GERMAN ECONOMIC TEAM IN BELARUS

Wage Determinants in Belarus: Labor Productivity and Wage Policy

Summary

This paper discusses the wage policy in Belarus and it consequences for the economy. It demonstrates that at the aggregate level there is a long-run relationship between labor productivity and wage growth measured in US Dollars. But in the short run the growth rates of these indicators differ significantly. It was found that these differences (and the wage policy itself) can to a large extent be explained by the political business cycle. The wage policy is implemented at the aggregate level (targeting of the wage levels) and at the sectoral level (reducing wage differentiation). It affects the whole economy, the incentives of workers and firms, and is also potentially harmful to the monetary and exchange rate policies. In order to avoid these negative effects of the current wage policy we recommend to eliminate the practice of setting target indicators for average wages, which are now *de-facto* mandatory, and stop direct government regulations aimed at decreasing of wage differentiation.

Contents

1. Introduction

Wages are the main sources of income for the majority of people in most countries. According to Household Budget Survey data, wages represent 60 to 65% of household monetary incomes in Belarus. Hence, the dynamics of consumer demand are to a large extent determined by the dynamics of wages. Furthermore, wages as a price of labor determine labor costs. Thus, wages are signals for firms. Their levels and dynamics determine decisions about employment and investment. Finally, wage is the return to labor and consequently is also a signal for employees. Employees expect that higher productivity entails higher wages. Therefore, wage levels and dynamics determine decisions about investments in education and skills (human capital).

Thus, the following fundamental relationship between wages and labor productivity should exist: the higher the labor productivity, the higher the wage. In other words, over the long run wages and labor productivity should grow at the same rates. However, in the short run this relationship can be broken by any agent with market power: the government, trade unions, or a powerful company. Interference by these agents in wage setting leads to the same consequences as interference in price setting: market disequilibria and wrong signals to the market agents. The agents' decisions when based on such wrong signals will negatively affect long-term growth.

Wage levels are one of the primary targets of economic policy of the government of Belarus. In order to meet these targets the government actively uses administrative methods, i.e. it interferes in the wage setting at all levels of the economy. This paper is aimed at analyzing this wage policy and its effects on the economy of Belarus, and at elaborating adequate policy recommendations, which might help to reduce the possible negative consequences of the wage regulation. The paper has the following structure. The dynamics of wages and their determinants are analyzed in the next section. Section three considers the wage policy at the aggregate and the sectoral levels. The fourth section analyzes the effects of the wage policy of the economy of Belarus. Section five proposes recommendations for the wage policy in Belarus.

2. Wage dynamics in Belarus and its determinants

2.1. Aggregate level

In this paper we analyze the ten-year period from 1996 to 2005. For this period, real wages were one of the fast-growing economic indicators in Belarus. While GDP increased 1.9 times within this 10-year period, wages rose 3.6 times, i.e. their average annual growth rate for the period was equal to 13.7%, which is twice as high as the annual GDP growth rate.

One possible explanation for such a fast wage growth rate could be increased labor productivity[1]. But, as Figure 1 demonstrates, real wages grew faster than labor productivity over the whole period except for one year. Additionally, in 6 out of the 10 years the growth rates of the two indicators change in different directions. These facts are inconsistent with a fundamental relationship between wages and labor productivity, especially taking into account the duration of the period. Ten years is long enough to clearly demonstrate such a relationship, if it exists. There are two other possible explanations for the discrepancy between the wage and labor productivity growth rates: a dramatic change in the GDP structure (increase in wage bill to GDP ratio) or problems with the data and/or the methodology of calculation.

According to our estimates, the share of the wage bill[2] in the GDP in 2005 was 38%, which is only 5.5 percentage points higher than in 1995. As employment for this pe-

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[1] The growth rate of labor productivity is calculated as the GDP growth rate divided by the employment growth rate.
[2] Employment multiplied by average annual salary.

riod decreased by 2.1%, the wage bill to GDP ratio should have risen by approximately 26 percentage points. Thus, the only remaining explanation for the gap between the growth rates of wages and labor productivity is problems with the underlying data.

