

## B. Global trends in wages by sector and occupation<sup>1</sup>

### 1. Introduction

Since the 1980s, evidence from cross-country studies has shown the existence of rising inequality in wages and earnings. In many high- and low/middle-income countries, the wages of high-skilled workers have increased, while those of low-skilled workers have grown relatively more slowly, fallen or remained stagnant. For example, in the United States, real earnings of low-wage workers have fallen while the earnings of high-wage workers have grown significantly. In Latin America and much of Asia, the same scenario exists. In much of Europe (with the exception of the United Kingdom), where wage-setting institutions are more centralized, the deteriorating position of low-skilled workers is exemplified more through rising unemployment than growing wage gaps.<sup>2</sup>

In addition, the gap in wages and earnings between men and women remains entrenched in many countries. In the EU Member States the gender gap in pay was 15 per cent in 2003.<sup>3</sup> In many countries in Asia and the Middle East and North Africa, the gap was upwards of 40 per cent in some sectors.<sup>4</sup> Even within the same occupations the wages and earnings of women

tend to be less than those of their male counterparts.

Wages and earnings constitute a large share of total income in many countries; therefore, wage/earning inequality can be held responsible for much of the inequality that exists in wealth, consumption, healthcare and other well-being indicators associated with income. Also, since households with the lowest wages and earnings generally fall among the poorest households within a country, deteriorating wages and earnings will only further exacerbate their already fragile economic situations.

There has been a growing debate regarding the extent to which workers have benefited from recent trends in the global economy. Although increased globalization in the form of trade and foreign direct investment has led to strong output growth in some economies, the extent to which these gains have been passed on to workers in the form of more employment and improved wages and earnings is questionable; rather globalization has been blamed for the deteriorating position of low-skilled workers globally.<sup>5</sup>

Using wage rates and earning indicators at the occupational level from the KILM 4th Edition database, this section will discuss the recent trends in wages and wage inequality across countries. It will also discuss the impact of globalization on wages and analyse the trends in gender equity in pay within occupations and sectors.

Part two of this section will provide background information from recent studies on wages. Part three will provide more detail on the wage rates and earning indicators used for the analysis in this section. Parts four and five

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1. This section was prepared by Marva Corley, Yves Perardel and Kalina Popova from the ILO Employment Trends Team.

2. S. Marjit and R. Acharyya: *Globalization and Wage Inequality: A Simple General Equilibrium Approach* (Washington, DC, Global Development Network, 2002); website: <http://www.eldis.org/static/DOC12479.htm>.

3. Eurostat estimate 2003. European Commission: "On equality between women and men", Report from the Commission to the Council, The European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM(2005) 44 final (Brussels, 2005); website: [http://europa.eu.int/comm/employment\\_social/news/2005/feb/gender\\_equality\\_2005\\_report\\_en.pdf](http://europa.eu.int/comm/employment_social/news/2005/feb/gender_equality_2005_report_en.pdf).

4. Author's calculations based on KILM 15.

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5. For a further discussion of employment impacts of output growth, see section A of this chapter.

will provide an analysis of wage trends making comparisons across broad categories (e.g. by high- and low-skilled occupations, and by gender) and finally, part six will draw the section's conclusions.

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## 2. Background information

There are few studies comparing wage rates and earnings across countries in different regions mainly because of the limited amount of comparable information and methodological data. Wage and earning indicators tend to be developed based on country- (or region-) specific criteria that are not always comparable.<sup>6</sup> For example, there are differences between concepts (definition of wage rates and earnings), time units (hourly, weekly), and data sources and methods of collection (household or establishment survey, administrative records) across countries. One of the few studies analysing global wage trends is that of Freeman and Oostendorp who also developed the Occupational Wages around the World (OWW) data file.<sup>7</sup> The OWW data file is basically a standardization of the data contained in the ILO's October Inquiry (as described in box B1) and contains occupational wages in 161 occupations, across 150 countries from 1983 to 1999.

In their analysis of wages across countries, Freeman and Oostendorp find that, while wage dispersion is inversely related to development across countries (i.e. the more developed the

country, the less income inequality exists),<sup>8</sup> within the same country, growth in GDP per capita only slightly reduces inequality of wages. Although these results may seem at odds, one explanation put forth by the authors is that institutional differences between high-income and low-income countries may be a determining factor. Institutional factors present in countries with high levels of GDP per capita, such as the type of government and the strength of trade unions, might help to explain why gains in GDP within a low-income country may not improve wage inequality.<sup>9</sup> Later studies using the OWW data file follow up on this analysis and focus more on the factors impacting wages and their dispersion across countries, citing particularly globalization in the form of trade and foreign direct investment (FDI). These studies find that in general the impact of globalization on wages:

1. shows a Kuznets-type relationship whereby globalization initially has a negative impact on wages, but this effect dissipates over time and eventually the impact of globalization on wages becomes positive;
2. is biased towards high-skilled occupations and has lesser impact on the unskilled and the poor; and
3. has narrowed the gender gap, particularly in low-skilled occupations.

One such study, Freeman, et al., finds that over time wages grow faster in countries that

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6. In KILM 16 real wage rates are defined as basic wages and salaries or basic remuneration; while real earnings include some elements of remuneration that are not counted as part of wage rates such as commissions, overtime, bonuses, gratuities and pay for time not worked. In practice there is often little choice but to accept whatever information is available from national sources. Therefore, the term "wages" will be used hereafter to refer to both wage rates and earnings unless otherwise noted.

7. R. Freeman and R.H. Oostendorp: "The Occupational Wages around the World data file", in *International Labour Review* (Geneva, ILO), 2001. The OWW data file as well as other studies on occupational wages is available from the NBER website at <http://www.nber.org/oww/>.

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8. This conclusion is more or less backed up by the analysis of the relationship between GDP per capita and the Gini index in figure 20c of the KILM 20 manuscript. However, the findings of Freeman and Oostendorp, as well as figure 20c, also show that there is considerable variation in wage inequality across countries with the *same* level of GDP per capita; for example, in the United States and the United Kingdom there is a high level of wage inequality.

9. Other studies suggest that wage differences across countries could also be due to firm size (wages in large firms tend to be higher than small firms); workforce composition (e.g. gender composition); differences in job characteristics such as contract type, overtime hours, working conditions and accident rates. See, for example, European Commission: *Employment in Europe 2003: Recent Trends and Prospects* (Brussels, 2003), Chapter 3.

are more open to trade and FDI.<sup>10</sup> Initially there are negative impacts of trade on wages, but this impact turns positive over time; while FDI has an initially positive impact on wages, but this positive impact diminishes over time. Thus, the authors suggest that two variables are complementary in the sense that FDI can help to alleviate some of the initial wage losses that might occur due to the liberalization of trade. At the same time, however, if the opening up of the economy fails to attract FDI, wage losses could be considerable.

Majid (2004), which also used data from the OWW data file, finds that, at the global level, there is an initial negative impact of globalization on wages, but they tend to recover within three to four years of openness.<sup>11</sup> His findings suggest that in developing economies *both* trade and FDI can initially impact negatively on wages.<sup>12</sup> The initial negative impact on wages could be the result of sectoral demand shifts (as a result of import penetration and a move to more profitable sectors) and/or inflation. In the long run there may be positive impacts due to increased growth, but this may not result in full-fledged enhancement of real wages due to openness. In addition, he finds that the effects of globalization are considerably better in the developed economies, where wage inequality is less and its recovery faster than in the developing economies.

