9	5.0
Hungary	-0.02	0.29	0.03	0.33	0.56	-2.40	-0.71	0.42	0.00	0.55	0.18	0.05	0.1	3.7	3.8
Kazakhstan	0.20	-2.26	0.02	0.30	-4.21	0.07	0.21	-1.86	0.03	0.20	-2.62	0.00	-9.0	0.7	10.7
Kyrgyzstan	0.03	-0.17	0.72	0.15	-0.78	0.94	0.01	-0.20	0.65	0.05	-0.14	0.79	-13.9	5.7	3.9
Latvia	0.10	0.06	-0.02	-0.02	-0.55	-0.31	0.12	0.02	0.00	0.08	0.09	-0.04	-13.7	4.9	7.1
Lithuania	0.39	-0.21	-0.29	0.75	-0.55	-0.93	0.34	-0.40	-0.12	0.45	-0.04	-0.45	-11.5	4.7	5.9
Macedonia, The former Yugoslav Rep.	0.75	-2.62	-3.54	1.05	-6.22	-7.59	1.38	-2.41	-3.38	0.35	-2.75	-3.64	-4.2	2.5	0.9
Moldova, Rep. of	0.06	0.83	0.25	0.04	1.63	0.55	0.06	0.71	0.16	0.06	0.95	0.33	-16.9	-3.6	5.5
Poland	-0.29	0.09	-0.57	-0.57	0.00	-1.60	-0.34	0.12	-0.51	-0.26	0.07	-0.61	4.6	6.1	3.2
Romania	0.51	0.11	-0.13	0.36	0.97	-1.09	0.55	0.05	-0.06	0.48	0.17	-0.19	0.8	-2.1	4.4
Russian Federation	0.38	0.40	0.13	0.34	1.21	0.05	0.47	0.26	0.21	0.30	0.53	0.06	-10.0	-0.4	6.8
Slovakia	0.22	0.05	0.30	0.32	-0.49	-0.53	0.05	0.18	0.24	0.37	-0.05	0.35	0.3	4.1	3.6
Slovenia	1.49	0.14	0.05	4.85	0.41	-2.20	1.21	0.15	-0.02	1.73	0.12	0.11	4.7	4.3	3.1
Tajikistan	-0.03	0.11	0.26	0.08	-0.81	0.38	-0.03	0.17	0.24	-0.03	0.07	0.28	-18.2	1.5	9.5
Turkey	0.37	0.06	-0.16	-0.24	-0.39	-1.15	0.15	-0.44	-0.84	0.46	0.26	0.09	3.8	3.2	3.0
Turkmenistan	-0.13	0.05	0.19	0.09	0.10	0.17	-0.13	0.04	0.17	-0.13	0.06	0.20	-10.1	0.7	18.9
Ukraine	-0.11	0.83	0.12	-0.11	0.51	0.10	-0.13	0.90	0.11	-0.09	0.77	0.12	-14.9	-3.9	7.4
Uzbekistan	-0.19	0.31	0.76	0.16	-0.35	0.72	-0.19	0.33	0.69	-0.19	0.29	0.83	-5.0	3.8	4.2

A2.4. Sector employment elasticities, sector value-added growth and GDP growth (1991-2003) – Transition Economies

Transition Economies	Agriculture Elasticity, 1991-2003		Industry Elasticity, 1991-2003		Services Elasticity, 1991-2003		Sector Value-added Growth and Total Growth, 1991-2003 (Average Annual %)			
	GDP	Value Added	GDP	Value Added	GDP	Value Added	Agriculture	Industry	Services	GDP Growth
Albania	-0.61	-0.81	-0.24	0.05	0.16	0.11	5.1	2.6	7.8	5.6
Armenia	0.12	0.63	-0.78	0.01	0.10	0.14	1.5	-4.9	-1.6	-2.3
Azerbaijan	0.08	0.11	0.18	0.19	0.02	0.03	0.4	1.6	-0.3	0.7
Belarus	0.00	0.74	0.00	-0.04	0.12	0.34	-2.9	-0.4	0.5	-0.6
Bulgaria	0.11	0.17	0.16	1.14	0.49	0.22	1.0	-1.4	-2.4	-1.8
Croatia	-1.91	2.16	0.15	0.14	0.34	0.32	-1.1	-0.9	2.8	1.0
Czech Republic	-3.70	-1.21	-1.06	-0.44	0.39	0.29	2.2	0.7	2.1	1.5
Estonia	-1.76	4.83	-0.32	0.05	-0.06	-0.07	-1.8	-0.8	2.3	1.0
Hungary	-1.52	0.28	0.27	0.14	0.21	0.24	-0.6	4.1	2.3	2.7
Kazakhstan	0.03	0.35	0.35	0.49	-0.12	-0.10	-2.4	-3.4	-0.8	-2.0
Kyrgyzstan	-0.04	0.89	0.33	0.74	0.01	0.11	2.5	-6.8	-2.2	-1.6
Latvia	-0.30	0.42	0.00	0.33	-0.09	-0.16	-3.9	-5.5	4.2	0.0
Macedonia, The former Yugoslav Rep.	-0.54	-0.83	-0.04	0.42	0.19	-0.68	-1.4	-1.9	1.5	-0.1
Moldova, Rep. of	-0.33	-0.23	-0.01	0.00	0.66	-0.54	-9.2	-7.0	-0.5	-5.8
Poland	-0.74	-1.30	-0.30	-0.24	0.30	0.35	1.1	5.0	4.1	4.3
Romania	0.63	-0.19	-0.58	-0.19	0.47	0.42	-0.7	0.6	1.8	0.9
Russian Federation	0.70	0.68	0.94	0.65	-0.06	0.15	-1.0	-4.3	-0.3	-2.2
Slovakia	-1.82	-2.55	-0.16	-0.15	0.38	0.30	2.7	3.1	5.0	4.3
Slovenia	0.06	0.84	-0.07	-0.07	0.59	0.59	-0.4	4.4	3.8	3.8
Tajikistan	-0.86	-1.18	0.51	0.12	0.16	1.21	-2.4	-6.7	2.9	-1.5
Turkey	-0.83	-1.72	0.58	0.62	0.98	0.95	1.0	3.1	3.6	3.1
Turkmenistan	-0.07	-0.03	-0.06	-0.15	0.06	-0.01	0.2	0.4	-1.1	-0.3
Ukraine	0.16	0.55	0.28	0.15	0.02	0.03	-2.9	-5.2	-4.9	-4.5
Uzbekistan	0.12	0.16	0.78	-0.11	0.82	0.79	1.4	-2.3	2.1	0.6

