Chapter III. Wage Dynamics and Unit Labor Costs

The wage-setting process influences the level of labor market flexibility, social security, and economic stability. The deregulation of salary policies in Armenia in general had a positive influence on stimulating highly productive and qualified work, in differentiating the qualification level of jobs, in influencing investments in human capital, and in labor movements. Real wage levels are gradually catching up to the pre-transition level but the purchasing power of wages tends to be higher than the official records indicate. According to survey data, the return from education has sufficiently increased but wage inequality largely represents the emergence of market factors, because education explains only a small part of wage inequality.

3.1. Wage Dynamics

In the 1990s, the dynamics of real wages in Armenia had two clear phases. In 1994, following the fall in output and labor demand, and reflecting an erosion of wage levels by rapid inflation, real wages dropped to 7 percent compared to 1990.\textsuperscript{25} The decline in real wages in absolute terms (and relative to output declines) was sharper in Armenia than in every other Commonwealth of Independent States (CIS) country (except Tajikistan and Azerbaijan; CIS STAT 2005). In the early 1990s, wages (and working hours) were the main mode of labor market adjustment, instead of employment. In 1995, wage levels in Armenia started to rebound at a relatively high pace, but the measured real wages are still much below the pre-transition level: in 2004, average (real) wages equaled 35 percent of the wage levels in 1990 and 68 percent of the level in 1991, reflecting productivity gains in the economy (Figure 3.1). In purchasing power, real wages have probably declined less than wage statistics suggest.\textsuperscript{26} Given that real wages and labor productivity are increasing from a very low base, it will require considerable growth for Armenia to close its wage and labor productivity gap with fast-reforming transition countries.

Labor and employment policies in productive sectors in the early 1990s may be characterized as a building up of hidden unemployment by dramatic cuts in wages and salaries, allowing part-time employment and mass administrative leaves, when people remained on the payroll list, but actually did not get paid for a long time.\textsuperscript{27} In public service sectors (health, education, and so forth), the policy was oriented toward the conservation of employment via very low salaries and savings on maintenance costs. In 1994 employment in the social infrastructure sectors (education, culture, art, health,

\textsuperscript{25} Consumer price inflation in Armenia was 174 percent in 1991, 729 percent in 1992, 1,823 percent in 1993, and 4,962 percent in 1994. Prices stabilized to single-digit levels starting in 1998.

\textsuperscript{26} The purchasing power of wages under central planning was overestimated because prices of many consumer goods were set below the equilibrium level, as attested to by widespread shortages. Therefore, the fall in real wages during the initial stage of the transition, when prices were liberalized, was most probably overestimated (World Bank 2005b).

\textsuperscript{27} According to the National Statistical Service survey conducted in 1996 of 1,500 economic entities, about 25.7 percent of the personnel of these enterprises were on administrative leave, and 20.6 percent were not paid during the leave. In privatized enterprises the personnel on administrative leave comprised 33.7 percent of total personnel. In medium-sized and large enterprises the personnel on administrative leave comprised about 40 percent of total personnel.
research and development) comprised 85.2 percent of the 1990 level, compared with 73.3 percent for all nonagricultural sectors. For 1997, corresponding indicators amounted to 75.3 percent and 60.1 percent, and for 1999, 71.7 percent and 54.9 percent, respectively. In 1990, wages in the health sector comprised 64.3 percent of the economywide average wage, whereas in 1998 they comprised 49.7 percent. In education, corresponding indicators amounted to 68.8 percent and 42.3 percent, respectively.

**Figure 3.1. Dynamics of Gross Domestic Product, Employment, Real Wages, and Labor Productivity in Armenia, 1990–2004 (Indexes, 1990 = 100)**

Large-scale privatization resulted in massive job cuts, especially in industry and construction, and in “vacant jobs,” that is, in jobs that were not filled. This policy also resulted in the marked deterioration of labor productivity and unit labor cost indicators in industry and other nonagricultural sectors of the economy. It was made possible by an absence at that time of effective contract enforcement mechanisms and bankruptcy procedures, facilitated by widespread barter trade, and a build-up of tax and mutual nonpayment arrears, mostly to the energy sector. As a result, the marked quasifiscal deficits were generated via indirect subsidizing of mainly state-owned medium- and large-sized enterprises.28