Other studies using the OWW data file, such as Rama (2003), find that although globalization in the form of FDI and trade increases wages, these benefits are not distributed equitably and can lead to increased

inequality.<sup>13</sup> Globally, the evidence shows that higher skilled workers benefit more from globalization than unskilled workers in terms of increased wages. In addition, there is no direct benefit to the poor (and unskilled) from globalization in terms of increased wages. These findings might seem contrary since, theoretically, globalization should favour unskilled workers in developing economies by increasing the countries' comparative advantage in the world market.<sup>14</sup> However, Rama suggests that, since the initial effects of globalization are on wages that accrue to wage and salaried employees, if the number of wage and salaried employees is small, as is the case in many developing economies (see KILM table 3 on status in employment), the initial direct impact on the poor (and unskilled) will be minimal. Other studies have also shown that high-skilled occupations in developing economies can act as a complement for trade in goods produced in low-skilled occupations – causing demand for labour in high-skilled occupations to expand as the result of increased trade. Therefore, if globalization leads to increased employment and wages in the skilled occupations, while having little impact on wages in low-skilled occupation, this can also increase inequality.

Another study by Oostendorp (2004) focuses on the impact of globalization on wages, but from a gender perspective.<sup>15</sup> Using the October Inquiry database, he analyses the impact of trade and FDI on the gender gap in wages and finds that, in low-skilled occupations, globalization has narrowed the gender pay gap (GPG) in both developed and developing economies, while in high-skilled occupations, it has led to a narrowing of the GPG in developed economies, but a widening of the gap in developing economies.

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10. R. Freeman, R. Oostendorp and M. Rama: *Globalization and Wages* (Washington, DC, World Bank, 2001).

11. N. Majid: "What is the effect of trade openness on wages?", Employment Strategy Paper, No. 18 (Geneva, ILO, 2004); website: <http://www.ilo.org/public/english/employment/strat/download/esp18.pdf>.

12. In contrast to Freeman, et al. (2001), which shows the crucial importance of FDI in developing countries for wage gains, Majid (2004) finds that FDI is relatively less important than trade for determining wages in developing countries.

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13. M. Rama: "Globalization and workers in developing countries", World Bank Policy Research Working Paper, No. 2958 (Washington, DC, 2003).

14. Such assumptions are based on Heckscher-Ohlin (comparative advantage stems from different relative factor endowments) and Stolper-Samuelson (international trade lowers the real wage of the scarce factor of production) type theorems.

15. R.H. Oostendorp: "Globalization and the gender wage gap", World Bank Policy Research Working Paper, No. 3256 (Washington, DC, 2004).

## Box B1. The Occupational Wages around the World data file

In their paper, entitled “The Occupational Wages around the World data file”, Freeman and Oostendorp discuss the methodology used to develop a database on wages based on the information contained in the ILO’s October Inquiry.

The October Inquiry is a questionnaire that the ILO sends to national governments requesting information on wages in detailed occupations. The coverage of the October Inquiry increased from 18 occupations in 15 countries at the beginning in 1924 to 159 occupations in 158 countries at the end of the twentieth century.

As a result of the expansion, the October Inquiry database is rich with information, but also problematic for the following reasons:

- Countries respond to the ILO’s request in inconsistent ways because they report data from a variety of national sources. Consequently, recorded wages in different occupations are sometimes not even comparable in the same country for the same year.
- Countries do not report consistently from year to year. During the 1983-99 period, only five out of 158 countries reported wages every year. Moreover, some countries do not provide national data, choosing to cover only particular regions instead.
- The October Inquiry does not cover all components of earnings (annual bonuses, for example, are missing).
- Even with the ILO’s detailed specification of skills, the work performed in a given occupation can vary from one country to another.
- There is a difference in the quality of the data coming from different sources (government agencies, collective agreements, etc.). This is why the ILO deems 15 per cent of the data as being of “poor quality”.
- Because of the different ways to report the wages (minimum wage rates, average, prevailing wage by hours, days, weeks, months, earnings for men, women, both), only 5.7 per cent of the observations are directly comparable.

Consequently, Freeman and Oostendorp developed a methodology to make the data in the October Inquiry more comparable. They standardized the wage rates of all occupations across countries based on the most common form of data in the Inquiry, the monthly average wage rates for male workers.

### *How did they standardize the data?*

They calculated adjustment coefficients that measure how non-standard forms of data diverge from the standard rate for different countries, occupations and time periods. As an example, consider the change made for “cloth weavers” in China in the 1990 data. The reported mean wage rate was 171 yuan per month for female workers (there was no mean wage rate for males). But using their base calibration, they estimated that female wage rate should be raised to 201 yuan per month to be on the same basis as the monthly average wage rates for male workers. Finally they developed a huge country-occupation-time matrix of wages. Unfortunately, the matrix contains many missing elements that they were not able to replace or estimate.

As a general conclusion, the OWW data file can be considered as a plausible alternative way of standardizing the October Inquiry data because variant standardizations yielded similar results. Nevertheless, this database is not perfect, and one main problem remains: estimating the missing values. Therefore, their conclusions have to be considered with prudence because they are only taking sources from 75,000 observations out of the possible 432,000.

The OWW data file as well as other studies on occupational wages is available from the NBER website at <http://www.nber.org/oww/>.

Source: R. Freeman and R.H. Oostendorp: “The Occupational Wages around the World data file”, in *International Labour Review* (Geneva, ILO), 2001.

Theoretically, Oostendorp suggests that globalization should narrow the GPG in certain occupations because increasing competitive pressures make it more costly for individuals and firms to discriminate based on sex. In addition, increasing trade can expand job opportunities for women in export-oriented occupations and lead to other indirect benefits, such as economic growth, improvement in infrastructures and availability of public services that can help to decrease the gender disparities in terms of human capital. At the same time, globalization may increase the gender gap in certain occupations if women are concentrated in the occupations that are adversely impacted by trade, because the lack of demand may weaken the bargaining power of women or may cause women to drop out of the labour force altogether or reduce their working time.

The author's findings suggest that in low-skilled occupations where women are generally more highly represented, globalization has helped to improve their wages vis-à-vis their male counterparts. At the same time, there are still significant gender gaps in human capital within the high-skilled occupations in developing economies, such that any increased demand for high-skilled labour will disproportionately favour male workers, leading to larger GPGs.

### 3. Wage indicators and the KILM database

Nominal wages and earnings data are taken from KILM table 16, which reports data across 19 occupations between the years 1980 and 2003 in the KILM 4th Edition.<sup>16</sup> These 19 specific occupations and their correspondent wages and earnings data are extracted from the October Inquiry based on four strict selection

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16. The occupational wage and earning indicators (KILM 16) are based on information extracted from the ILO's October Inquiry, which contains data on wages, earnings and hours of work in 159 different occupations and over 158 countries from 1983-2004. For further information on the October Inquiry, see the manuscript for KILM 16.

criteria: reliability, comparability, geographical coverage and availability of data by sex (for further details on selection criteria of occupations from the October Inquiry, see manuscript for KILM 16). In KILM table 16, real wages are defined as basic wages and salaries or basic remuneration; while real earnings include some elements of remuneration that are not counted as part of wage rates, such as commissions, overtime, bonuses, gratuities and pay for time not worked. The most appropriate indicator to use for analysis would, theoretically, depend on the specific questions being explored; in practice, however, one must often accept whatever information is available from national sources. Therefore, the term "wages" will be used hereafter to refer to both wage rates and earnings, unless otherwise noted.

Comparability across countries was maximized by converting nominal wages into US dollars using constant value consumption purchasing power parities (PPPs). The constant value consumption PPPs take into consideration both the exchange rate and price changes. They are based on the prices of a basket of consumption goods specific to each country, which allows comparisons of the standard of living in each country relative to the United States in a specific base year (in this case 1996). Thus, PPP consumption wages are a better indicator of the standard of living than wages, based simply on exchange rate conversions to US dollars (which better reflect competitiveness).<sup>17</sup> Additionally, because they take into consideration the relative prices in the country, real wages based on PPPs give higher wage rates than those based on exchange rates. The real wages in PPP dollars were calculated as follows:

$$(1) \text{ PPW} = \text{NW} / \text{CPPP}$$

$$(2) \text{ CPPP} = (\text{PC} / 100) * \text{XRAT}$$

Where PPW are wages in PPP, NW are nominal wages, CPPP are consumption PPPs,

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17. For further information on the use of PPPs to convert wages, see Majid (2004) and R.H. Oostendorp and M. Przybyla: *Comparing Standards of Living across Occupations and Countries using the ILO October Inquiry*, ILO mimeo (Geneva, 2002).