Figure 1: Real wages and labor productivity
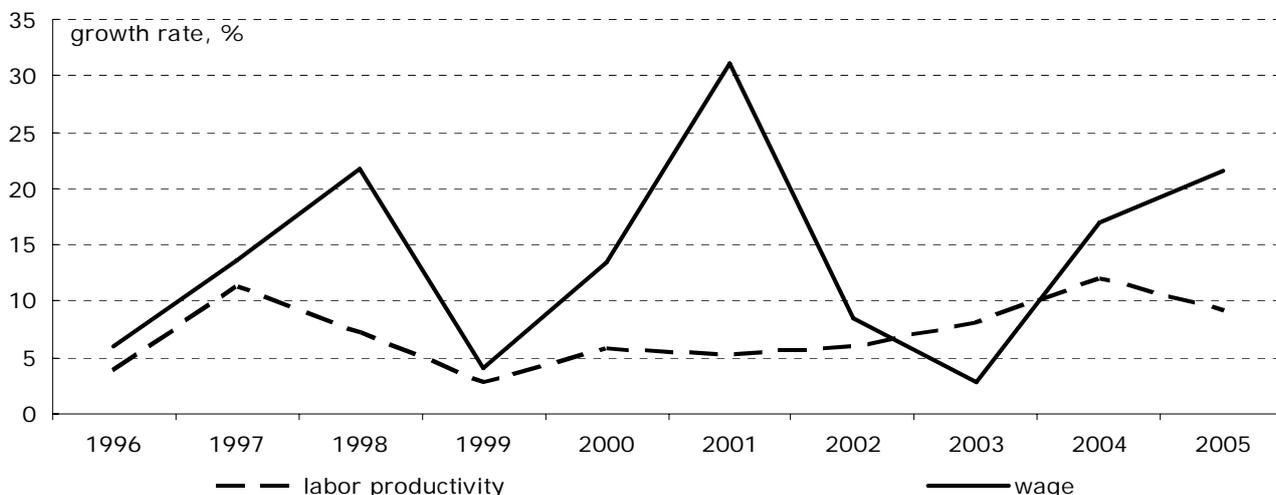
Indeed, real wages and real productivity are calculated based on different deflators. Real wage is nominal wage deflated by CPI, whereas real labor productivity is nominal labor productivity deflated by the GDP deflator. The CPI and GDP deflators differ substantially (see Figure 2). Moreover, throughout the period the GDP deflator was always higher than that of the CPI[3]. By 2005, the cumulative GDP deflator was 1.5 times higher than the one of the cumulative CPI, which explains the difference between the wage and labor productivity growths to a large extent.

Figure 2: GDP deflator vs. CPI
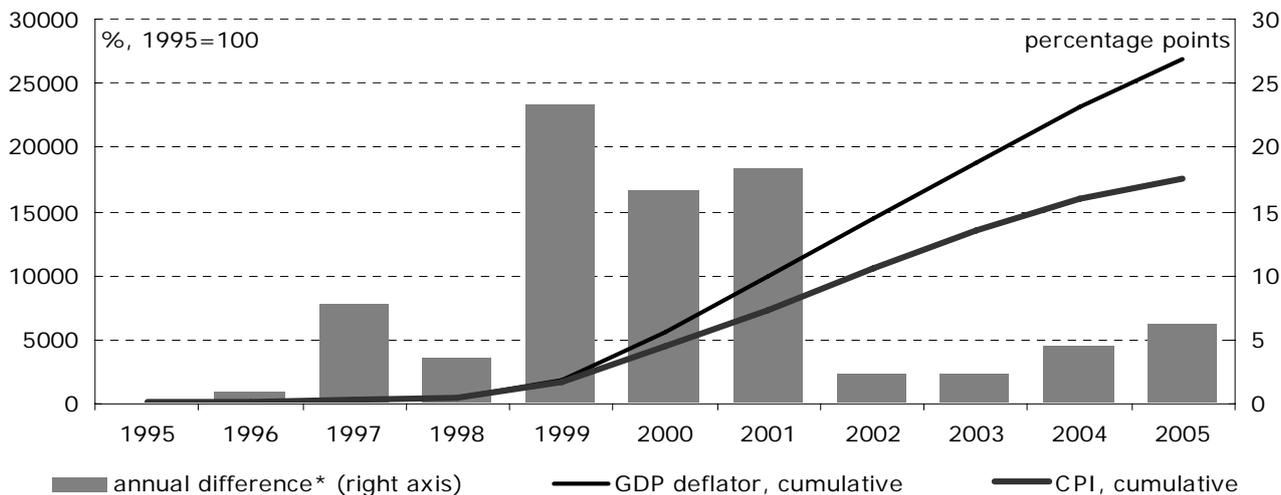
* The difference is the annual growth rate of the GDP deflator minus the annual growth rate of the CPI.