A2.5. Employment elasticities and GDP growth (1991-1995, 1995-1999 and 1999-2003– Asia and the Pacific

Asia and the Pacific	Total Employment Elasticity			Youth Employment Elasticity			Female Employment Elasticity			Male Employment Elasticity			Average Annual GDP Growth (%)		
	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003
China	0.14	0.14	0.17	-0.23	-0.44	0.07	0.15	0.17	0.17	0.13	0.12	0.17	12.7	8.3	8.1
Hong Kong, China	0.22	0.68	0.43	-0.41	-0.10	-0.70	0.35	1.18	0.74	0.13	0.36	0.20	5.7	1.8	4.0
Korea, Republic of	0.30	0.17	0.38	-0.11	-0.96	-0.09	0.32	0.31	0.49	0.28	0.08	0.31	7.4	3.4	5.6
Macau, China	-0.04	-1.16	0.51	-0.97	0.38	0.49	0.17	-1.89	0.66	-0.18	-0.56	0.37	6.6	-2.1	5.6
Mongolia	-0.40	0.48	1.18	-0.36	-0.29	0.46	-0.34	0.49	1.20	-0.46	0.47	1.15	-1.1	3.3	2.8
Cambodia	0.52	0.59	0.00	0.77	0.71	0.80	0.37	0.50	0.51	0.68	0.68	-0.57	7.9	6.6	6.5
Fiji	0.64	0.50	0.65	0.02	0.56	0.17	1.84	0.64	1.00	0.16	0.43	0.47	4.9	2.1	2.3
Indonesia	0.37	-0.08	0.43	0.18	0.32	-0.15	0.38	-0.20	0.57	0.37	-0.01	0.35	7.6	-0.3	4.1
Lao People's Dem. Rep.	0.06	0.08	0.61	-0.23	-0.36	0.57	0.05	0.06	0.57	0.07	0.10	0.63	7.0	6.4	5.2
Malaysia	0.31	0.51	0.67	0.17	0.35	0.48	0.29	0.50	0.82	0.33	0.52	0.59	9.5	3.7	4.6
Myanmar	0.35	0.36	0.21	0.20	0.11	0.03	0.37	0.38	0.22	0.34	0.35	0.20	7.5	7.2	11.7
Papua New Guinea	0.24	0.41	-1.46	0.09	0.33	-1.19	0.32	0.47	-1.55	0.17	0.37	-1.38	8.4	1.7	-0.4
Philippines	0.99	0.69	0.76	0.83	0.07	0.86	1.09	0.86	0.79	0.92	0.57	0.75	2.8	3.4	4.4
Singapore	0.21	0.54	0.62	-0.67	-0.72	0.64	0.19	0.63	0.71	0.23	0.48	0.56	9.6	5.4	2.8
Solomon Islands	0.69	0.16	-0.44	0.67	0.10	-0.32	0.77	0.18	-0.45	0.63	0.14	-0.43	5.9	0.2	-5.8
Thailand	0.09	0.14	0.38	-0.38	1.16	-0.10	0.01	0.18	0.42	0.15	0.11	0.36	8.6	-0.6	4.8
Viet Nam	0.24	0.26	0.35	-0.12	-0.22	0.04	0.23	0.24	0.34	0.25	0.27	0.35	8.8	6.9	7.0
Bangladesh	0.38	0.48	0.06	0.13	0.35	-0.97	0.13	0.50	-0.10	0.54	0.47	0.16	4.6	5.0	5.3
Bhutan	0.04	0.42	0.56	-0.09	0.39	0.57	0.13	0.51	0.59	-0.02	0.37	0.53	6.3	6.8	7.1
India	0.40	0.43	0.36	0.08	0.13	0.16	0.54	0.57	0.33	0.34	0.37	0.38	6.3	6.3	5.3
Nepal	0.35	0.46	0.64	0.14	0.23	0.53	0.22	0.31	0.57	0.43	0.54	0.67	4.9	4.5	3.5
Pakistan	0.49	0.96	0.63	0.25	0.86	0.72	0.93	1.16	0.69	0.36	0.90	0.61	4.5	3.0	3.9
Sri Lanka	0.14	0.82	0.19	-0.36	1.34	-0.83	-0.08	1.39	-0.05	0.22	0.59	0.29	5.6	4.8	3.4

A2.6. Sector employment elasticities, sector value-added growth and GDP growth (1991-2003) – Asia and the Pacific

Asia and the Pacific	Agriculture Elasticity, 1991-2003		Industry Elasticity, 1991-2003		Services Elasticity, 1991-2003		Sector Value-added Growth and Total Growth, 1991-2003 (Average Annual %)			
	GDP	Value Added	GDP	Value Added	GDP	Value Added	Agriculture	Industry	Services	GDP Growth
China	0.09	0.23	0.07	0.06	0.47	0.50	3.7	12.5	8.8	9.7
Mongolia	1.51	1.25	-1.14	-0.60	1.43	1.51	3.8	-0.2	0.9	1.6
Fiji	1.04	-0.24	0.81	0.56	1.00	0.76	0.3	3.6	3.6	3.0
Indonesia	-0.03	0.23	1.11	0.91	1.16	1.04	2.2	4.5	3.5	3.7
Lao People's Dem. Rep.	-0.01	0.00	-0.05	-0.03	0.66	0.64	5.3	10.1	5.9	6.4
Malaysia	0.16	1.01	0.58	0.47	0.60	0.59	1.0	7.2	5.9	5.9
Papua New Guinea	0.53	0.53	0.18	-0.05	0.79	0.65	3.6	3.7	2.5	3.2
Philippines	0.20	0.34	0.69	0.69	1.36	1.14	2.3	3.4	4.3	3.6
Singapore	0.83	-2.29	-0.38	-0.29	0.65	0.65	-3.1	5.9	6.0	6.0
Thailand	-0.28	-0.12	0.90	0.70	0.85	0.87	1.6	5.2	3.9	4.2
Viet Nam	0.13	0.23	0.09	0.06	0.91	0.98	4.3	11.4	7.0	7.6
Bangladesh	0.26	0.35	0.71	0.51	0.03	0.03	3.0	7.2	4.9	4.9
Bhutan	0.34	0.59	0.66	0.47	0.41	0.40	3.4	9.9	7.0	6.4
India	0.38	0.78	0.28		0.54	0.41	2.8	6.0	7.7	6.0
Nepal	-0.41	-0.64	3.84	3.05	1.92	1.60	2.6	5.5	5.3	4.2
Pakistan	0.80	0.69	0.71	0.65	0.44	0.37	3.4	4.2	4.5	4.1
Sri Lanka	1.01	2.67	0.02	0.04	-0.15	-0.16	1.7	5.6	5.2	4.5

