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# Spatial Wage Inequality in Belarus

This policy brief summarizes the results of an analysis of wage inequality among the districts of Belarus over the period 2000-2015. The developments in wage inequality varied noticeably by sub-periods: wage disparity decreased in 2000-2005, stayed stable in 2006-2012, and increased again during the last three years. I find evidence for spatial dependency in wages between districts, and increasing separation within districts (between rural and urban population). A decomposition of wage inequality by different quantiles of districts shows that the real wage increase rate in the lower percentiles exceeds the real wage increase rate in the higher percentiles. From a theoretical point of view, my results reject the inverted U-shaped relationship between spatial inequality and economic development for Belarus, and support the hypothesis made by the French economist Thomas Piketty that slow growth rates lead to rise in inequality.



In Belarus, wages make up approximately 60% of household income and account for 46% of GDP. The equality of the wage distribution therefore affects the scale and degree of socio-economic disconnect in the country. On the one hand, too much inequality may dampen long-term growth. On the other hand, too much equality may reduce incentives for productivity improvements.

This policy brief outlines a study (Mazol, 2016), where I examine the wage inequality concern of Belarus using annual Belstat data on district average monthly nominal wages (excluding large cities) from year 2000 to 2015, corrected by the country's CPI index (using 2000 as the base year).

## Characteristics of district wages

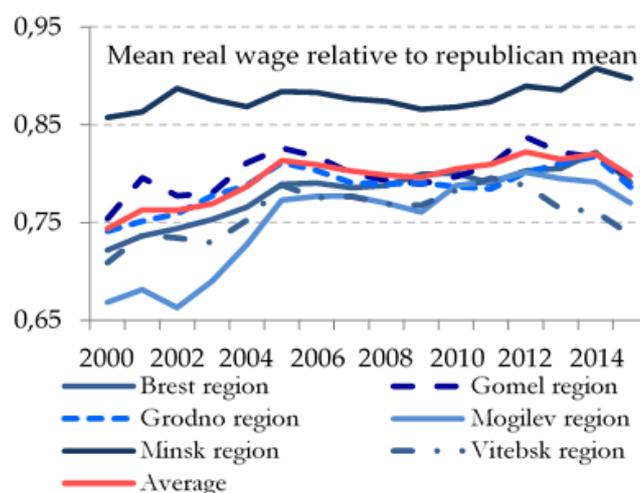
According to the Belarusian statistical definitions by the end of 2015, Belarus has 118 districts with an overall population of 4.9 million (excluding large cities), which corresponds to approximately 50% of total population. Average district wages relative to the national mean has increased from 74% in 2000 to 82% in 2005, indicating a catching-up process in wage income between districts and large cities (see Figure 1).

However, from 2013, the convergence of wages reverted to divergence (79% in 2015) suggesting that the relatively poor district population have become even poorer in recent years.

District wages differed by 2.8 times in 2000 and by 2.4 times in 2015. The largest number of districts with the lowest wages concentrate in the northern part of Belarus, represented by Vitebsk region with a mostly rural population, whereas districts with the highest wages are mostly in the Minsk and Gomel region, which are the central and most industrialized parts of Belarus (Minsk, Zhlobin, Mozyr and Soligorsk) (see Figure 2).

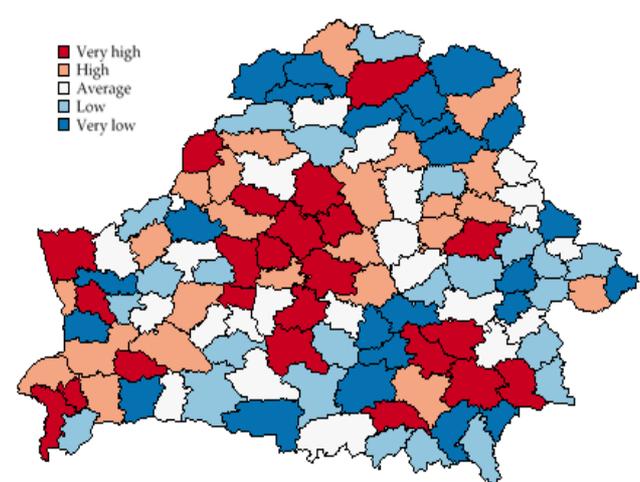
However, the common feature in the allocation of different levels of district wages is that the higher/lower wage districts tend to concentrate with similar districts, indicating presence of spatial dependence in the wage distribution.

Figure 1. Decomposition of district real wages at the regional level of Belarus



Source: Author's own calculations.

Figure 2. Map of Belarus' districts by levels of real wages in 2015



Source: Author's own calculations.

## Spatial interdependencies of district wages

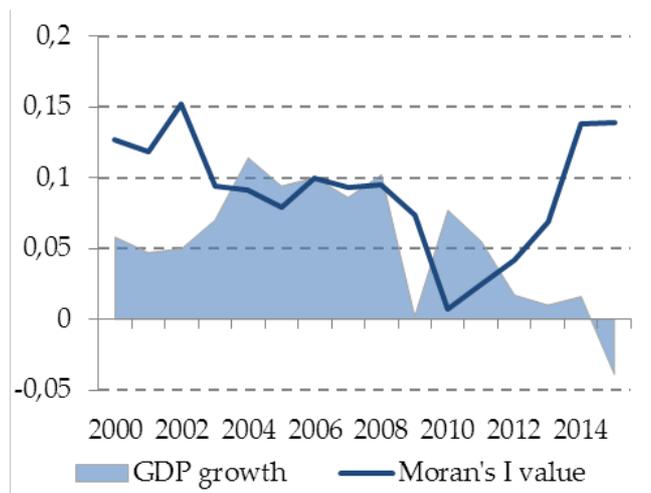
The spatial characteristics are tested using the Global Moran's  $I$  statistic (Moran, 1950). A positive coefficient means that neighboring districts have similar wages and a higher value indicates an increase in the relationship.