In order to remove the influence of the gap between the deflators one can use nominal indicators to determine the relationship between the wage and labor productivity

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[3] There are two possible explanations for the huge gap between the cumulative CPI and GDP deflators. Firstly, prices are heavily regulated in Belarus, hence prices for certain groups of goods and services grow more slowly than the average. Secondly, the accuracy of some of the initial data coming from enterprises is likely not to be very great, as they were mandated to fulfill targeted price and output growths.

growths. However, during the period under consideration the real wage and the real labor productivity growth rates were much lower than the inflation rate (measured both by the GDP and the CPI deflators). Hence, the relationship between the nominal indicators could simply show the relationship between the deflators. I.e. acceleration or deceleration of inflation automatically led to proportional changes in the nominal indicators. In order to avoid this effect both the wages and the labor productivity could be measured in foreign currency (e.g. US dollars). The dynamics of these indicators (deflated for US inflation) are presented in Figure 3. There is a clear relationship between them over the long run, while annual figures differ significantly.

Figure 3: Wages and labor productivity (in US dollars)
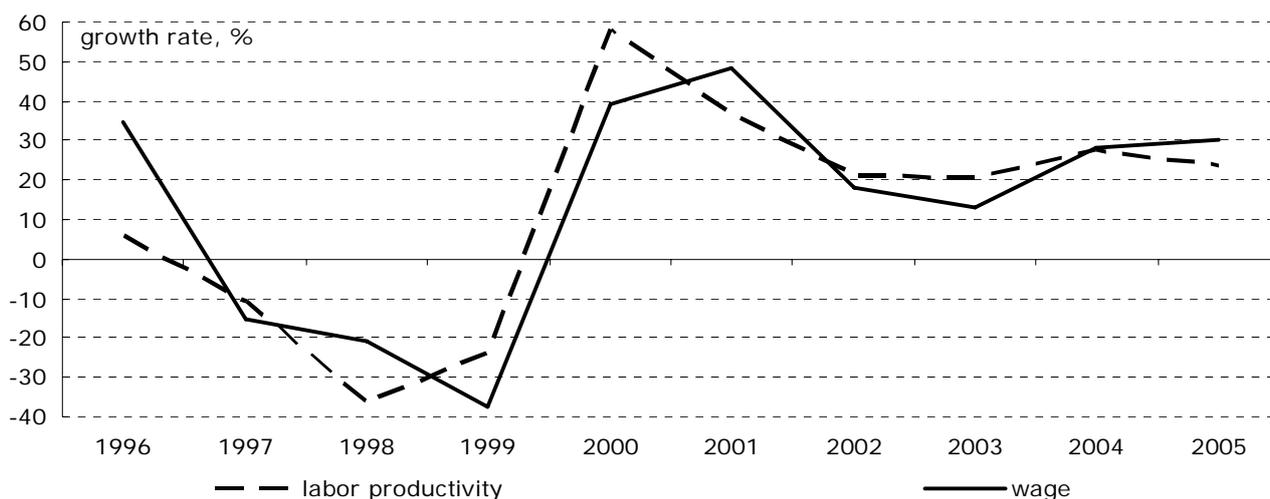
Note: Both indicators deflated for US inflation.
Source: Own calculations based on data from the Ministry of Statistics and Analysis and the US Bureau of Labor Statistics.

This leads us to an important conclusion: a fundamental relationship between the growths of wages and labor productivity does exist over the long run in Belarus, which is not necessarily true for the short run.

2.2. Sectoral level

While a relationship between wages and labor productivity exists at the aggregate level, it is hard to observe the same relationship at the sectoral level. Unlike wages, labor productivity does not always increase in all sectors of the economy. Between 1996 and 2004 it even decreased in real terms in 9 out of 22 sectors of the economy (mostly in services); in US Dollar terms it dropped in 2 sectors of the economy. In the economy as a whole the average annual growth rate of wages in dollar terms exceeded that of labor productivity only by 1.5 percentage points, while in agriculture and communications the difference was 6.9 and 3.9 percentage points respectively, and in transport and in trade and catering it was negative (-1.9 and -2.6 percentage points, respectively, see Table 1).