PC are price level of consumption, and XRAT are exchange rates. The price level of consumption and exchange rate data needed to calculate the consumption PPPs are taken from the Penn World Tables 6.1.<sup>18</sup> Consumption PPPs are more appropriate for transforming wages than using the general PPPs because they omit expenditures for government and investment goods.

In addition, data on average nominal wages in manufacturing are taken from KILM 15, which reports data from 1980 to 2003.<sup>19</sup> In general, wage indicators for manufacturing employees are more widely available than for other sectors of the economy because of the countries' desire to produce a measure of the level of industrial development. Similar to occupational wages and earnings, real manufacturing wages are estimated using consumption PPPs.

In both cases wages were standardized to a common measurement period (i.e. hourly, daily, weekly, monthly) based on working time information that can also found in the October Inquiry. Where no working time information was available, assumptions were made based on standard hours of work.<sup>20</sup>

#### **4. Global wage trends across occupations**

This section examines the trend in wages and earnings across countries and occupations since the 1990s, focusing specifically on

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18. The Penn World Tables are available at [http://pwt.econ.upenn.edu/php\\_site/pwt\\_index.php](http://pwt.econ.upenn.edu/php_site/pwt_index.php). For further discussion of consumption PPPs, see the Data Appendix for a Space-Time System of National Accounts: Penn World Table 6.1 (PWT 6.1) at the same link.

19. The data are extracted from the ILO Database of Labour Statistics (LABORSTA); website: <http://laborsta.ilo.org>.

20. Where working hours information is aggregated on a monthly or yearly basis, we estimate reference period wages by dividing yearly wages by 12 months, and monthly wages by 4.333 weeks. It was not possible to standardize the wages and earnings measured per day as it was impossible to determine how many hours per day people worked.

whether certain occupations witnessed increases in wages and if these occupations were the same across countries.

Figure B1 shows the rankings of occupations according to their average monthly wage between the period 1990 to 2000.<sup>21</sup> The full ten-year period was taken into consideration to smooth yearly fluctuations in wage growth that might occur. Based on the average monthly wages, it is evident that there are five occupations (power distribution and transmission (PDT) engineer, accountant, computer programmer, first-level education teacher and professional nurse) with considerably higher monthly wages than the other occupations in the sample. These occupations require the most technical skills of the 19 occupations in the sample in terms of specialized training and a high level of education. Thus, in spite of the regional differentiation in the sample, the wage premium given for more technically skilled workers prevailed. The average of the monthly wages in these five occupations was more than double the average in the remaining 14 occupations.

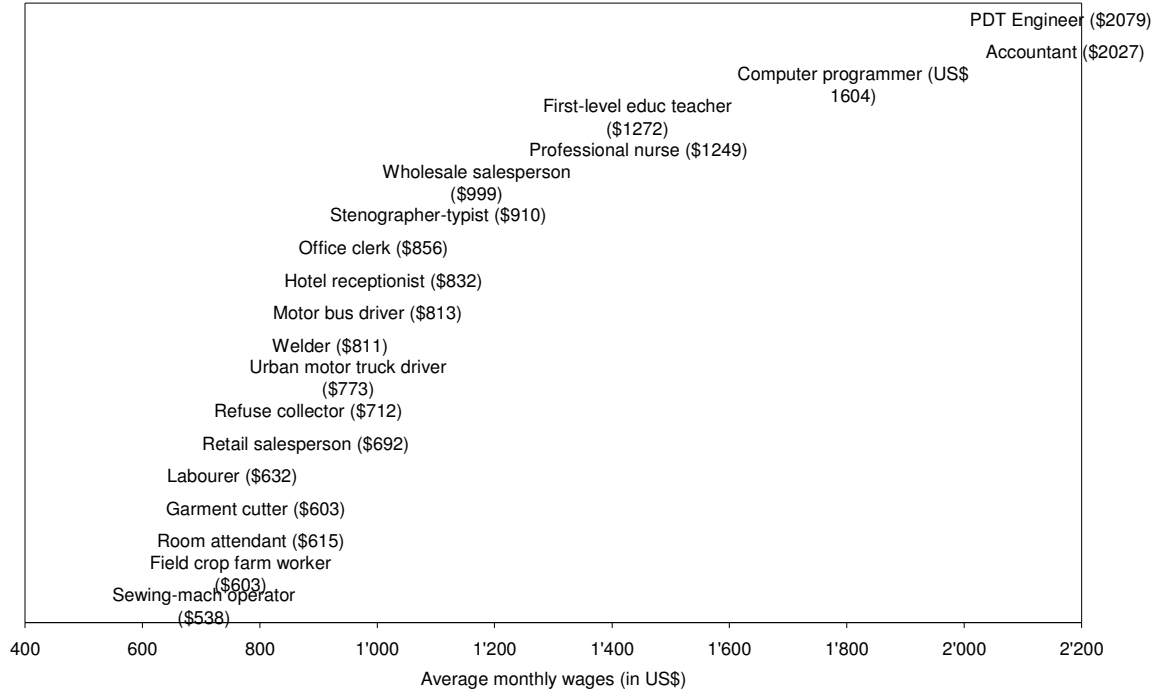
These results are in line with other studies showing that higher wages are generally found within the services sector (where four of the five technical occupations lie). One EU report, for example, found that in the majority of Western, Central and Eastern European countries, average wages in the services sector generally exceed those in industry.<sup>22</sup> The report elaborates that wages are generally above average in financial intermediation industries (occupations such as accountant and computer programmer in banks), but lower than average in manufacturing of textiles (sewing-machine operator and garment cutter) and hotels and restaurants (room attendant). Some of the wage differences in the lower skilled occupations can be attributed to lower

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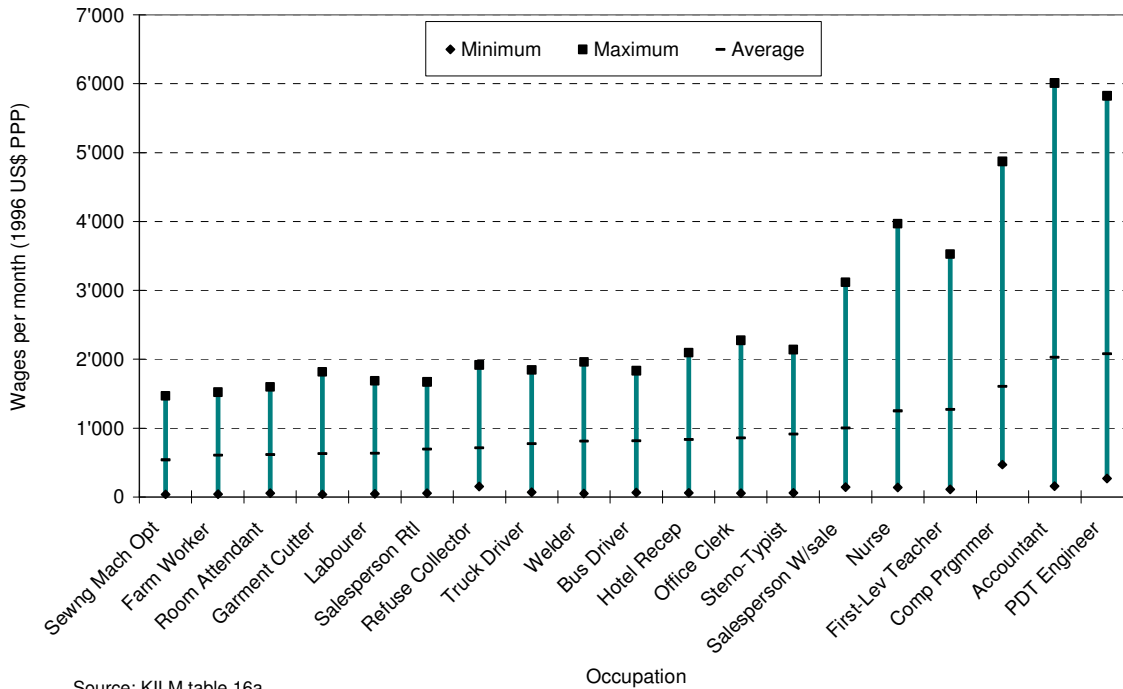
21. The occupations in KILM 16 are specific to particular industries and may not represent the wages of similar occupations in other industries. For a full list of occupations and sector designation, see box 16a in the manuscript for KILM 16.

