

E.T. Gurvich

Economic Expert Group, Financial Research Institute, Moscow, Russia

E.S. Vakulenko

National Research University Higher School of Economics, Moscow, Russia

## Studies of Labor Market in Russia and Economic Policy

**Abstract.** This paper summarizes the studies on the mechanisms of Russian labor market. The topics under consideration include unemployment emergence and wages formation, relationship between key labor market variables and inflation, and labor market adjustment to adverse shocks. We demonstrate that the general feature of the Russian labor market is its high flexibility, which shows itself in a gradual decline of the NAIRU level, high elasticity of real wages to unemployment rate, rapid return to full employment after adverse external shocks. Problems rooted in the labor market are identified (primarily declining labor supply and increasing labor share in GDP). The neglect of these problems can become a major impediment for economic growth if urgent steps based on the earlier and forthcoming research findings are not enacted.

**Keywords:** *Russian economy, labor market, real wage flexibility adjustment to shocks.*

JEL Classification: E24, J08, O57.

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### Unemployment formation

Unemployment and wage rate, two major characteristics of the labor market, play decisive role in formulation of macroeconomic policy. The implementation of such a policy requires detailed knowledge about the labor market mechanisms, i.e. the formation of respective variables, their reciprocal relationship and their association with the other aggregate macroeconomic parameters. The emphasis here is not only on quantitative parameters but also on the qualitative reciprocal effects and causality, the identification of short term and long term links, the speed of labor market response to long term dynamic trends (if present) etc.

One of the key concepts here is Non accelerating inflation rate of unemployment (NAIRU). The estimates of NAIRU obtained by various researchers notably vary. Some authors (Bragin, Osakovsky, 2004, Gafarov, 2011) cite NAIRU values at close to 8% others though (Ahundova, Korovkin, 2006) arrived to somewhat different conclusions: according to them NAIRU of 8.7% in 1999 has fallen to 5.6% towards the end of 2004. More recent estimates are in the work by Sanjani (Sanjani, 2017), where NAIRU level is shown to gradually decline (from 7.5% in 2003 to 5.5% in 2016). The author connects this dynamic with increased flexibility of Russian labor market.

However lately the decline of NAIRU has slowed down to about 0.1 percent point per annum. To put it otherwise further decline of NAIRU can possibly smooth but not compensate the implications of the diminished labor force.

The next issue is the relationship between production indicators and unemployment (or employment). Okun's law (OL – further) provides a classic expression for this nexus. For emerging markets, including Russia, we use OL formula connecting production to unemployment:

$$u_t - u_{t-1} = a + bg_t + \varepsilon_t, \quad (1)$$

where  $u$  – rate of unemployment,  $g$  – GDP growth rate,  $b$  – Okun coefficient. This expression demonstrates the reaction of unemployment to production oscillations away from the long term trends within a business cycle. In principle labor market can adjust to production shocks via various channels: variation of economic activity levels, changes in rate of unemployment and in average number of hours, or changes in labor productivity (measured by GDP divided by the number of employed). OL states that adjustment share that takes place at the expense of increased unemployment remains stable (at least for each country): this very share is Okun's coefficient. Expression (1) also posits potential economic growth rates  $g$

with constant labor market indicators (unemployment, economic activity level, average number of work hours) which are given as  $g = -a/b$ . This autonomous growth rate can be interpreted as average rate of growth of labor productivity due to the new technological advance, improved human capital etc.

Standard estimate of expression (1) found presence of significant short term link with Okun's coefficient at  $-0.103$  (Vakulenko, Gurchich, 2015a). To put it otherwise, market short term reaction of labor market to economic growth rates acceleration by 1 percentage point leads to 0.1 percentage point rate of unemployment reduction. Unemployment rate and GDP growth rate changes are co-integrated in long term. In the long run GDP growth rate by 1% is associated with unemployment reduction by 0.07–0.08 percentage points. Rate of employment elasticity to GDP is 0.16–0.18 (Vakulenko, Gurchich, 2015a). Coefficient  $a$  estimate in equation (1) is insufficiently significant to be used to assess the potential of the long term Russian GDP growth.

Unemployment relationship with GDP growth rates is oftentimes asymmetric varying during recessions and economic expansions. Two explanations are possible to account for this: risk aversion and worker retention. In the former case at the onset of a recession the employers reduce their costs including the wages to avoid losses. In the latter case worker firing and recruitment either have legal restrictions or they involve additional costs (severance pay, worker search, training costs, etc.). The opposite is true when the economy is in downward trend: employers attempt to retain workers. It is typical for the developed countries to have a stronger reaction during a recession i.e. risk aversion dominates. Russian labor market analysis has demonstrated that adverse production shocks reaction is more than 2 times stronger than reaction to positive production shocks. Thus risk avoidance in employers conduct in Russia (as in the majority of other countries) prevails over intent to retain workers.