Table 1: Wages and labor productivity in major sectors of the economy

Average annual growth rates, %:	Wage		Labor productivity	
	In real terms	In US dollar terms	In real terms	In US dollar terms
Industry	11.8	9.8	10.7	8.7
Agriculture	11.7	9.7	9.4	2.8
Transport	11.3	9.3	1.8	11.2
Communications	12.1	10.1	5.6	6.0
Construction	11.1	9.1	4.6	8.0
Trade and catering	11.5	9.5	11.9	12.1
Economy	**12.5**	**10.5**	**6.8**	**9.0**

Note: A labor productivity growth rate is calculated as the growth rate of value added in a sector of the economy divided by the growth rate of employment in the respective sectors. Real wages are deflated by CPI. Growth rates of labor productivity are calculated based on the data for value added in constant prices by sector of the economy.
Source: Own calculations based on the data of the Ministry of Statistics and Analysis and the IPM Research Center.

The second conclusion is that at the sectoral level wage dynamics are determined to a lesser degree by labor productivity. Thus, Belarus faces the situation that labor productivity growth determines wage growth at the aggregate level but at the sectoral level this is not necessarily the case. The same results can be obtained from an econometric analysis, which shows that wages in the economy and its sectors grow at some 'autonomous' rate (as represented by intercepts in regression equations), while the coefficients of labor productivity growth are statistically insignificant[4].

3. Wage policies in Belarus

There were no significant fluctuations of real wage growth for 1996 to 2005. In dollar terms wage growth was more uneven: almost all its increase occurred between 2000 and 2005, when the dollar equivalent of wages rose by 32.4% per annum on average. Between 1996 and 1999 it was decreasing by 11.3% per annum. Figures 1 and 2 show certain cycles in wage and labor productivity development, and a cyclical wage policy seems to be the most plausible explanation both for the uneven growth of these indicators and the short run gaps between their growth rates.

The following major tools of wage policy are used in Belarus: targeting of the wage level and redistributions of wages between sectors. Operating with these tools the government uses more specific instruments like mandating minimum wages, planning wages and their growths for specific sectors and controlling the fulfilling of these plans, subsidizing weak enterprises, etc. All these measures are implemented at different times making it possible to meet the wage policy targets. The choice of any given wage policy measure is determined by political events (see Table 2).

Table 2: Wage dynamics, wage arrears,
and the political business cycle in Belarus

	Monthly wage measured in US dollars		Wage arrears
	Growth rate	Target	
Constitutional referendum of May 14, 1995 (change of the state symbols, integration with Russia, land reform)	160% yoy – May 1995, 188% yoy – June 1995	--	--
Constitutional referendum of Nov 24, 1996 (broadening of presidential powers)	Decrease of wages after the referendum	--	Sep 1996: 24% of wage bill, Oct 1996: 6.5% of wage bill
Presidential election of Sep 9, 2001	-36% yoy – 1999, 44% yoy – 2000, 58% yoy – Jan-Aug 2001	USD 100 in the month of the elections	Aug 2000: 17% of wage bill, Sep 2000 to Aug 2001: 2.4% of wage bill (Aug 2001: 0.5% of wage bill). After the election: 15 fold increase
Constitutional referendum of Oct 17, 2004 (elimination of the limit on the number of terms a person can be elected to the presidency)	28.6% yoy – Oct. 2004, 40.5% yoy – Nov. 2004 43.5% yoy – Dec. 2004	USD 200 by the end of 2004, USD 250 by the end of 2005	Since October, 2003 wage arrears have been close to zero

Source: Haiduk et al. (2005) Labor Market in Belarus: A Survey, *CASE Studies & Analysis* 313, Center for Socio-Economic Research Foundation – CASE.

The influence of political events on the dynamics of economic indicators is known as a 'political business cycle'[5]. In Belarus five important political campaigns took place be-

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[4] For details see Chubrik, A. (2006) Wage and Labor Productivity in Belarus, *Working paper* WP/01/06, IPM Research Center. For several years (primarily for 2000–2001, and 2004–2005) the growth rate of wages was far above the 'autonomous' growth rate of wages. Evidently, deviations of the actual wage growth rate from the 'autonomous' one were caused by certain events of the corresponding years. Most likely the growth of wages in these periods was affected by political factors. In 2000–2001 it was the presidential election of September 2001, while in 2004–2005 the wage growth was influenced by the referendum on the elimination of a constitutional limit on the number of terms a person could be elected to the presidency, and by the presidential election of March 2006. A deviation of the actual wage growth rate from the 'autonomous' rate was also observed in 1996 – the year of the referendum on broadening the constitutional powers of the president.