22. European Commission: *Employment in Europe*, op. cit.

**Figure B1. Average monthly wages in US\$ per month (1996 US\$ PPP), 1990-2000**



**Figure B2. Intra- and inter-occupational wage differentials, 1990-2000**



levels of productivity as well as higher proportions of female employees (who might work less hours and are generally weaker at negotiating increases in pay than their male counterparts). There was also more inter-occupational wage variation between higher and lower skilled occupations.

Figure B2 provides a useful snapshot of the mean as well as the intra- and inter-occupational distribution of monthly wages for all countries.<sup>23</sup> For each occupation the horizontal line in the middle indicates the mean of the sample. The endpoints on the lines indicate the variation in wages within the occupations. The mean and spread vary a great deal between occupations and it is evident that there is more variation in wages in the technically skilled occupations. For example, the variation of wages within garment cutters was less than the spread within the engineering and accounting occupations.

Table B1 displays the actual values for the lower- and upper-limit wages. The wages across countries for sewing-machine operators were between US\$37 and US\$1,469 per month, while in the engineering occupation the range of wages was between US\$266 and US\$5,823 per month. Thus, in most parts of the world, wages in the low-skilled occupations tended to be low, as compared to the technical occupations where the variation across countries (in absolute terms) was much greater. At the same time, the *relative* intra-occupational wage differences were higher in low-skilled occupations than in high-skilled occupations; the best-paid garment cutter earned almost 50 times more than the lowest-paid garment cutter; while the best-paid engineer earned “only” 22 times that of the lowest-paid engineer.

Table B2 shows growth in hourly wages in 1990 and 2000 for five selected occupations. The occupations selected are a mix of the technical and low-skilled occupations. The figures in the table show that between 1990 and 2000 wages increased in

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23. We calculated the mean by region and found similar rankings to those shown for all countries.

accounting and computer programming occupations by 30 per cent and more over the ten-year period for countries with available data. Some of the largest increases were witnessed in Hungary and Mauritius where wages more than doubled.<sup>24</sup> Comparatively, in the motor bus driver, garment cutter and sewing machine operator occupations wages were generally lower and wage growth was much less than in the technical occupations; wage growth was over 30 per cent in only two incidences and declined in a number of cases. From the selected occupations in table B2 it would seem that the technical occupations not only have higher wages, but have also witnessed stronger wage gains in the decade from 1990 to 2000 than in the low-skilled occupations.

To examine this trend more closely it is necessary to look at the wage trends across all occupations in the database. One way of doing this is to separate the occupations into two groups based on their average level of wages. The technically skilled group will consist of the five occupations with the highest average wages (PDT engineer, accountant, computer programmer, first-level education teacher and professional nurse), while the low-skilled group will comprise the remaining 14 occupations.

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24. All figures are measured in PPP as opposed to exchange rates. In developing economies where the cost of living is often much less than in developed economies, the PPP generally gives higher wage rates than those based on exchange rates because it takes into consideration the difference in the cost of living across countries.



**Table B1. Lower and upper wage limits by occupation in US\$ per month (1996 US\$ PPP), 1990-2000**

Occupation	Lower wage limit	Upper wage limit
Sewing-machine operator	37	1469
Field crop farm worker	39	1520
Room attendant or chambermaid	54	1597
Garment cutter	37	1816
Labourer	46	1687
Salesperson (retail)	55	1670
Refuse collector	151	1915
Urban motor truck driver	70	1843
Welder	48	1961
Motor bus driver	63	1832
Hotel receptionist	60	2092
Office clerk	55	2273
Stenographer-typist	57	2138
Salesperson (wholesale)	134	3119
Professional nurse	138	3969
First-level education teacher	108	3526
Computer programmer	470	4871
Accountant	155	6010
Power distribution and transmission engineer	267	5823

**Table B2. Hourly wages and earnings in selected occupations (in 1996 US\$ PPP)**

Occupation		Austria	Hungary	Nicaragua	Mauritius	United States.	Mexico	Sri Lanka	Philippines	Venezuela	Czech Rep
		Wages					Earnings				
Accountant	1990	13.79	4.48	5.03	13.95	n.a.	n.a.	n.a.	n.a.	3.12	n.a.
	2000	18.54	10.44	6.63	28.12	19.88	n.a.	3.72	n.a.	5.56	n.a.
	% Change	0.34	1.33	0.32	1.02	n.a.	n.a.	n.a.	n.a.	0.78	n.a.
Computer Programmer	1990	11.84	6.57	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.92	5.95
	2000	15.68	14.98	17.48	n.a.	27.06	6.69	n.a.	n.a.	5.15	9.94
	% Change	0.32	1.28	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.31	0.67
Motor bus driver	1990	6.60	3.45	2.34	n.a.	n.a.	n.a.	2.62	2.41	2.44	n.a.
	2000	8.42	3.77	4.49	n.a.	11.09	3.34	n.a.	2.93	1.53	n.a.
	% Change	0.28	0.09	0.92	n.a.	n.a.	n.a.	n.a.	0.22	-0.37	n.a.
Garment cutter	1990	n.a.	1.95		n.a.	n.a.	n.a.	0.94	n.a.	1.96	3.05
	2000	5.49	2.36	2.33	n.a.	8.98	1.69	1.34	n.a.	1.61	4.15
	% Change	n.a.	0.21	n.a.	n.a.	n.a.	n.a.	0.43	n.a.	-0.18	0.36
Sewing-machine operator	1990	4.05	n.a.	n.a.	n.a.	n.a.	n.a.	1.58	2.22	1.81	n.a.
	2000	5.00	n.a.	1.95	n.a.	7.42	1.69	1.21	2.94	1.34	3.61
	% Change	0.23	n.a.	n.a.	n.a.	n.a.	n.a.	-0.23	0.32	-0.26	n.a.

n.a. = Not available.

Using the occupation groupings discussed above in countries with comparable data over the period 1990 to 2000, figure B3 shows that there has been stronger growth in wages in the technically skilled occupations than in low-skilled occupations across our sample.<sup>25</sup> Figure B3 shows the growth rate in technical and low-skilled occupations in seven countries at various stages of development. Only in Austria does one find growth in low-skilled occupations outstripping that of technically skilled occupations during the period. Wage growth in technically skilled occupations was between 15 and 60 per cent, while wage growth in low-skilled occupations was between 0 and 50 per cent. The Czech Republic, Mauritius, Nicaragua and the Philippines had particularly strong wage growth in both high-skilled as well as low-skilled occupations. One of the reasons for this may be because these countries are high traders and trade contributed more to GDP (over 80 per cent) than in Austria, Sri Lanka and Venezuela.

These findings are also in line with trends in other studies, such as Majid (2004) and Rama (2003) who found that in developing economies the impact of trade in terms of wage gains has been greater in high-skilled occupations than in the low-skilled occupations. Theory suggests that with increased trade those countries with a comparative advantage in low-wage labour (i.e. developing economies) should have higher wage growth in low-wage occupations than in high-wage occupations. Majid and Rama consider that this might not be the case because of the surplus labour in the developing economies, whereby the initial impact from globalization (and growth) may be to bring previously underemployed or unemployed people into the formal labour market, with no direct effect on wages.