Changes in the structure of the economy, and thus changes in relative demand for different types of labor, have given rise to various wage premia to worker and firm characteristics (such as education and skills, occupation or industry) that were not

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28 However, Armenia was more successful in managing quasi-fiscal deficits in the energy and utility sectors than most of the CIS countries. The volume of the hidden deficit in Armenia declined from 8.2 percent of GDP in 1995 and 4.9 percent in 1998 to 1.1 percent of GDP in 2001. Meanwhile, total subsidies (including hidden and quasi-fiscal subsidies) also declined from 9.4 percent of GDP in 1997 to 4.2 percent in 2001 (see World Bank 2003a).
widespread during the socialist period. Also, deregulation of wages and wage policies in the transition countries was a part of the overall liberalization process. This has led to the inequality in dispersion of earnings, but also to better market efficiency, as wages become better aligned with productivity differentials.29 Wage inequality in Armenia, measured by the Gini coefficient, is very high but declined substantially between 1998/99 and 2004—from 0.438 to 0.37 (Table 3.1). (See World Bank and NSS 2006 for the details.) The wage gap between top decile workers and bottom decile workers (P90/P10) also decreased over 1998/99–2004. Wage inequality measured by this ratio is more comparable to CEE countries than to CIS countries, where inequality was highest (World Bank 2005). At the same time, 23 percent of all employees in Armenia earned less than two-thirds of the median (low pay), which means that the incidence of low pay is quite high. In the European Union, the decile ratio varies between 3 and 4.

Table 3.1. Armenia: Summary of Earnings Distribution, 1998/99 and 2004

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Public</td>
<td>Private</td>
</tr>
<tr>
<td>P10/P50</td>
<td>0.50</td>
<td>0.48</td>
<td>0.35</td>
</tr>
<tr>
<td>P90/P50</td>
<td>3.00</td>
<td>2.50</td>
<td>3.00</td>
</tr>
<tr>
<td>P90/P10</td>
<td>6.01</td>
<td>5.21</td>
<td>8.57</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>0.438</td>
<td>0.405</td>
<td>0.498</td>
</tr>
<tr>
<td>Standard error of Gini</td>
<td>(1.2)</td>
<td>(1.0)</td>
<td>(3.4)</td>
</tr>
<tr>
<td>Incidence of low pay</td>
<td>Low pay, %</td>
<td>26.7</td>
<td>28.9</td>
</tr>
<tr>
<td></td>
<td>High pay, %</td>
<td>28.7</td>
<td>25.4</td>
</tr>
</tbody>
</table>

Notes: P10/P50 (P90/P50) denotes the ratio of earnings of the bottom (top) decile relative to the median. Decile ratio is the ratio of the top decile to the bottom decile, i.e. P90/P10. Low pay is defined as earnings below two-thirds of the median. High pay is defined as earnings over 1.5 times the median. The incidence of low (high) paid workers is a percentage of low (high) paid workers in all wage and salary workers.

As noted, regional disparities in average wages are also enormous. Wage levels in Yerevan and in Kotaik marz—the regions with the highest unemployment rates—are on average 1.7-fold higher than in the lowest-paid regions in Armenia (Table 2.6). Wage gaps in regions are mainly explained by differences in human capital and job characteristics, while the variation in the wage due to the variation of the unemployment rate is relatively weak. Typical of other countries in transition, average wages in the highest-paid financial intermediation sector much exceed the average, and are almost eightfold higher than the average wages in predominantly budget-financed culture and arts (Annex Table1). According to the 2004 LFS, average monthly wages of employees in the state sector of the economy were 29,219 drams, while in the non-state sector they were 40,646 drams (NSS 2005b).

29 During the socialist period, wages were set according to a centrally determined wage grid, or the unified Tariff Schedule of Wages and Salaries. Wage differentials were very small and earnings structure was compressed.
Despite the higher education level of women, the gender pay gap in Armenia, controlling for other individual characteristics, is significant in both the public and private sectors and indicates that females are paid less than their male counterparts. This gap appears lower in the public sector than in the private sector. Women in the private sector earned on average 32 percent less than men with similar characteristics, while women in the public sector earned 18 percent less than men with similar characteristics. The gender pay gap in Armenia is comparable with other CIS countries (see World Bank and NSS 2006). There is a correlation between job segregation and wage gaps: the concentration of female employees is higher in the public sector, which traditionally offers lower earnings. Pay differentials between males and females are in general significant, but they also depend on other factors, such as occupation, position, and differences in working hours. At the same time, due to the lower salaries, the public sector is less attractive to men, and this further increases the concentration of women.