[5] The political business cycle is a business cycle that results primarily from the manipulation of policy tools by incumbent politicians hoping to stimulate the economy just prior to an election and thereby improve their own and their party's reelection chances. (A Glossary of Political Economy Terms,

tween 1995 and 2006: two presidential elections and three constitutional referendums, having significant impacts on the dynamics of wages and wage arrears. A high degree of control over the economy (75–80% of the Belarusian GDP is produced in the state sector) allows the government to meet wage targets and to decrease wage arrears whenever it deems this necessary. Another important peculiarity of the wage policy in Belarus is its orientation towards decreasing wage differentiation and reducing the percentage of low-income workers.

3.1. Targeting the wage level

The first wage target was set just before the presidential election of 2001, when the president mandated the government to increase average monthly wages to USD 100 in the month of the election. In the prior two years the average wage, measured in US dollars, had increased more than twofold (see Table 2). In the Program for Social and Economic Development of the Republic of Belarus for 2001 to 2005 the government planned to achieve an average wage of USD 250 per month by the end of 2005 (with an intermediary target of USD 200 by the end of 2004). All these targets were met.

The following factors made fulfilling the targeted indicators possible: Firstly, the government has significant control not only over the state but also over the private sector. This control is simplified by the subordination of the majority of all medium and large enterprises to branches of ministries or to so-called 'concerns', which impose the targets on their members. Additionally, there are mechanisms of punishment for not meeting targeted indicators, such as relieving the enterprise's director of his position, bringing him to administrative account, or applying the golden share rule on an enterprise with wage arrears. Secondly, the large government share in GDP (state expenditures equal approximately 50% of GDP) allows the government to subsidize less efficient enterprises, in effect, supporting them with moneys taken from more efficient enterprises.

Till the end of 2003 the wage policy in Belarus has one additional component: wage arrears. Reducing these arrears has the same effect as increasing wages and vise versa. Thus, the government reduced wage arrears before elections and other important political campaigns. For instance, before the referendum of 1996 wage arrears decreased from 24 to 6.5% of the monthly wage bill. Similarly, in the year before the presidential election of 2001 the arrears were reduced from 17% in August 2000 to on average 2.4% of the wage bill in September 2000 – August 2001, and to 0.5% of the wage bill in August 2001, the month before the election (see Table 2). The government was able to influence wage arrears through the same mechanisms used for average wages. Additionally, control over the six biggest banks in the banking system of the country allows the government to oblige them to issue loans for paying off wage arrears to enterprises. For instance, in 2002 the share of loans issued in accordance with resolutions of the government and the president was about 20–25% of all loans issued.

3.2. Redistribution policy

In addition to targeting the average wage, the government has in the recent years conducted a redistribution policy aimed at decreasing wage differentiation. Figure 4 shows that in 2003 the majority of workers were earning less than the average wage of BYR 242'000, namely between BYR 100'000 and 200'000, while in 2005 they earned around the average wage of BYR 340'000 (inflation adjusted to May 2003). The Gini coefficient, based on data on the distribution of the accrued wage size of workers, decreased from 0.338 in May 2003 to 0.322 in May 2005[6]. This also indicates a decrease in wage differentiation. Also, the ratio of the average wage of 10% of the highest-paid workers to the

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http://www.auburn.edu/~johnspm/gloss/political_business_cycle.). A political business cycle in the context of wage setting has been empirically demonstrated to exist both in developed and developing countries.
[6] Gini coefficient varies from 0 to 1. The closer Gini coefficient to 0, the more equal wage distribution is.

average wage of 10% of the lowest-paid workers remained practically unchanged: according to our estimates this ratio equaled 10.5 in May 2005, which is close to the figure of May 2003. Taken together with the Gini coefficient reduction, this means that the wage differentiation among the other 80% of workers have decreased (see Figure 4).