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25. Countries had to have at least two occupations in each of the groups in order to be included in the analysis. The mix of occupations in the low- and high-skilled group remained the same within countries over the period, but between countries the mix of occupations may differ. For example, country A may contain three low-skilled and five high-skilled occupations, while country B may contain six low-skilled and three high-skilled occupations.

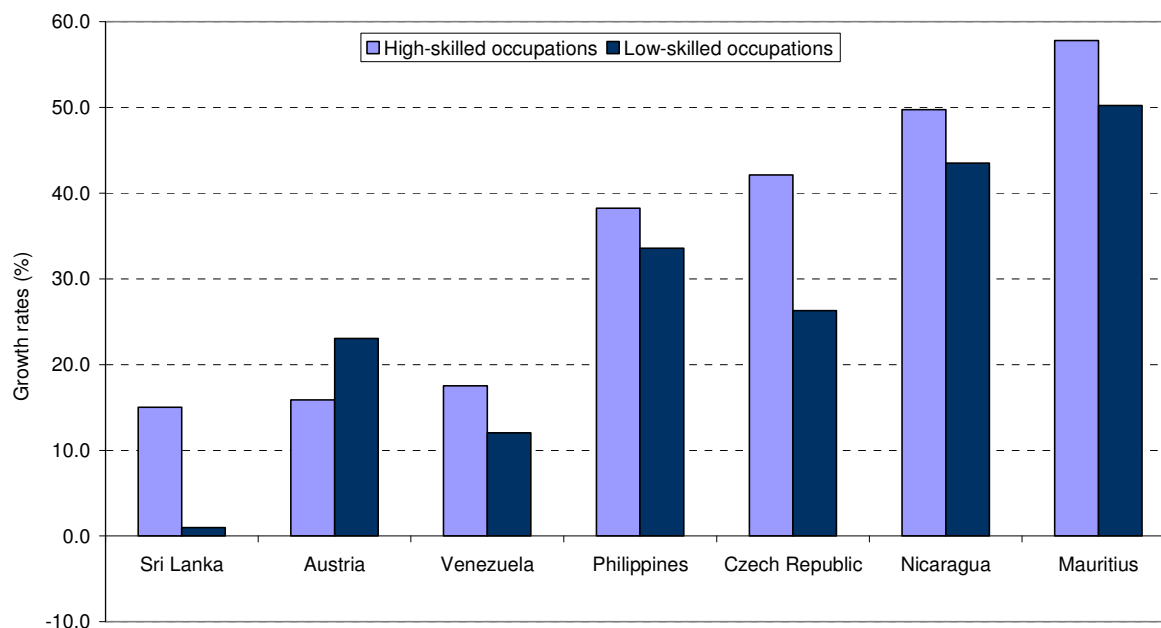
Another reason for the wage premium in high-skilled occupations in developing economies may be the result of growth in complementary industries that require workers with technical skills. For example, if growth in low-skilled industries attracts complementary high-skilled industries then wages in the high-skilled industries may rise at a faster rate due to the shortage of technical labour in developing economies. In support of this theory, studies have found that only about 7 per cent of the labour force has a university degree in developing economies<sup>26</sup> (verified by the data available in KILM table 14a). Since employment in the high-skilled industries generally requires a university degree or advanced training, the scarcity of university graduates may contribute to a wage premium in the labour market for high-skilled workers.

In addition to wage equity across occupations with different skill sets, another important issue is the equity within occupations between the sexes. This section focuses on gender equality within occupations in terms of pay. The GPG is considered to be one of the most important structural indicators in the analysis of the discrepancies between the position of men and women in the labour market. It is defined as the ratio of the average gross hourly wage rates (or earnings) of female and male paid employees across occupations in a given country and year.

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26. McKinsey Global Institute: *The Emerging Global Labor Market* (McKinsey and Company, 2005); website: <http://www.mckinsey.com/mgi/publications/emerginggloballabormarket/>.

**Figure B3. Wage and earning growth in high- and low-skilled occupations (1996 US\$ PPP), 1990-2000, total/combined growth over the period**



Notes: Czech Republic and Sri Lanka refer to earnings and all other countries to wages. Venezuela (1990-1998); Philippines (1990-1999); Czech Republic (1993-2000); Nicaragua (1993-2000).  
Source: Author's calculations based on KILM tables 16a and 16b.

## 5. The gender pay gap across countries

The main challenge in determining the GPG is to make a distinction between discrepancies in female and male wages resulting from different labour market characteristics (skills, education, participation rates, etc.) and indirect or direct wage discrimination due specifically to gender.<sup>27</sup> For this reason using the occupational wages database can be useful and provide a more accurate reflection of the gap in wages between men and women than indicators at the more aggregate level, particularly if one assumes that males and females in the same occupation possess similar labour market characteristics. This can, of course, also be a

strong assumption because men and women in the same occupation may indeed have dissimilarities that account for the differences in pay. For example, if females earn lower wages in a particular occupation, due to less tenure than their male counterparts, then the gender wage gap can be attributed more to different labour market characteristics than direct discrimination. Thus, care must be taken in analysing the indicators until more reliable information on the labour characteristics of male and female workers within occupations is available.

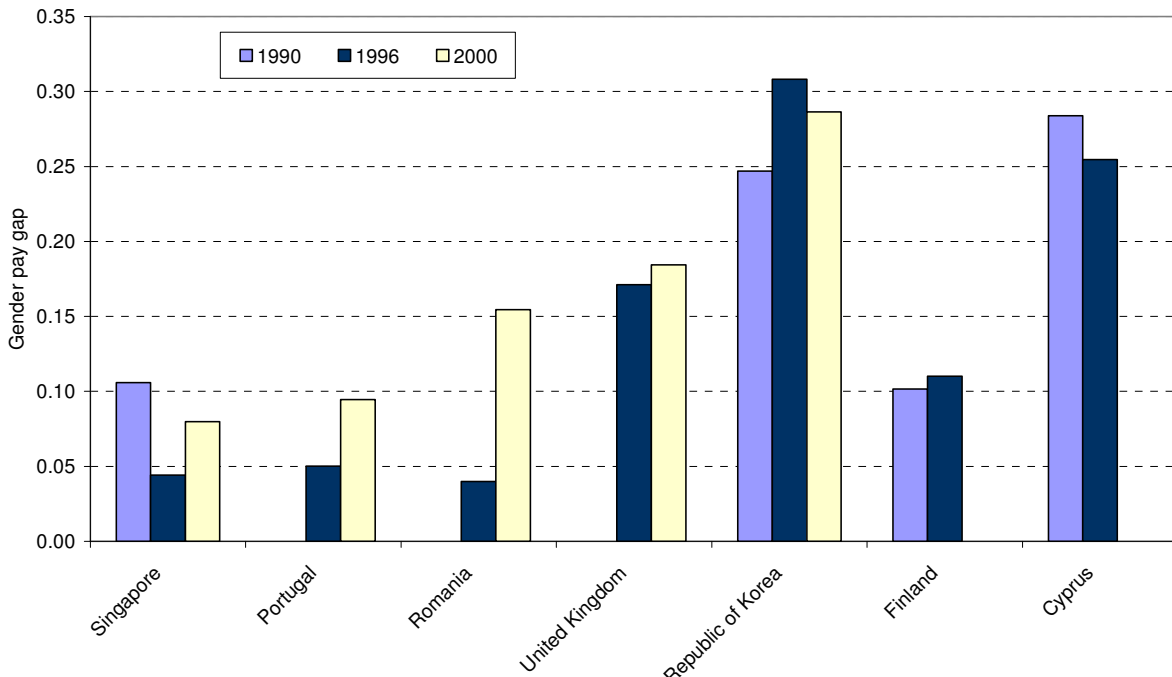
In the analysis, the gender pay gap is measured as:

$$GPG = 1 - \sum ((FPPW/MPPW)/n)$$

Where FPPW and MPPW are the female and male wages in PPP and  $n$  is the number of observations in the sample. The equation calculates the average ratio of female to male wages across occupations, by country and year. Using this methodology a gap of 0 represents complete wage equality between