The results show that the values of the Global Moran's  $I$  statistic are positive and significant at the 5 percent level for the periods 2000-2008 and 2014-2015 (see Figure 3). This suggests that



districts with similar high or low levels of wages tend to concentrate geographically.

Figure 3. Global Moran's I statistic and GDP growth in Belarus



Source: Author's own calculations.

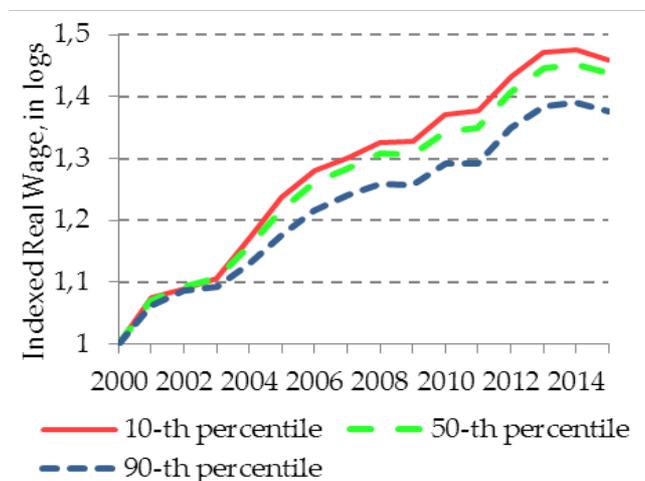
Additionally, starting from 2012, the substantial increase in positive spatial interdependencies in wages between districts coincides with a significant decrease in economic growth. This suggests that the districts of Belarus tend to cluster more closely with each other during economic recessions, indicating a more profound formation of rich and poor clusters of districts. Such a trend could be caused by a lack of public financial resources, which restricts administrative redistribution of financial support in favor of poor districts. As a result, such districts tend to become even poorer (for example, districts in Vitebsk region).

## Wage inequality in the districts of Belarus

Overall, the level of wage inequality among the districts of Belarus remains low for the studied period. Moreover, the growth rates of wages in districts with low wages are higher than in the richer districts, indicating presence of a convergence process (see Figure 4). Yet, the differences between these two groups continue to be large. In 2015, the 10th and 90th percentiles of

district wages were 4.6 and 6.1 million Belarusian rubles, respectively.

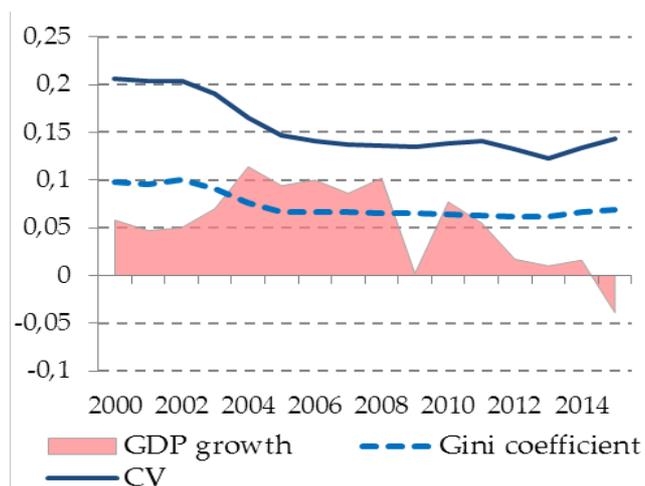
Figure 4. Indexed real wage



Source: Author's own calculations.

Regarding inequality dynamics, the country experienced a decline in wage disparity 2000-2005, but from 2013, the inequality in wages started to rise (see Figure 5) and this coincides with an economic slowdown and subsequent recession.

Figure 5. Measures of wage inequality



Note: CV – coefficient of variation.

Source: Author's own calculations.

Thus, during 2000-2015, Belarus' accelerating levels of economic growth first led to a decrease in district wage inequality. During a time of high and stable economic growth, the level of district wage inequality was constant. But, during the last



years' negative economic growth, the district wage inequality in Belarus has started to increase again. From a theoretical point of view, these results reject the hypothesis of an inverted-U-shaped relationship between spatial inequality and economic development stated by Kuznets (1955), and confirms the hypothesis stated by the French economist Thomas Piketty (2014) that declining growth rates increase inequality.

## Conclusion

My results suggest that spatial wage inequality in Belarus is a persistent phenomenon that has increased in recent years. I found evidence for a spatial dependency in wages between districts and an increasing separation within districts (between rural and urban population). These may lead to a socio-economic instability, growth of shadow economy, and even an emergence of depressed regions (for example, Vitebsk region).

In order to decrease spatial wage inequality and increase overall economic efficiency in the districts of Belarus, the government needs to implement specific policies aimed at facilitating regional drivers of economic growth through the formation of new economic centers at the district level.

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Aleh Mazol received his Bachelor's degree in Economics from the Belarusian State Economic University (2003) and obtained his Master's degree in Economics from the Kyiv School of Economics (KSE) in 2013.

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