A2.7. Employment elasticities and GDP growth (1991-1995, 1995-1999 and 1999-2003– Latin America and the Caribbean

Latin America and the Caribbean	Total Employment Elasticity			Youth Employment Elasticity			Female Employment Elasticity			Male Employment Elasticity			Average Annual GDP Growth (%)		
	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003
Argentina	-0.01	0.71	0.01	-0.65	0.29	1.48	0.49	1.17	-0.44	-0.25	0.45	0.31	5.1	3.4	-2.0
Bahamas	2.91	0.77	-0.06	1.97	0.04	-1.70	3.81	1.03	0.07	2.13	0.52	-0.18	0.0	4.1	1.2
Barbados	1.37	0.90	-0.23	1.55	0.49	0.69	1.36	0.96	0.12	1.38	0.84	-0.53	0.3	3.8	0.0
Belize	0.97	0.87	0.48	0.87	0.73	0.32	1.51	0.96	0.51	0.77	0.84	0.47	4.5	4.5	6.9
Bolivia	0.95	1.23	1.59	0.57	1.41	1.55	1.74	1.25	1.97	0.43	1.21	1.30	3.8	3.6	2.2
Brazil	0.54	0.50	0.68	0.22	-0.46	-0.65	0.74	0.62	0.83	0.42	0.42	0.59	3.6	1.7	1.8
Chile	0.35	0.22	0.28	0.17	-0.96	-0.92	0.55	0.49	0.21	0.26	0.08	0.31	8.9	4.3	3.2
Colombia	0.63	0.42	0.94	0.21	-1.22	0.52	0.82	1.01	0.35	0.52	0.05	1.33	4.6	0.5	2.4
Costa Rica	0.56	0.66	1.33	0.22	0.62	0.51	0.76	0.95	2.42	0.48	0.54	0.81	6.3	5.7	2.9
Dominican Republic	1.02	0.64	0.29	0.97	1.10	-0.76	1.93	0.90	0.26	0.71	0.53	0.30	5.0	7.7	3.3
Ecuador	2.01	0.61	1.18	0.79	0.23	1.53	4.38	0.68	1.88	0.84	0.57	0.74	2.1	0.5	3.5
El Salvador	0.44	0.88	2.00	0.72	0.38	-0.40	0.13	1.42	3.49	0.64	0.55	0.99	6.8	3.3	2.0
Guatemala	0.95	0.97	1.04	1.00	0.93	1.09	1.75	1.57	0.84	0.65	0.71	1.14	4.5	4.1	2.6
Guyana	0.12	0.34	0.89	-0.39	-0.49	-0.61	0.13	0.58	1.28	0.12	0.22	0.69	7.4	3.8	0.1
Haiti	-0.34	0.57	-2.42	-0.25	0.57	-2.22	-0.55	0.78	-2.45	-0.18	0.39	-2.39	-7.0	2.9	-0.2
Honduras	1.01	2.27	-0.31	0.95	1.55	-2.00	1.33	4.02	-0.63	0.90	1.53	-0.15	3.6	2.4	3.4
Jamaica	0.31	-1.25	1.55	-0.68	-0.04	2.02	0.08	-0.64	1.86	0.48	-1.69	1.34	1.7	-0.3	1.4
Mexico	0.81	0.71	0.67	0.67	0.33	-0.86	1.31	0.92	0.77	0.59	0.61	0.62	0.8	5.1	2.1
Nicaragua	1.06	1.11	0.56	0.86	1.21	0.36	-0.07	1.07	0.84	1.55	1.12	0.43	1.9	5.3	4.7
Panama	1.01	0.63	1.04	0.89	0.20	0.49	1.24	0.81	1.03	0.91	0.54	1.04	4.5	5.0	2.1
Paraguay	1.97	3.55	2.20	2.31	2.70	1.94	3.03	5.21	2.23	1.37	2.38	2.17	3.5	0.9	0.4
Peru	0.46	1.36	-2.76	0.61	1.22	-0.26	0.39	2.11	-2.63	0.50	0.89	-2.85	6.3	2.5	2.8
Puerto Rico	0.61	0.43	0.32	1.26	0.41	-0.10	0.85	0.58	0.43	0.46	0.33	0.24	4.5	4.5	3.9
Suriname	-0.32	-0.27	0.60	-0.14	-2.37	0.62	0.07	-1.15	0.27	-0.52	0.14	0.74	-0.8	1.9	2.5
Trinidad and Tobago	1.26	0.72	0.85	1.64	0.94	1.30	1.68	0.88	0.93	1.03	0.63	0.79	1.0	4.7	4.0
Uruguay	0.31	0.28	-0.01	0.34	0.04	0.99	0.48	0.58	-0.02	0.19	0.08	0.00	4.1	3.1	-3.4
Venezuela	1.28	0.92	-0.36	0.68	1.25	-0.05	1.38	1.46	-0.44	1.23	0.65	-0.32	1.9	0.0	-3.2

A2.8. Sector employment elasticities, sector value-added growth and GDP growth (1991-2003) – Latin America and the Caribbean