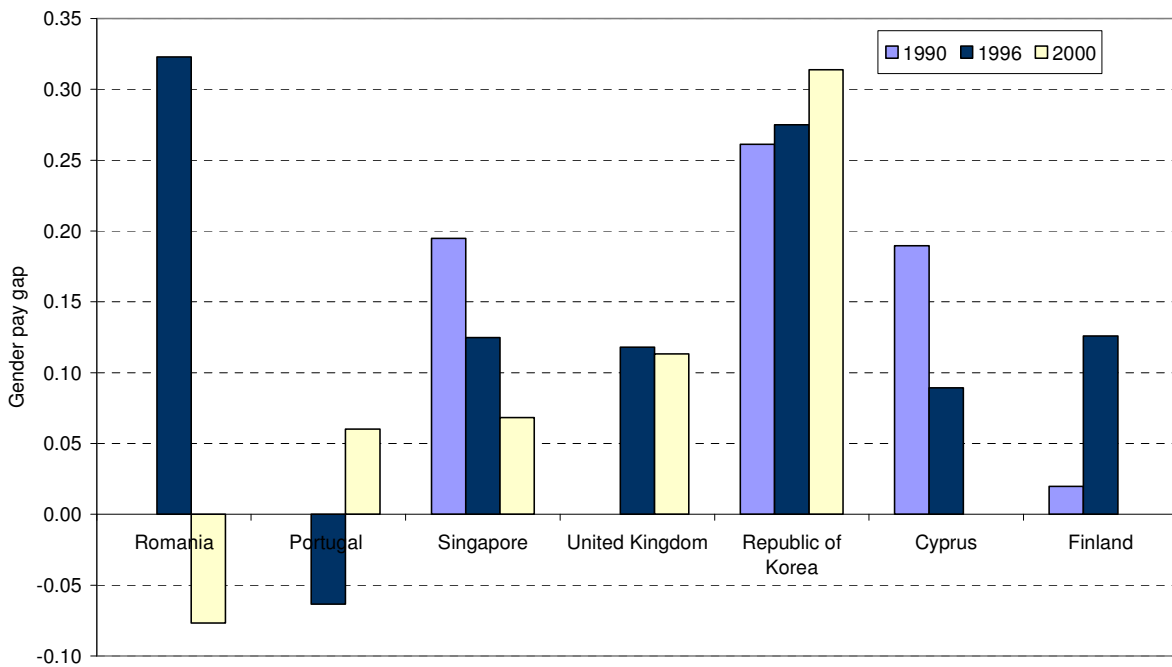
27. Indirect discrimination includes institutional settings, pay policies or social norms, which could contribute to a difference in female and male wages. Direct discrimination refers to a situation in which women and men with similar education, skills and work experience receive different wages for the same job position.

**Figure B4. Gender pay gap in low-skilled craft occupations, 1990, 1996 and 2003**



Source: Author's calculations based on KILM tables 16a and 16b.

**Figure B5. Gender pay gap in high-skilled technical occupations, 1990, 1996 and 2003**



Source: Author's calculations based on KILM tables

male and female wages; as the gap increases between 0 and 1, the less are female wages relative to male wages. For example a 15 per cent gender wage gap means that males earn 15 per cent more than their female counterparts, or alternatively female wages are only 85 per cent of their male counterparts. Figures B4 and B5 show the gender wage gap in various years using the occupational groupings described in the previous section.

From the figures above it can be seen that those countries with a higher relative GPG in low-skilled occupations also had a high gender gap in the high-skilled occupations. However, in terms of the most recent year of data (2000), the majority of countries had a higher GPG in the low-skilled than the high-skilled occupations. In addition, in a number of countries the gap was shown to be increasing. These findings are at odds with some other studies (such as Oostendorp, 2004), which find that the GPG in low-skilled occupations has been declining in both developed and developing economies; while the pay gap in high-skilled occupations in developing economies has been increasing. With the exception of Romania, however, none of the countries reviewed could be classified as developing economies so that Oostendorp's conclusions can neither be categorically confirmed nor refuted.

The European Commission recently published findings showing that the pay gap between men and women has remained virtually unchanged at 15 per cent across all sectors.<sup>28</sup> The anaemic wage conditions for women have been attributed to the slowdown in economic growth in the EU and, in particular, the worsening labour market conditions in the new Member States. In addition, in many European countries, women are still disproportionately employed in sectors where wages are lower and have been

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28. European Commission: "On equality between women and men", Report from the Commission to the Council, The European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM(2005) 44 final (Brussels, 2005); website: [http://europa.eu.int/comm/employment\\_social/news/2005/feb/gender\\_equality\\_2005\\_report\\_en.pdf](http://europa.eu.int/comm/employment_social/news/2005/feb/gender_equality_2005_report_en.pdf).

declining. For example, in the United Kingdom, 60 per cent of women workers are employed in ten occupations, with the majority concentrated in "the five Cs": caring, cashiering, catering, cleaning and clerical.<sup>29</sup> Many of these jobs are in smaller non-unionized firms, where women have less bargaining power and less possibility to improve their economic situation vis-à-vis their male counterparts.<sup>30</sup>

However, given the limited number of countries and observations available at the occupational level, such observations may not be fully representative; therefore analyzing the GPG at the more aggregate level, where more observations are available, would be more appropriate. Figure B6 shows the GPG for 1996 and 2003 across countries in the manufacturing sector, based on indicators in KILM 15.

The majority of countries in figure B6 exhibited a decline in the GPG between 1996 and 2003. Noticeable exceptions, however, include countries in the region of Central and Eastern Europe (non-EU) and CIS countries (former transition economies) and new EU Member States where the gender gap has actually increased. The increase is mainly because these countries had very low gender gaps in terms of pay and other labour market characteristics prior to the transition period. The increases in the gender gaps are, therefore, the result of the worsening labour market conditions resulting from the adjustments to a

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29. House of Commons, United Kingdom: *Jobs for the Girls: The Effect of Occupational Segregation on the Gender Pay Gap*, Trade and Industry Committee, Sixteenth Report of Session 2004-05 (London, The Stationary Office Limited, 2005); website: <http://www.publications.parliament.uk/pa/cm200405/cmselect/cmtrdind/300/300.pdf>.

30. Other studies have found these results to hold in the United Kingdom, in spite of the introduction of the National Minimum Wage (NMW) in 1999, where fully three-quarters of the beneficiaries are women. For example, see R. Dickens and A. Manning: "Minimum wage, minimum impact", in R. Dickens, P. Gregg and J. Wadsworth: *The Labour Market Under New Labour: The State of Working Britain* (Palgrave MacMillan, 2003), which finds the impact of the NMW to have been a closing of the average wage gap between men and women of only 0.5 percentage points between 1998 and 2002.

market economy, which have disproportionately impacted on women.<sup>31</sup> In some of the EU countries the GPG was also high and entrenched, but there has been a strong policy effort as part of the Lisbon Strategy (see box B2 below) to improve gender equity in the labour markets and narrow gender gaps in pay by improving the education and training of women in the labour market and eliminating occupational segregation.

In general, studies have shown that the GPG is affected by, among other factors, the labour market characteristics of males and females, in particular:

- the composition effect, i.e. differences in the composition of the male and female workforce;
- the remuneration effect, i.e. differences in the pay of men and women with similar characteristics; and
- the selection effect, i.e. differences in the labour market participation behaviour of men and women.<sup>32</sup>

The composition and remuneration effects are normally referred to as “explained” and “unexplained” components of the GPG, respectively. The composition of the workforce in this context means the difference in labour force participation rates of women and men and can plausibly explain some of the differences in GPGs. Differences in pay among males and females of similar characteristics are not as easily explained (thus the term “unexplained”) and are often seen as direct forms of discrimination. In an attempt to explain the gender gap across the countries shown in figure B6, the relationship between the gender gap and the female unemployment rate, as well as the female labour force participation rate, are further explored. Figures

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31. For further information, see A. Newell and B. Reilly: “The gender pay gap in transition from communism: Some empirical evidence”, IZA Discussion Paper Series (Bonn, 2001); and P. Paci: *Gender in Transition*, World Bank unpublished manuscript (2002).