Figure 3.2. Average Wages of Employees with Different Levels of Education, According to 2004 LFS Data, in Drams

To close the gap, it is necessary that both public and private sector employers acknowledge the principle of equal pay for equal work, regardless of gender. In the past few years, salaries increased significantly in the public sector. This considerably improved the wage situation of several traditionally female occupations, and reduced the gender wage gaps in the whole economy. Due to the increased earnings, the public sector has become an attractive option for a larger number of men, thus also reducing job segregation.

An increase in educational wage premia has been an important factor behind the rise in wage inequality. In relative terms, wages and salaries of well-educated and highly skilled workers have increased, while wages of less-educated workers have decreased (Figure 3.2). These developments have led to a substantial increase in returns to education, especially university education. By the ILCS 2004, while the private sector offers a premium to special secondary education and tertiary education, the public sector
offers a premium to tertiary education only. In the private sector, employees with tertiary education earned 63 percent more than those with general secondary education or below, keeping all other characteristics constant. In contrast, in the public sector this premium was 48 percent. (World Bank and NSS 2006). The wage gap would be even higher if the budget-financed social services sector, which traditionally employs the most-educated part of the labor force, had not been the lowest-paid field of economic activities, at least according to the official (measured) wage statistics.

Table 3.2. Average Annual Earnings and Return per Unit of Cost of Education, 16–33 Year-olds with Jobs, by Gender and Level of Education, in ‘000 Drams; 2001

<table>
<thead>
<tr>
<th>Gender</th>
<th>Incomplete</th>
<th>Secondary</th>
<th>Vocational</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>---</td>
<td>312.5</td>
<td>387.1</td>
<td>669.7</td>
</tr>
<tr>
<td></td>
<td>240.4</td>
<td>+72.1</td>
<td>+146.8</td>
<td>+357.2</td>
</tr>
<tr>
<td></td>
<td>47.4</td>
<td>141.0</td>
<td>178.4</td>
<td>582.7</td>
</tr>
<tr>
<td></td>
<td>300.3</td>
<td>751.0</td>
<td>2924.9</td>
<td>24.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Female</th>
<th>---</th>
<th>144.8</th>
<th>160.9</th>
<th>461.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>47.4</td>
<td>141.0</td>
<td>178.4</td>
<td>582.7</td>
</tr>
<tr>
<td></td>
<td>300.3</td>
<td>751.0</td>
<td>2924.9</td>
<td>10.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Both Sexes</th>
<th>---</th>
<th>253.0</th>
<th>251.4</th>
<th>542.6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>47.4</td>
<td>141.0</td>
<td>178.4</td>
<td>582.7</td>
</tr>
<tr>
<td></td>
<td>300.3</td>
<td>751.0</td>
<td>2924.9</td>
<td>9.9%</td>
</tr>
</tbody>
</table>

--- = Number of replies from women too small for statistical significance.

Note: The return per unit of cost in column 5 is based on the “shortcut” formula for rate of return when data on earnings are available for only a single year. Impact on earnings and total cost of both secondary and secondary vocational are measured in comparison with incomplete secondary, and of higher education compared with secondary.


The impact on labor-market outcomes can be analyzed within the framework of rate-of-return analysis, which focuses on the impact of education on earnings in relation to cost. Based on the results of the Education, Poverty and Economic Activity Survey, the returns to education in relation to its cost are quite high for young males who get jobs (though they diminish as the level increases) (UNDP 2002; Table 3.2). Young women of all educational levels earn substantially less than men, but also gain a reasonable rate of return on their higher education.
For international comparisons, a preferred approach might be to follow wage
dynamics and levels in U.S. dollar terms (that is, industrial wages valued in foreign
currency by the contemporaneous market exchange rate), using these as indicators
of the results of the reform strategies and other factors. Prior to the transition, ruble
wage levels in the CIS states were rather equalized. After some 15 years of reforms,
differentials in monthly wages (in U.S. dollars) are enormous: average wages differed in
2004 from US$22 in Tajikistan to US$237 in Russia and US$207 in Kazakhstan, in
which the economic growth is based on extraction of natural resources (mainly oil and
gas). Armenia is somewhat in the middle of CIS states by the wage level in U.S. dollar
terms, and average wages equaled US$79 in 2004, a substantial increase compared to
US$17 in 1995 (Annex Table 12; CIS STAT 2005).