Latin America and the Caribbean	Agriculture Elasticity, 1991-2003		Industry Elasticity, 1991-2003		Services Elasticity, 1991-2003		Sector Value-added Growth and Total Growth, 1991-2003 (Average Annual %)			
	GDP	Value Added	GDP	Value Added	GDP	Value Added	Agriculture	Industry	Services	GDP Growth
Argentina	-0.02	-0.24	0.04	-0.06	0.31	0.42	2.8	1.7	2.0	1.9
Barbados	-0.20	0.00	1.67	1.22	1.17	1.38	-1.1	1.6	1.1	1.1
Belize	0.34	0.19	-0.83	0.16	2.36	2.30	5.4	3.8	5.6	5.2
Bolivia	5.33	7.14	0.95	0.88	0.96	0.89	2.2	3.5	3.5	3.3
Brazil	-0.66	-0.56	0.46	0.48	1.09	1.06	3.7	2.0	2.7	2.5
Chile	-0.30	-0.50	0.04	0.03	0.47	0.60	2.5	5.0	4.5	4.5
Colombia	1.14	-0.85	-0.29	-0.19	0.93	0.66	-1.0	1.6	3.4	2.1
Costa Rica	-0.02	0.00	0.41	0.35	1.19	1.24	3.1	5.1	4.9	4.8
Dominican Republic	0.28	0.47	0.60	0.58	0.76	0.73	3.2	5.5	5.6	5.3
Ecuador	1.78	0.35	1.81	0.66	1.80	1.40	-2.4	2.7	2.7	2.0
El Salvador	0.94	3.42	0.48	0.40	0.98	0.84	1.3	4.8	4.3	4.0
Guatemala	0.90	1.32	-0.27	-0.28	1.98	1.73	2.5	3.6	4.3	3.7
Guyana	0.00	0.02	-0.03	-0.02	0.51	0.70	4.4	5.8	3.0	4.2
Haiti	-0.44	-0.36	-0.71	-0.30	0.05	1.00	-4.4	-3.7	0.2	-2.1
Honduras	0.89	0.83	1.31	1.09	2.05	1.65	2.7	3.8	3.6	3.4
Jamaica	-1.91	-0.02	-0.14	0.27	2.97	1.57	0.3	-0.1	1.7	1.0
Mexico	-0.46	-0.71	1.31	1.16	1.13	1.13	1.9	2.6	2.8	2.7
Nicaragua	1.02	1.02	1.04	1.49	0.69	0.41	2.3	2.1	5.7	4.0
Panama	0.23	0.38	0.88	1.04	1.06	0.97	2.4	3.2	4.2	3.9
Paraguay	-0.73	-0.54	3.23	1.85	5.20	5.29	2.0	3.0	0.6	1.6
Peru	0.35	0.23	-0.08	-0.08	0.67	0.76	4.9	4.4	3.4	3.8
Suriname	2.12	-1.11	-10.21	-6.18	1.30	0.98	-0.4	0.2	1.5	1.0
Trinidad and Tobago	-0.20	-0.17	0.85	0.72	1.01	1.15	2.2	3.6	2.9	3.2
Uruguay	-0.38	-0.11	-0.29	0.40	0.52	0.46	1.4	-1.2	2.2	1.1
Venezuela	0.31	0.01	1.22	0.57	2.16	1.91	1.2	0.7	0.2	0.5

A2.9. Employment elasticities and GDP growth (1991-1995, 1995-1999 and 1999-2003 – Africa and the Middle East

Africa and the Middle East	Total Employment Elasticity			Youth Employment Elasticity			Female Employment Elasticity			Male Employment Elasticity			Average Annual GDP Growth (%)		
	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003
Algeria	-0.37	0.99	0.91	-0.85	0.16	0.49	-0.20	1.93	1.10	-0.42	0.68	0.84	0.6	3.4	3.9
Angola	-0.21	0.31	0.38	-0.26	0.37	0.44	-0.20	0.30	0.38	-0.21	0.32	0.39	-5.4	7.2	6.5
Bahrain	0.65	0.89	0.81	0.56	0.69	0.42	1.07	1.40	0.98	0.56	0.77	0.76	5.8	4.0	3.5
Benin	1.15	0.77	0.69	0.96	0.78	0.84	1.88	1.21	0.84	0.62	0.37	0.55	4.1	5.3	5.6
Botswana	0.36	1.41	0.52	-0.52	1.43	0.61	1.46	1.51	0.87	-0.40	1.32	0.21	3.3	4.9	5.3
Burkina Faso	0.98	0.55	0.60	0.83	0.49	0.60	0.93	0.51	0.54	1.04	0.58	0.65	2.5	5.0	4.7
Burundi	-0.21	0.05	1.60	-0.73	-0.09	2.14	-0.12	0.06	1.36	-0.30	0.04	1.85	-4.0	-1.1	1.1
Cameroon	-1.11	0.63	0.57	-1.14	0.65	0.67	-1.29	0.72	0.59	-1.01	0.57	0.55	-1.4	4.8	4.5
Cape Verde	0.57	0.63	0.73	0.35	0.70	0.70	0.59	0.63	0.67	0.56	0.63	0.77	6.2	6.3	5.3
Central African Rep.	0.37	0.45	-0.20	0.45	0.64	-0.41	0.36	0.43	-0.17	0.38	0.47	-0.23	1.3	2.4	-1.2
Chad	-0.02	1.05	0.37	0.15	1.78	0.47	-0.08	0.95	0.37	0.04	1.13	0.37	0.3	3.0	7.1
Comoros	0.75	1.82	1.81	0.69	1.84	1.52	0.73	1.78	1.76	0.76	1.84	1.85	2.4	1.5	1.4
Congo	-0.61	1.34	0.52	-0.66	1.49	0.67	-0.64	1.40	0.52	-0.59	1.30	0.52	0.2	1.0	4.1
Côte d'Ivoire	0.98	0.46	-1.20	1.37	0.77	-1.90	1.26	0.60	-1.34	0.86	0.39	-1.13	1.8	5.0	-2.0
Dem. Rep. of the Congo	-0.19	-0.06	0.00	-0.14	0.07	-0.07	-0.13	0.13	0.00	-0.24	-0.20	-0.01	-7.0	-3.2	-0.4
Egypt	0.53	0.48	0.33	0.89	0.72	-1.43	0.39	0.39	0.83	0.56	0.50	0.21	4.1	5.3	3.7
Equatorial Guinea	0.27	0.07	0.12	0.26	0.07	0.15	0.28	0.07	0.12	0.27	0.06	0.12	9.0	39.6	21.5
Eritrea	0.02	0.48	0.38	0.02	0.51	0.39	0.02	0.48	0.38	0.02	0.48	0.38	12.2	4.7	0.6
Ethiopia	0.62	1.11	0.73	0.75	1.39	0.90	0.81	1.67	0.94	0.49	0.69	0.55	3.2	5.0	3.0
Gabon	0.67	0.55	0.86	0.80	0.56	0.61	0.71	0.57	0.87	0.65	0.54	0.85	2.4	1.6	2.7
Gambia	2.39	1.72	0.98	2.99	2.49	1.20	2.65	2.05	1.05	2.20	1.47	0.92	1.9	4.6	4.3
Ghana	0.81	0.68	0.69	0.81	0.66	0.67	0.79	0.67	0.67	0.82	0.70	0.71	4.0	4.6	4.4
Guinea	0.80	0.46	0.51	0.81	0.56	0.46	0.79	0.45	0.49	0.81	0.47	0.54	4.5	4.8	3.0
Guinea-Bissau	1.01	-0.15	-0.36	1.13	-0.14	-0.41	1.04	-0.15	-0.37	0.98	-0.14	-0.36	2.7	-2.0	-0.3
Iran, Islamic Rep. of	0.85	1.22	0.62	0.66	1.95	0.75	2.56	1.98	0.77	0.38	0.96	0.57	3.0	3.4	6.0