Figure 4: Distribution of workers of organizations on accrued wage size
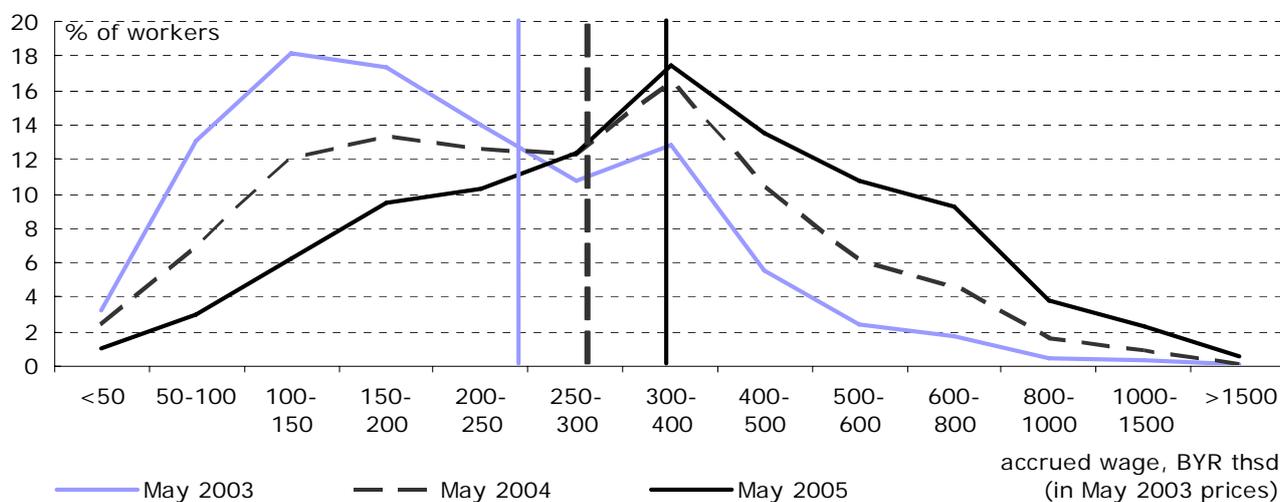
Note: The distribution of workers based on the size of their average accrued monthly wage is based on data of surveys conducted annually (in May) by the Ministry of Statistics and Analysis. The average wages for each year are shown as vertical lines.
Source: Haiduk et al. (2005) Labor Market in Belarus: A Survey, *CASE Studies & Analysis* 313, Center for Socio-Economic Research Foundation – CASE.

The decrease in wage differentiation was due to redistribution of incomes in favor of low-income workers and of sectors with lower wages, implemented through administrative restrictions on wage growth at efficient enterprises and 'natural monopolies'. It is very unlikely that it was caused by a faster growth of labor productivity by low-income workers.

4. Effects of the wage policy on the Belarusian economy

In general, interfering with wage setting leads to the same consequences as interfering with price setting: disequilibria at the market and wrong signals to market agents. The agents' decisions when based on wrong signals will negatively affect long-term growth. State interference in wage setting affects the economy at the macro level (through investment) and at the micro level (by changing the incentives for firms and employees). Additionally, targeting of the wage levels and linking wage targets to the US Dollar affects the efficiency of monetary and exchange rate policies.

4.1. Macro Level: Disinvestment

State intervention aimed at pushing wages up despite lacking labor productivity leads to unit labor cost increases. Other things being equal, this means lower profits and a lower ability to finance investments (though household consumption might increase). Thus, intervention by the state concerning wage levels may lead to lower investment. This relationship is supported by empirical evidence (see Figure 5a and Table 3).

After wages were manipulated during a political business cycle, wages will – after such periods of growth above the labor productivity growth rate – grow more slowly again. Thus, profits will rise again and investments can increase. However, in this situation the timing of investments is to a large extent determined by the state's wage policy rather than by market forces. For example, an enterprise may expect a favorable external situation or notice other demand-enhancing factors, which means that investments should now be made. But if investment financing is impossible at this time because of the wage policy, an important business opportunity may be missed.

Thus, the state's wage policy limits the ability of enterprises to invest at the appropriate time. This has a negative effect on companies and on the whole economy, worsening the international competitive position of Belarusian companies and limiting the potential for long-term economic growth. An additional problem is that investors receive wrong signals: increasing domestic demand in pre-election periods may attract 'excessive' investment into sectors working for the domestic market and lead to under-investment in export-oriented sectors. Thus, through wrong signals to investors the state's wage policy reduces efficient resource allocation in the economy.