32. European Commission: “Gender pay gaps in European labour markets – Measurement, analysis and policy implications”, Commission Staff Working Paper, 4.9.2003, SEC(2003) 937 (Brussels, 2003).

B7 and B8 show these relationships and give an indication of the labour market composition effects on the GPG, which, along with the remuneration effect, has been shown to comprise the bulk of the explanation for the gap.

In figure B7 there is a very clear negative relationship between the female labour force participation rate and the gender gap. In countries with low female labour force participation rates, such as those in the Middle East and North Africa, the GPG was relatively higher. However, in countries in the Developed Economies and European Union and Central and Eastern Europe where the female labour force participation rate was higher the gender gap in pay was lower. This result is consistent with other studies, which attribute negative correlation between female labour force participation and wages to the “selection effect”, i.e. those women who enter into the labour market tend to have, on average higher education and better work-related skills than women outside the labour market, thus improving their chances for higher wages.<sup>33</sup>

In figure B8 there is a positive relationship between the GPG and the female unemployment rate. This means that at higher levels of female unemployment there is a higher GPG. This relationship, however, does not hold across all regions. In the Asia and Pacific region there was a negative relationship between the GPG and the female unemployment rate. The positive relationship can exist because of the weaker bargaining position of women relative to their male counterparts. When the female unemployment rate is high the bargaining power of women can be even weaker, which will drive down female wages relative to males. At lower levels of unemployment the demand for female labour increases as does their bargaining power and their wages relative to men.

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33. *ibid.*

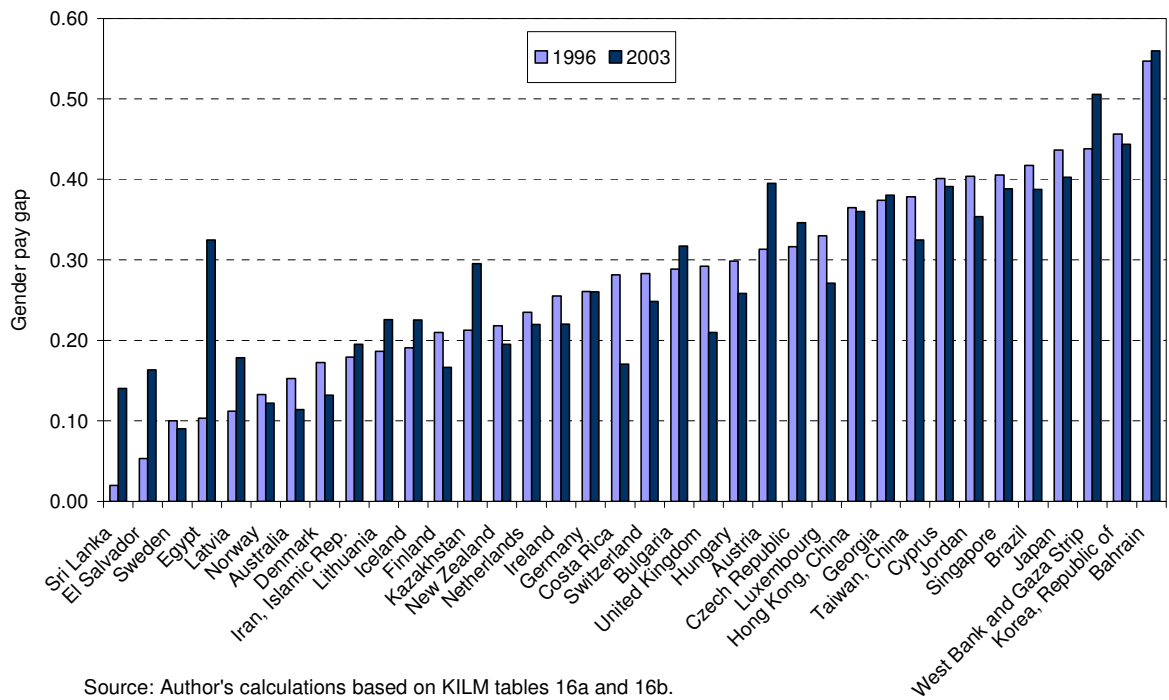
## Box B2. The gender pay gap in the EU

The European Commission recently released a report on equality between women and men in the European labour market. According to EUROSTAT data, the pay gap between women and men in unadjusted form in EU Member States is still very high, 15 per cent in 2003, although there is a 3 per cent decline compared to 1998 figures. In part, this decrease could be explained by the European Union's enlargement in 2004 since the new Member States from the former Soviet bloc have a slightly lower GPG. Despite the general trend of narrowing the GPG between 1998 and 2003, there are six countries (Belgium, Denmark, Finland, Germany, Portugal and Spain), in which it increased, and two (France and Slovakia) in which it stayed the same. A study by the European Commission in 2003 provided information about the pay gap in the different sectors of the economy. In 2000, the GPG was narrower in the public sector (11 per cent) than in the private sector (22 per cent). The most affected groups were the older workers (25 per cent), the high-skilled (22 per cent) and the people with supervisory job status (17 per cent). According to the same study, the major factors contributing to the GPG in the EU are (1) earning differences between women and men with family responsibilities, (2) gender segregation by sectors and occupations, with women being underrepresented in high-paying sectors and occupations, and (3) relatively lower earnings of women in female-dominated sectors and occupations, which are not due to different productivity rates between sectors and occupations.

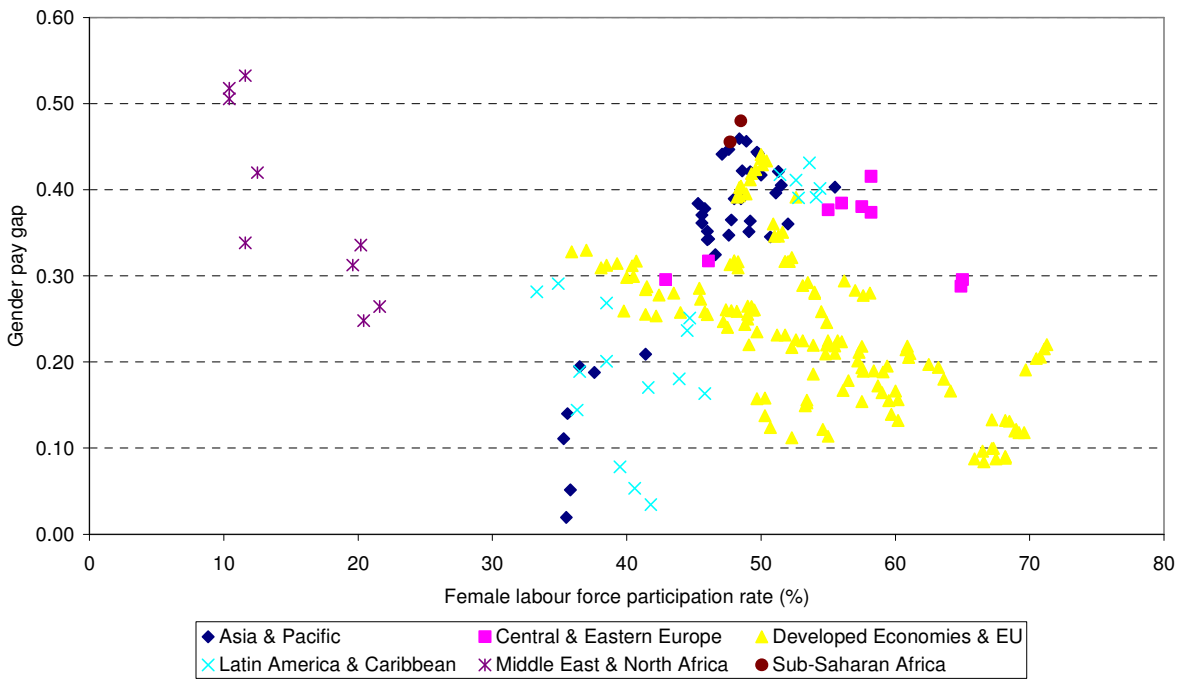
The EU's long-standing commitment to promote gender equality was further reaffirmed in the Lisbon Agenda, approved by the European Council in March 2000. The Agenda has a special focus on productivity and employment, aiming at the increase of the overall employment to population ratio to 70 per cent and the female employment to population ratio to 60 per cent by 2010. Regarding the difference in female-male wages, all Member States are encouraged to apply a comprehensive policy towards a major reduction in the GPG by 2010 with the objective of its final elimination. Special consideration should be given to issues such as better education and training, employment segregation by sector and occupation, job definitions and payment schemes, as well as more awareness of the gender pay inequality problem among the public.