A2.9. Employment elasticities and GDP growth (1991-1995, 1995-1999 and 1999-2003 – Africa and the Middle East (continued)

Africa and the Middle East (2)	Total Employment Elasticity			Youth Employment Elasticity			Female Employment Elasticity			Male Employment Elasticity			Average Annual GDP Growth (%)		
	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003
Israel	0.97	0.58	0.85	1.38	-0.60	0.36	1.25	0.90	1.02	0.78	0.33	0.72	6.3	3.5	1.7
Jordan	1.26	2.01	1.07	1.09	0.76	0.69	1.65	2.83	1.07	1.17	1.79	1.07	8.5	2.8	4.2
Kenya	1.64	1.51	2.72	1.85	1.62	3.32	1.70	1.60	2.75	1.58	1.43	2.69	1.7	2.2	0.8
Kuwait	-0.07	3.23	1.67	-0.39	3.61	2.39	-0.08	3.56	1.93	-0.07	3.13	1.60	15.1	0.0	0.6
Lebanon	0.78	1.21	1.46	0.24	0.10	0.99	1.07	1.59	1.38	0.67	1.05	1.50	6.4	2.9	1.6
Lesotho	0.50	0.21	0.18	0.70	0.28	0.70	0.50	0.22	0.31	0.50	0.20	0.11	3.9	3.3	3.0
Liberia	0.07	0.13	0.65	0.09	0.10	0.75	0.09	0.11	0.67	0.05	0.14	0.65	-24.5	38.7	6.9
Madagascar	2.14	0.73	0.10	1.93	0.66	0.06	2.12	0.73	0.10	2.15	0.74	0.10	1.2	3.7	1.5
Malawi	0.07	0.42	0.30	0.04	0.59	0.40	0.08	0.42	0.26	0.06	0.41	0.33	1.7	4.4	1.2
Mali	0.65	0.41	0.41	0.67	0.44	0.43	0.66	0.41	0.40	0.65	0.41	0.41	3.2	5.7	6.3
Mauritania	0.44	0.74	0.74	0.44	0.66	0.59	0.43	0.70	0.70	0.45	0.78	0.77	5.2	3.8	4.4
Mauritius	0.27	0.19	0.23	-0.24	-0.01	-0.55	0.28	0.26	0.23	0.26	0.15	0.22	5.0	5.6	4.6
Morocco	-0.09	1.07	0.28	-0.24	1.13	-0.69	-0.06	1.34	-0.85	-0.10	0.97	0.64	-0.7	4.4	3.9
Mozambique	0.73	0.24	0.23	0.57	0.18	0.32	0.71	0.24	0.22	0.76	0.25	0.25	2.9	9.6	7.2
Namibia	0.48	-1.12	2.10	0.32	-3.45	4.27	0.58	-1.70	2.15	0.40	-0.70	2.07	4.1	3.5	2.9
Niger	0.51	0.66	0.83	0.49	0.62	0.70	0.51	0.67	0.82	0.51	0.66	0.84	0.3	3.9	3.1
Nigeria	1.51	1.21	0.62	1.60	1.35	0.67	1.64	1.29	0.62	1.44	1.17	0.63	2.0	2.5	4.7
Oman	1.36	1.11	0.48	0.80	2.31	0.35	1.64	2.77	0.81	1.33	0.90	0.43	5.1	2.8	4.8
Rwanda	0.24	0.88	0.58	0.27	1.11	0.66	0.22	0.95	0.57	0.26	0.81	0.59	-10.1	10.7	6.3
Saudi Arabia	2.16	1.71	1.11	0.41	3.69	1.30	5.04	4.98	1.74	1.77	1.11	0.97	1.4	2.0	2.4
Senegal	1.13	0.58	0.68	1.23	0.60	0.65	1.20	0.60	0.69	1.07	0.56	0.67	2.0	5.2	4.8
Sierra Leone	0.23	0.10	0.44	0.42	0.37	0.27	0.25	0.12	0.42	0.23	0.09	0.45	-7.3	-5.5	5.5
South Africa	-0.34	1.94	-0.23	-1.88	2.17	-0.46	-0.18	2.31	-0.28	-0.43	1.73	-0.21	1.3	2.4	2.9
Sudan	0.77	0.70	0.56	0.71	0.79	0.57	1.29	0.84	0.67	0.59	0.65	0.52	4.4	6.3	6.2
Swaziland	0.84	0.72	0.51	1.30	0.91	1.27	1.17	0.67	0.52	0.65	0.75	0.50	3.0	3.5	2.5
Syrian Arab Republic	0.73	1.34	1.71	0.83	1.22	1.68	0.93	1.89	1.77	0.66	1.13	1.68	8.0	2.9	2.4

A2.9. Employment elasticities and GDP growth (1991-1995, 1995-1999 and 1999-2003– Africa and the Middle East (continued)