Figure 5: Wages and investment

(a)

$$d(I/GDP) = 0.70 - 0.68*d(WB/GDP)$$

(b)
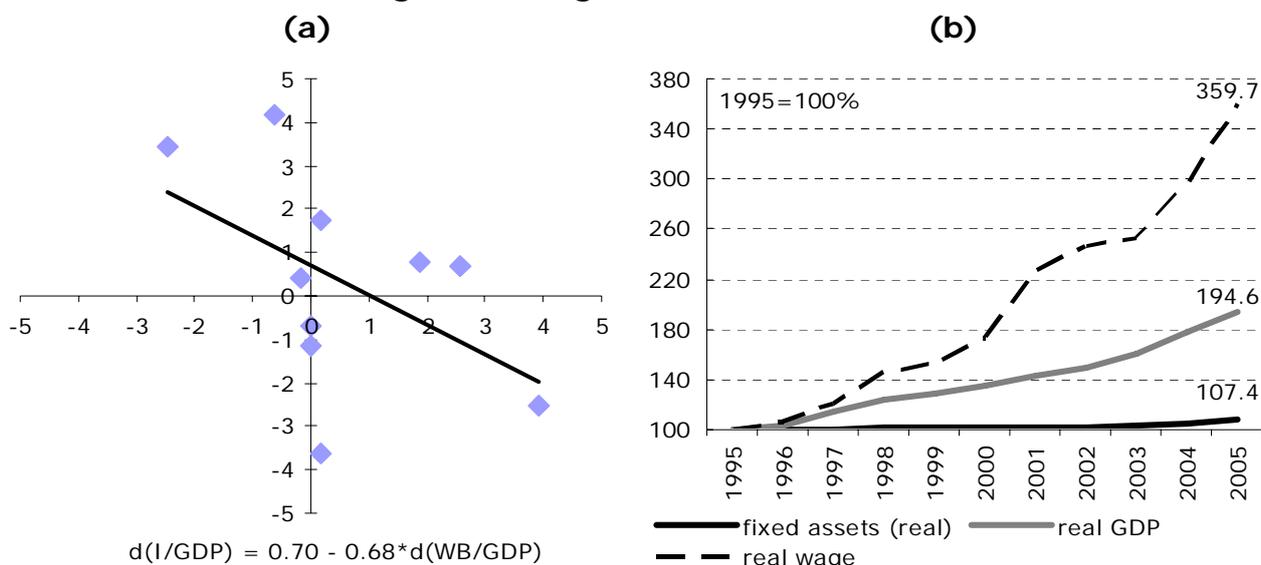
Note. d(I/GDP) is the change in the share of investment (gross fixed capital formation) in GDP, d(WB/GDP) is the change in the share of the wage bill in GDP. The data is presented in percentage points (change): The OX axis is change in the wage bill / GDP ratio, the OY axis is the change in investment / GDP ratio.
Source: Own calculations based on Ministry of Statistics and Analysis data.

Note. The real indicators are calculated based on different deflators, thus the difference between them could be affected by the difference between the deflators.
Source: Own calculations based on Ministry of Statistics and Analysis data. Fixed assets in 2005: own estimates.

Table 3: Contribution to GDP growth

	Real GDP growth rate, %	Contribution of household consumption	Contribution of gross fixed capital formation
		percentage points	
1996	**2.8**	**3.2**	**-0.7**
1997	11.4	6.6	5.1
1998	8.4	8.1	2.5
1999	3.3	5.8	-1.0
2000	5.8	5.2	0.5
2001	**4.7**	**9.8**	**-0.6**
2002	5.0	7.0	1.6
2003	7.0	4.8	5.3
2004	**11.4**	**6.3**	**5.4**
2005	**9.2**	**9.6**	**6.0**

Note. The sum of the contributions of the two components may exceed the GDP growth rate due to the negative contribution of other components (net exports, change in inventories, government consumption, consumption of NGOs, and statistical discrepancy). Years of important political events are marked in bold.
Source: Own calculations based on Ministry of Statistics and Analysis data.

Despite the logic described above, in one particular instance the growths of wages and household consumption were accompanied by an investment increase even during a pre-election period (2004–2005, see Table 3). In this instance, starting in mid-2003, Belarus faced very favorable external conditions (fast growth of the prices of its main export goods, and the related increase in currency revenues and revenues of the state). Thus, the economy had sufficient resources to invest and to increase wages simultaneously.