The influence of government on rate and dynamics of wages is expressed in setting
minimum labor cost, time schedule for payment of salaries to the public sector, and
change of direct taxes and social benefits (through parliamentary procedures). The
labour market impacts of minimum wages depend heavily on the level at which they are
set and how well they are enforced. In Armenia, minimum wages are raised on an ad
hoc basis, and since 1997, they were increased only three times—in 1999, 2004 and 2006
(Table 3.3). Based on the 2004 LFS, only 10.6 percent of the employees received
salaries below the level of minimum wages, and many of them might be part-time
workers. On the other hand, workers with earnings close to a minimum wage are likely to
fall into poverty. Over the transition years, minimum wages in Armenia tend to be at a
level below subsistence wages, and together with weak enforcement, the level is too low
to be binding (that is, to affect wage and employment decisions). At its current level, the
minimum wage can hardly be characterized as an instrument of wage policy. Its role in
alleviating poverty is limited, and it seems to provide limited adverse effects on unskilled
workers.

Table 3.3. The Dynamics of Average Monthly Wages and Minimum Wages
in Armenia, 1997–2006, Drams

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</thead>
<tbody>
<tr>
<td>Average Monthly Wages</td>
<td>13,600</td>
<td>18,000</td>
<td>20,200</td>
<td>22,700</td>
<td>24,500</td>
<td>27,300</td>
<td>34,800</td>
<td>43,400</td>
<td>60,600</td>
</tr>
<tr>
<td>Minimum Wages</td>
<td>1,000</td>
<td>1,000</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
<td>13,000</td>
<td>15,000</td>
<td></td>
</tr>
<tr>
<td>Ratio of Minimum Wages to Average Wages, %</td>
<td>7.4</td>
<td>5.6</td>
<td>24.8</td>
<td>22.0</td>
<td>20.4</td>
<td>18.3</td>
<td>14.4</td>
<td>30.0</td>
<td>24.8</td>
</tr>
</tbody>
</table>

* - January-July
Source: NSS (2001); NSS (2005c), www.armstat.am

30 For a concise review of the theory regarding the employment impacts of the minimum wage, see OECD (1998).
31 Starting in 2004, according to the relevant provisions of the Poverty Reduction Strategy Paper, the
minimum wage is defined in accordance with the general poverty line. In 2006, the minimum wage equals
15,000 drams.
3.2. Unit Labor Costs

The attractiveness of Armenia to foreign direct investment lies not in lower relative nominal wages per se, but in lower unit labor costs. Unit labor costs capture the change in the nominal wage in relation to the trend in labor productivity. A moderate rise in unit labor costs, implying nominal wage growth approximately in line with labor productivity, is essential to maintaining the competitive cost advantage of the economy.

The systemic crisis of the first half of the 1990s, combined with the surplus employment, resulted in a sharp decline in unit labor cost. The return of economic growth has somewhat improved this ratio. During 2000–03, there has been a clear trend of decline in unit labor cost in the nonagricultural sector, which can be attributed to growing real exchange rate undervaluation (Figure 3.3; Annex Figure 9). This trend reversed in 2004 with change of real exchange rate pattern and rapid appreciation that pushed US$-nominated wages up. In 2004 and 2005 nominal wages increased by 36 and 40 percent in USD terms, which fully offset unit labor cost reduction of early 2000s.

Figure 3.3. Dynamics of Unit Labor Cost in Armenia, 1990–2004 (1990 = 100)

Source: National Statistical Service and authors’ calculations.

Figure 3.3 shows that the agricultural sector, although substantially more competitive than during the Soviet period, is becoming less and less competitive compared with the nonagricultural sector, and the productivity gap between them is gradually deepening. Currently, unit labor cost in agriculture is the highest compared

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32 Calculated as the ratio of annual wage (a proxy for labor cost paid by the employer) to the GDP produced by one worker (labor productivity, or output per person employed). According to this indicator, sectors of the economy in which unit labor cost is lower have higher levels of labor productivity, and consequently higher levels of competitiveness.