Africa and the Middle East (3)	Total Employment Elasticity			Youth Employment Elasticity			Female Employment Elasticity			Male Employment Elasticity			Average Annual GDP Growth (%)		
	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003	1991-1995	1995-1999	1999-2003
Tanzania, United Rep. of	1.80	0.67	0.42	1.78	0.63	0.49	1.76	0.64	0.40	1.84	0.69	0.44	1.8	3.9	5.8
Togo	0.01	0.87	1.06	0.00	0.92	1.08	0.01	0.90	1.06	0.01	0.85	1.06	0.2	3.3	1.3
Tunisia	0.81	0.65	0.92	0.35	0.77	0.95	1.34	1.29	1.41	0.67	0.46	0.75	4.0	5.8	4.2
Uganda	0.31	0.23	0.48	0.36	0.18	0.48	0.32	0.24	0.46	0.30	0.22	0.50	7.4	6.7	5.6
United Arab Emirates	1.70	0.60	0.34	2.81	-1.24	-0.42	2.38	1.53	0.68	1.62	0.47	0.29	2.4	4.6	5.8
Yemen, Rep. of	1.21	0.95	0.85	1.72	1.95	1.06	1.06	1.22	0.90	1.25	0.85	0.84	6.5	5.8	4.6
Zambia	-0.50	0.89	0.20	-0.62	1.32	0.43	-0.51	0.84	0.16	-0.50	0.93	0.23	-1.8	2.5	4.3
Zimbabwe	1.84	0.26	-0.21	4.45	0.42	-0.68	1.67	0.26	-0.13	1.99	0.27	-0.28	0.1	3.7	-6.3

A2.10. Sector employment elasticities, sector value-added growth and GDP growth (1991-2003) – Africa and the Middle East

Africa and the Middle East	Agriculture Elasticity, 1991-2003		Industry Elasticity, 1991-2003		Services Elasticity, 1991-2003		Sector Value-added Growth and Total Growth, 1991-2003 (Average Annual %)			
	GDP	Value Added	GDP	Value Added	GDP	Value Added	Agriculture	Industry	Services	GDP Growth
Algeria	1.92	1.22	0.75	0.75	0.54	0.51	3.7	2.3	3.2	2.7
Angola	0.36	0.16	0.42	0.38	0.42	-0.01	0.4	5.3	-1.5	2.6
Benin	0.67	0.60	1.17	1.22	1.01	1.09	5.4	5.1	4.6	5.0
Botswana	2.03	-6.38	0.18	0.20	0.99	0.65	-0.7	4.0	6.8	5.0
Burkina Faso	0.60	0.78	1.30	1.70	1.10	0.86	3.0	2.8	5.0	4.1
Burundi	-0.78	-0.34	2.04	0.63	1.29	1.41	-0.3	-0.5	-0.4	-0.3
Cameroon	0.77	0.53	0.73	0.76	0.76	1.04	5.9	1.4	0.6	2.6
Cape Verde	0.01	0.02	0.94	1.05	0.77	0.73	4.4	5.4	6.3	5.9
Central African Rep.	0.77	0.45	0.28	0.50	0.45	-0.19	3.9	2.0	-6.7	1.0
Chad	0.84	0.89	0.83	0.34	0.86	1.06	3.1	7.7	2.4	3.6
Comoros	2.75	0.81	-0.23	0.01	0.59	-0.18	4.4	9.3	-4.6	1.8
Congo	1.84	1.31	0.33	0.19	0.78	0.33	2.3	2.4	1.1	1.8
Côte d'Ivoire	0.87	0.84	0.48	0.22	0.61	0.73	2.8	2.3	0.8	1.6
Dem. Rep. of the Congo	-0.02	1.41	-0.73	0.22	-0.57	-0.20	0.2	-6.3	-10.0	-4.3
Egypt	0.19	0.27	0.14	0.14	0.87	0.81	3.1	3.8	4.6	4.1
Equatorial Guinea	-0.53	-1.34	0.94	0.52	0.53	1.23	5.1	44.8	9.5	23.1
Eritrea	0.34	-0.14	0.72	0.40	0.60	0.56	-1.2	11.9	5.7	5.1
Ethiopia	0.91	1.46	1.44	1.24	1.31	0.87	0.7	4.4	6.3	3.4
Gabon	0.98	0.46	0.88	0.88	0.90	0.69	0.6	2.6	2.1	2.2
Gambia	1.80	1.03	1.76	1.47	1.78	1.49	3.1	3.7	4.6	4.1
Ghana	0.50	0.58	1.22	1.26	1.01	0.84	3.3	3.0	5.7	4.3
Guinea	0.53	0.48	1.02	0.89	0.87	1.11	4.6	4.5	3.1	3.9
Guinea-Bissau	0.00	0.65	0.34	0.09	0.28	0.00	2.8	1.1	1.0	1.8
Iran, Islamic Rep. of	1.73	1.53	0.96	-0.33	0.40	0.22	4.7	0.3	7.3	4.4

A2.10. Sector employment elasticities, sector value-added growth and GDP growth (1991-2003) –
Africa and the Middle East (continued)

Africa and the Middle East (2)	Agriculture Elasticity, 1991-2003		Industry Elasticity, 1991-2003		Services Elasticity, 1991-2003		Sector Value-added Growth and Total Growth, 1991-2003 (Average Annual %)			
	GDP	Value Added	GDP	Value Added	GDP	Value Added	Agriculture	Industry	Services	GDP Growth
Jordan	2.22	-1.61	1.45	1.27	1.33	1.28	-0.6	6.0	4.6	4.7
Kenya	1.67	1.93	1.58	2.04	1.76	1.25	0.9	1.2	2.6	1.8
Lesotho	-0.99	-1.25	1.18	0.91	0.85	0.82	1.6	4.7	3.6	3.6
Madagascar	1.17	1.70	-0.13	-0.18	0.28	0.22	1.7	1.7	2.7	2.2
Malawi	0.41	0.18	0.65	0.61	0.59	0.90	5.1	-0.2	1.8	2.5
Mali	0.44	0.73	0.74	0.44	0.66	0.91	3.2	7.5	3.6	4.2
Mauritania	0.59	0.72	0.72	0.94	0.68	0.47	3.0	2.9	6.2	4.5
Mauritius	0.17	0.10	-0.99	-0.96	0.94	0.78	-0.1	5.0	6.2	5.3
Morocco	3.60	0.63	0.57	0.52	0.99	1.06	0.3	3.2	2.9	2.5
Mozambique	0.26	0.32	0.94	0.47	0.80	1.54	4.5	13.0	2.9	6.2
Namibia	-0.03	-0.19	1.21	1.33	0.77	0.69	0.9	3.6	4.0	3.5
Niger	1.16	1.00	0.36	0.46	0.58	0.63	2.5	2.1	2.5	2.4
Nigeria	1.33	0.88	0.89	0.96	1.00	0.88	3.5	0.3	2.5	2.2
Rwanda	0.58	0.65	0.78	0.61	0.75	0.73	4.0	0.4	0.5	1.9
Saudi Arabia	3.91	4.44	1.58	1.97	1.24	0.90	1.8	1.1	2.7	1.9
Senegal	0.65	0.88	0.81	0.61	0.78	0.75	2.3	5.4	3.9	3.9
Sierra Leone	-0.35	-0.15	2.67	2.53	1.90	1.91	-2.5	-0.4	-2.7	-2.4
South Africa	0.50	0.27	0.80	1.16	0.70	0.58	0.0	1.4	2.8	2.2
Sudan	0.89	0.53	0.42	0.37	0.07	0.10	9.3	5.7	3.3	5.7
Swaziland	0.73	0.49	0.78	0.75	0.77	0.70	0.0	3.4	3.5	3.0
Syrian Arab Republic	2.16	1.89	1.23	0.63	1.15	1.50	4.2	7.3	3.4	4.4