In spite of this, almost all investment increases related to replacing fixed assets, i.e. the investment was only slightly higher than the depreciation of fixed capital. As a result, while fixed capital investment increased by almost 100% between 1995 and 2005, fixed assets increased by just 7.4% over this period (see Figure 5b). Thus, the investment was too small to ensure fixed capital accumulation, and to some extent this is related to the state's interference in wage setting.

4.2. Micro Level: The effect of redistribution on incentives

Another aspect of the wage policy – redistribution – sends the wrong signals to current and future employees. Current employees see no advantage to further their education, training, etc., or to change the field of work. Future employees (young people) get the wrong signal (artificially high wages in certain sectors) and choose the field of their future activities based on this signal. Thus, people decide on their investment in education and skills (human capital) based on the wrong signals. As a result, the structure of investment in human capital and, consequently, the structure of the labor supply become non-optimal and reduce long-term growth potential. Furthermore, the redistribution of wages is often aimed at preserving employment at inefficient enterprises, which delays the restructuring of the economy via reallocation of the labor force from inefficient industries and enterprises to more productive ones.

Additionally, the redistribution of wages distorts the workers' incentives, since being more productive does not necessary mean getting a higher salary. In this situation de-motivation both of very productive and of less productive workers may occur. Firstly, if a productive worker does not receive appropriate gratification for good performance, he/she may reduce his/her efforts (which will cause a decrease in labor productivity), or start to look for a job abroad (this raises the brain drain problem, i.e. a skilled workforce leaving the country). Secondly, unproductive workers have no incentive to increase their productivity, since they can expect wage increases anyway. Thus, some sort of adverse selection in the labor market occurs which is bad for economic growth because the most productive and efficient part of the workforce either leaves the country or has no incentive to increase its productivity.

4.3. Effects on the monetary and exchange rate policies

Targeting the wage levels limits monetary policy efficiency. Where an enterprise lacks funds to pay off its wage arrears, the government may oblige an authorized bank to issue a loan to pay these off and then order the NBB to refinance the bank, thus increasing the money supply. In recent years such practices have become quite rare, but from 2000 to 2002 this was common. In this situation it is difficult for the NBB to reduce its money supply using other channels, because any decrease in its liquidity limits the ability of enterprises to pay or to increase wages. Furthermore, higher wages can contribute to faster price growth. Thus, the targeting of wage levels limits the ability of the NBB to combat inflation.

Linking wage targets to the US Dollar also limits the ability of the NBB to conduct an appropriate exchange rate policy. The existence of wage targets measured in US Dollars conflicts with the NBB's goal to ensure external stability. For example, in case of a negative external shock devaluation could help to absorb this shock. However, with devaluation the wage targets may not be achieved, while without devaluation the negative external shock may threaten the macroeconomic stability. The NBB could simply loose the chance to devalue the national currency at the proper time.

5. Conclusions and policy recommendations

The following conclusions can be drawn from the above analysis:

Conclusion 1: In the long run, there exists a relationship between the growth of wages and labor productivity in Belarus, but in the short run these indicators differ significantly.

<u>Conclusion 2</u>: The wage dynamics can be explained by the political business cycle (i.e. wage increases are linked to periods of important political campaigns).

<u>Conclusion 3</u>: In addition to the wage increases given during political campaigns, there exist additional components of wage policy in Belarus: wage targets and redistributions aimed at reducing wage differentiation.

<u>Conclusion 4</u>: When wages rise beyond labor productivity, enterprise profits and investments are reduced. The political business cycles distort the investment structure.

<u>Conclusion 5</u>: Redistribution distorts the employee's incentives and the structure of investment in human capital. It also limits the firms' abilities to use wages as a tool to encourage productivity increases.

<u>Conclusion 6</u>: Targeting of wage levels limits the capacity of the NBB to combat inflation and linking wage targets to the US dollar restrains to ability of the NBB to efficiently conduct an adequate exchange rate policy.

Taking these consequences of the Belarusian wage policy into account we recommend that the government reduce its interference in the field of wage determination. More specifically, we propose the following:

<u>Recommendation 1</u>: Stop the practice of targeting wage levels, or at least, make wage targets *de facto* indicative, not obligatory.

<u>Recommendation 2</u>: Avoid redistributions aimed at decreasing wage differentiation. In particular, suspend all interference in the wage policies of private enterprises and do not limit wage increases at profitable state enterprises, which receive no state subsidies.

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Minsk, May 2006