Source: European Commission: "Gender pay gaps in European labour markets – Measurement, analysis and policy implications", Commission Staff Working Paper, 4.9.2003, SEC(2003) 937 (Brussels, 2003); European Commission: "On equality between women and men", Report from the Commission to the Council, The European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM(2005) 44 final (Brussels, 2005); website: [http://europa.eu.int/comm/employment\\_social/news/2005/feb/gender\\_equality\\_2005\\_report\\_en.pdf](http://europa.eu.int/comm/employment_social/news/2005/feb/gender_equality_2005_report_en.pdf).

**Figure B6. Gender pay gap in manufacturing industries, 1996 and 2003**

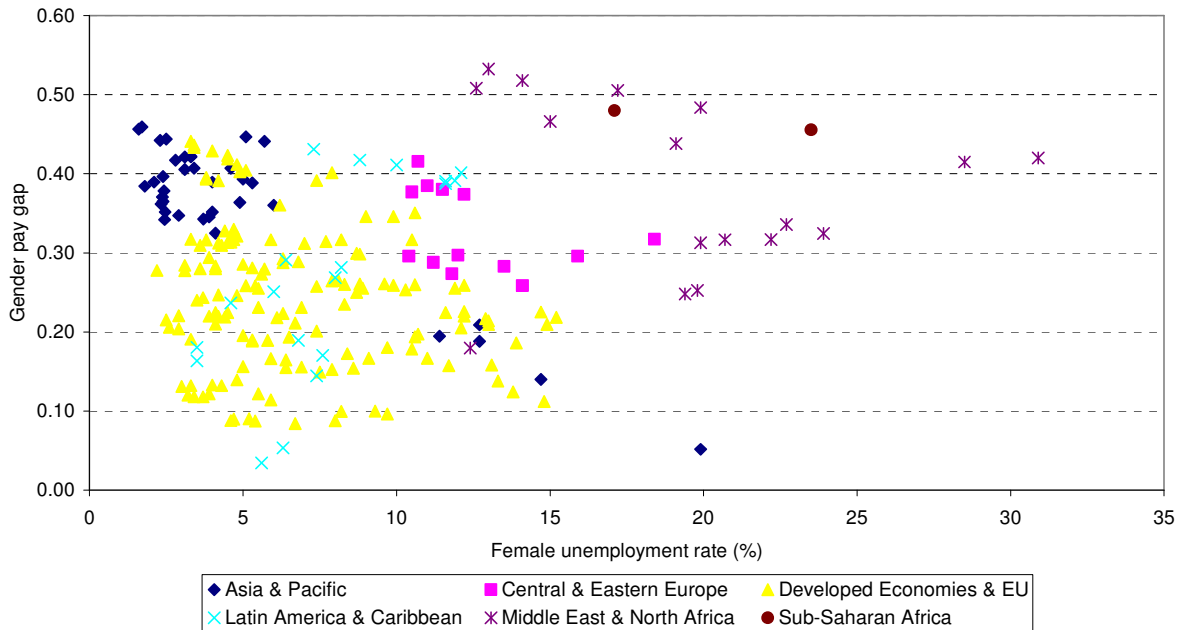


**Figure B7. Relationship between the gender pay gap and female labour force participation rates**





**Figure B8. Relationship between the gender pay gap and female unemployment rates**



Source: Author's calculations based on KILM tables 16a and 16b (pay gap) and KILM table 8a (unemployment rate).

Although these factors do not explain all of the differences in the GPG in the manufacturing sector, they do go some way to understanding some of the causes. Institutional differences, differences in the status of employment (e.g. full-time vs. part-time work), and direct discrimination are other factors that should be explored.

## 6. Conclusions

This section uses the most recent data from the KILM 4th Edition to show that between 1990 and 2000 wages increased faster in high-skilled occupations than in low-skilled occupations (within the seven countries used in the analysis). Although these findings do not show a deterioration of the wage position for low-skilled workers in any of these countries, they do suggest widening wage inequality between high- and low-skilled workers during the 1990s. The data also suggest that the high-skilled occupations have also witnessed stronger wage gains in the

decade from 1990 to 2000 than the low-skilled occupations.

The findings here seem to negate the proposition that globalization will lead to a convergence of wages (as discussed in part two). In general, other studies on the impact of globalization on wages found that:

1. There exists a Kuznets-type relationship whereby globalization initially has a negative impact on wages, but this dissipates over time and eventually the impact of globalization on wages becomes positive.

The findings of this analysis do not refute the above proposition, i.e. we found evidence of wage growth across all occupations and particularly in those countries with a high portion of GDP dependent on trade. At the same time, the evidence shows that there are clear differences in wage growth across occupational groupings.

2. Wage growth is biased towards high-skilled occupations and has lesser impact on the unskilled and the poor.

The evidence shown in this analysis would lend support to this proposition. In general, we find that high-skilled occupations not only have higher wages, but also witnessed stronger wage gains in the decade from 1990 to 2000, than the low-skilled occupations. Part of the reason for this may be due to the surplus of labour in developing economies, whereby the initial impact from globalization (and growth) may be to bring previously underemployed or unemployed people into the formal labour market, with no direct effect on wages. Another reason could be due to the growth in complementary industries that demand workers with higher technical skills.

3. Globalization has narrowed the gender pay gap, particularly in low-skilled occupations.

The findings of this analysis confirm that there is evidence of some improvements in wage inequality among males and females in recent years. However, in some countries, particularly those in the region of Central and Eastern Europe (non-EU) and CIS and new EU Member States, the gender wage gap has increased, particularly in low-skilled occupations. The findings show that some of the increase in the gender gap in these countries can be attributed to the worsening labour market conditions resulting from the adjustments to a market economy, which disproportionately impacted on women. At the same time, the persistence of gender pay gaps

are closely related to gender segregation by sectors and occupations, with women being underrepresented in high-paying sectors and occupations, and also to the relatively lower earnings of women in female-dominated sectors and occupations, which are not due to different productivity rates between sectors and occupations.

A further analysis of the factors contributing to the GPG at the sectoral levels finds a clearly negative relationship between the participation rate of women in the labour market and the gender pay gap. For example, in the Middle East and North Africa, where women are less active in the labour market, the gender pay gap was relatively higher than in other regions. In addition, in all regions except Asia, higher levels of female unemployment are associated with a higher gender pay gap. This relationship, however, does not hold across all regions. Such a relationship can exist because of the weak bargaining position of women at high rates of unemployment.

Further research should focus on the employment composition within specific occupations, taking into consideration the breakdown in male and female employees. With this in mind more and better quality indicators on wages and employment at the global level are necessary to improve the understanding of labour market dynamics resulting from global changes in developing and developed economies. This will greatly improve the analysis and provide a better framework for policy interventions.