**A2.10. Sector employment elasticities, sector value-added growth and GDP growth (1991-2003) –
Africa and the Middle East (continued)**

Africa and the Middle East (3)	Agriculture Elasticity, 1991-2003		Industry Elasticity, 1991-2003		Services Elasticity, 1991-2003		Sector Value-added Growth and Total Growth, 1991-2003 (Average Annual %)			
	GDP	Value Added	GDP	Value Added	GDP	Value Added	Agriculture	Industry	Services	GDP Growth
Tanzania, United Rep. of	0.68	0.78	0.60	0.45	0.64	0.66	3.5	4.7	3.7	3.8
Togo	1.03	0.93	0.49	0.32	0.66	0.35	3.1	2.1	-0.1	1.6
Tunisia	2.32	2.05	0.78	0.77	0.65	0.57	2.2	4.6	5.3	4.6
Uganda	0.06	0.11	2.09	1.32	0.85	0.75	3.8	10.2	7.6	6.3
Yemen, Rep. of	1.17	1.14	0.85	0.72	0.77	0.77	6.3	5.3	5.6	5.7
Zambia	0.95	0.46	-0.42	0.60	0.00	-0.08	2.3	-0.8	2.9	1.5
Zimbabwe	0.21	0.45	1.00	0.04	0.86	1.06	0.9	-2.5	0.9	-0.1

Appendix 3. Aggregation methodologies

This appendix provides an explanation of the weighting methodologies used to produce the various world and regional aggregations presented in this paper.

Economy-wide elasticities
For economy-wide employment elasticities (total, youth, male and female), country-level results were weighted by labour force. For the 1991 to 1995 period, labour force from 1993 was used. For 1995 to 1999, labour force from 1997 was used. Finally, for 1999 to 2003, labour force figures from 2001 were used. The labour force chosen for the weight was identical to the group for which elasticities were calculated (female labour force weight for female elasticity, etc).

Sector-specific elasticities
For sector-specific elasticities (agriculture, industry and services) for the 1991 to 2003 period, country-level results were weighted by total country employment in each sector in 1997 (i.e. employment in agriculture in 1997 was used to weight the agriculture elasticities).

GDP and value-added growth
Aggregate average annual growth rates in GDP were calculated by weighting the country-level average annual growth rates by each country's respective share in world output given by the IMF's "Shares of Aggregate GDP Based on Purchasing Power Parity (PPP) Valuation of Country GDP indicator".

Aggregate average annual growth rates in value added by economic sector were calculated by weighting the country-level average annual growth rates by each country's respective share of global value added by sector (in constant $1995), given in the World Bank's WDI 2004 database.

Appendix 4. Descriptive statistics and empirical results

Table A.4.1. Descriptive statistics: full sample

Variable	N	Mean	Std. Dev.	Min	Max
Employment elasticity, 1991-2003	154	0.548	0.482	-0.461	2.403
Youth employment elasticity, 1991-2003	154	0.235	0.857	-2.575	3.060
Female employment elasticity, 1991-2003	154	0.704	0.713	-0.812	5.101
Average annual growth in working-age population, 1991-2003	154	0.020	0.012	-0.009	0.068
Average annual growth in youth population, 1991-2003	154	0.016	0.017	-0.027	0.069
LFPRgap91	154	0.317	0.154	0.037	0.706
Share of employment in services, 1991	154	0.412	0.199	0.036	0.791
Share of employment in industry, 1991	154	0.222	0.117	0.009	0.475
Average annual inflation rate, 1991-2003	154	0.314	0.702	-0.003	5.508
Degree of conflict	154	0.127	0.277	0.000	1.000
Average trade as percentage of GDP, 1991-2003	154	0.797	0.425	0.031	2.773
Average trade balance, 1991-2003	154	0.061	0.125	-0.162	0.780
Malaria deaths per 100,000 inhabitants	154	40.831	86.327	0.000	469.0

Table A.4.2. Descriptive statistics: partial sample

Variable	N	Mean	Std. Dev.	Min	Max
Employment elasticity, 1991-2003	100	0.522	0.480	-0.461	2.403
Youth employment elasticity, 1991-2003	100	0.139	0.876	-2.575	3.060
Female employment elasticity, 1991-2003	100	0.712	0.770	-0.812	5.101
Average annual growth in working-age population, 1991-2003	100	0.019	0.012	-0.006	0.068
Average annual growth in youth population, 1991-2003	100	0.012	0.018	-0.027	0.069
LFPRgap91	100	0.305	0.159	0.037	0.706
Share of employment in services, 1991	100	0.452	0.185	0.036	0.791
Share of employment in industry, 1991	100	0.243	0.107	0.028	0.475
Average annual inflation rate, 1991-2003	100	0.283	0.642	-0.003	5.508
Degree of conflict	100	0.128	0.282	0.000	1.000
Highest individual tax rate	100	0.337	0.130	0.000	0.600
Employment stringency index	100	39.850	19.254	0.000	86.0

Table A.4.3. Regression results with total elasticity as dependent variable, specification 1

	(1)	(2)	(3)	(4)
Average annual growth in working-age population, 1991-2003	22.957	25.414	24.515	24.444
	(3.066)***	(4.296)***	(4.450)***	(4.520)***
Share of employment in services, 1991		0.761	0.639	0.608
		(0.205)***	(0.208)***	(0.220)***
Share of employment in industry, 1991		-0.423	-0.422	-0.435
		(0.382)	(0.388)	(0.424)
Average annual inflation rate, 1991-2003			-0.114	-0.116
			(0.033)***	(0.033)***
Degree of conflict			-0.157	-0.164
			(0.082)*	(0.091)*
Average trade as percentage of GDP, 1991-2003				0.001
				(0.068)
Average trade balance, 1991-2003				-0.161
				(0.189)
Malaria deaths per 100,000 inhabitants				0.000
				(0.000)
Constant	0.085	-0.184	-0.060	-0.033
	(0.057)	(0.157)	(0.161)	(0.183)
Observations	154	154	154	154
R-squared	0.34	0.40	0.44	0.44

Table A.4.4. Regression results with total elasticity as dependent variable, specification 2

	(1)	(2)	(3)	(4)
Average annual growth in working-age population, 1991-2003	20.923	20.655	19.953	16.680
	(4.151)***	(5.665)***	(5.949)***	(6.300)***
Share of employment in services, 1991		0.669	0.515	0.568
		(0.263)**	(0.264)*	(0.255)**
Share of employment in industry, 1991		-0.624	-0.600	-0.689
		(0.588)	(0.593)	(0.623)
Average annual inflation rate, 1991-2003			-0.136	-0.147
			(0.032)***	(0.028)***
Degree of conflict			-0.110	-0.072
			(0.106)	(0.100)
Highest individual tax rate				-0.774
				(0.446)*
Employment stringency index				0.003
				(0.002)
Constant	0.128	-0.018	0.112	0.309
	(0.067)*	(0.220)	(0.219)	(0.286)
Observations	100	100	100	100
R-squared	0.29	0.34	0.38	0.42

Robust standard errors in parentheses
* significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent

Table A.4.5. Regression results with youth elasticity as dependent variable, specification 1

	(1)	(2)	(3)	(4)
Average annual growth in youth population, 1991-2003	32.232	32.880	33.163	33.404
	(4.274)***	(6.066)***	(6.232)***	(6.452)***
Share of employment in services, 1991		0.699	0.602	0.506
		(0.444)	(0.447)	(0.441)
Share of employment in industry, 1991		-0.920	-0.904	-1.016
		(0.758)	(0.781)	(0.826)
Average annual inflation rate, 1991-2003			-0.077	-0.076
			(0.053)	(0.057)
Degree of conflict			-0.212	-0.231
			(0.146)	(0.158)
Average trade as percentage of GDP, 1991-2003				0.013
				(0.122)
Average trade balance, 1991-2003				-0.329
				(0.373)
Malaria deaths per 100,000 inhabitants				-0.000
				(0.001)
Constant	-0.273	-0.366	-0.283	-0.199
	(0.083)***	(0.257)	(0.256)	(0.281)
Observations	154	154	154	154
R-squared	0.41	0.43	0.44	0.44

Table A.4.6. Regression results with youth elasticity as dependent variable, specification 2

	(1)	(2)	(3)	(4)
Average annual growth in working-age population, 1991-2003	31.668	29.772	30.309	26.734
	(5.737)***	(8.073)***	(8.567)***	(8.586)***
Share of employment in services, 1991		0.791	0.690	0.670
		(0.505)	(0.505)	(0.504)
Share of employment in industry, 1991		-1.516	-1.455	-1.635
		(1.158)	(1.207)	(1.241)
Average annual inflation rate, 1991-2003			-0.081	-0.062
			(0.081)	(0.073)
Degree of conflict			-0.138	-0.080
			(0.201)	(0.199)
Highest individual tax rate				-1.038
				(0.650)
Employment stringency index				0.001
				(0.003)
Constant	-0.251	-0.217	-0.152	0.237
	(0.091)***	(0.349)	(0.336)	(0.420)
Observations	100	100	100	100
R-squared	0.41	0.44	0.44	0.46

Robust standard errors in parentheses
* significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent

Table A.4.7. Regression results with female elasticity as dependent variable, specification 1

	(1)	(2)	(3)	(4)
Average annual growth in working-age population, 1991-2003	28.507	21.601	21.667	21.078
	(3.939)***	(5.512)***	(5.595)***	(5.766)***
Share of employment in services, 1991		1.140	1.032	0.875
		(0.329)***	(0.334)***	(0.324)***
Share of employment in industry, 1991		-0.546	-0.532	-0.619
		(0.565)	(0.590)	(0.641)
Gender gap in labour force participation		1.525	1.449	1.491
		(0.485)***	(0.497)***	(0.501)***
Average annual inflation rate, 1991-2003			-0.097	-0.099
			(0.040)**	(0.044)**
Degree of conflict			-0.190	-0.232
			(0.137)	(0.153)
Average trade as percentage of GDP, 1991-2003				-0.020
				(0.088)
Average trade balance, 1991-2003				-0.669
				(0.327)**
Malaria deaths per 100,000 inhabitants				-0.000
				(0.001)
Constant	0.129	-0.563	-0.444	-0.295
	(0.068)*	(0.180)***	(0.189)**	(0.200)
Observations	154	154	154	154
R-squared	0.24	0.41	0.43	0.44

Table A.4.8. Regression results with female elasticity as dependent variable, specification 2

	(1)	(2)	(3)	(4)
Average annual growth in working-age population, 1991-2003	28.649	32.210	31.844	24.704
	(5.887)***	(8.066)***	(8.654)***	(8.572)***
Share of employment in services, 1991		1.236	1.041	1.110
		(0.446)***	(0.442)**	(0.404)***
Share of employment in industry, 1991		-0.305	-0.287	-0.520
		(0.781)	(0.806)	(0.874)
Average annual inflation rate, 1991-2003			-0.150	-0.155
			(0.036)***	(0.055)***
Degree of conflict			-0.225	-0.134
			(0.180)	(0.159)
Highest individual tax rate				-1.719
				(0.841)**
Employment stringency index				0.004
				(0.003)
Constant	0.173	-0.379	-0.217	0.358
	(0.081)**	(0.303)	(0.302)	(0.443)
Observations	100	100	100	100
R-squared	0.21	0.29	0.31	0.38

Robust standard errors in parentheses
* significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent

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