The available estimates attest to the fact that adaptation to production decline in Russia is reached mainly via decrease in real wages with moderate rise of unemployment. This is however

typical not only for Russia (as shown by (Vakulenko, Gurchich, 2015a)); similar Okun's coefficients are present in Germany, the Netherlands, Brazil, and Italy have even smaller absolute value of this coefficient.

The cited relationship between the unemployment and GDP parameters can be explained a number of ways. This relationship can be a reflection of the fact that additional labor force use contributes to great production output (according to the production function). Or this is a situation when production expansion generates additional demand for labor. In South Africa causality goes in the long run from unemployment to GDP, but in Malaysia these variables are in a two-way relationship (Noor et al., 2007). In case of Russia (Vakulenko, Gurchich, 2015a) causality goes from production to unemployment which means that OL in Russia is manifest of the *demand for labor changes*.

Derived O(K)L(N) estimates allow to address an important question of concern not for the economists only but also for the policy makers: would expected economic growth create more jobs? The answer to this question is not obvious. On the one hand, output growth implies higher efficiency of production and can thus possibly reduce demand for labor for the given level of production. On the other hand, efficiency increase can diminish production costs, which, in turn, can elicit greater demand for labor. As shown in Gali (Gali, 1996), *the nature of the relationship in question is determined here by the source of economic growth*. If growth is a result of the technological advance, then productivity of labor will lead to lower employment. If, otherwise, this growth is a result of aggregate demand increase then demand for labor will go up too.

A direct relationship between production and employment in Russia points out that intensive GDP growth is paired by unemployment reduction (as observed during 2000–2012). This observation supports the conclusion (Kudrin, Gurchich, 2014) that the main source of the Russian economy growth was expansion of demand and not technological advance.

Economic growth without creation of new jobs is a matter of concern in the countries with

high unemployment. The opposite situation is present in Russia though: relatively low current level of unemployment is coupled with a forecast of working-age population reduction. According to the estimates by Ivanova (Ivanova et al., 2017), projected labor force will be going down on average by 0.5–0.6% per year for the period up to 2030. This trend would certainly impose limits to the Russian economy unless a new model of economic growth is implemented.

### **Wage rate formation**

Simple analysis has shown that under market conditions the wage rate has to do with marginal labor productivity. Empirical data supports such close long term relationship between the dynamic of productivity and the wage rate in the majority of countries (Meager, Speckesser, 2011). Nevertheless, productivity is not the only factor that determines the wage rate: the latter depends on the level of unemployment too. According to obtained estimates (Vakulenko, Gurvich, 2015b) for the model in question which connect all of the above mentioned indicators, productivity growth by 1% leads to real wage growth in Russia by 0.59% (or by 0.73% if the wage rate is not used, and instead it is work pay calculated using national accounts system). The extent of the estimated correlation is typical for other countries too. Close quantitative values for the same relationship were obtained for two panel data sets: one comprising 13 countries of the euro zone, and another 19 emergent market economies (Vakulenko, Gurvich, 2015b).

The same study reached a conclusion that unemployment reduction by 1 percentage point, all other things held constant, makes real wage rate go up by 12–14%.

Let's note here that some of the economists share a concept of the "efficiency wages" according to which employers set wages above the actual workers' productivity in hopes to elicit greater work effort thus compensating for high additional costs of labor. This concept along with the traditional one presumes the direct relationship between work pay and labor productivity, however the direction of this relationship is reversed: changes of wage rate define changes of productiv-

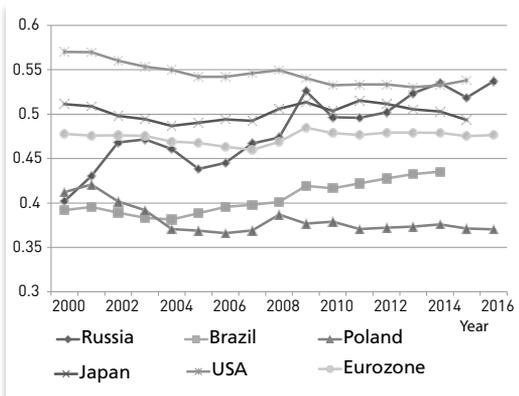
ity. "Efficiency wages" mechanism (if proven active) provides for a new explanation of structural unemployment contrary to the conventional statement about labor market rigidity being the main source of such unemployment (Ehrenberg, Smith, 2012). In the study by Dohmen et al. (Dohmen et al., 2014), the authors have interpreted such results at the microeconomic level and deemed them as an indirect proof of the validity of this hypothesis for Russia.

Vakulenko and Gurvich (Vakulenko, Gurvich, 2015b) have demonstrated for Russia, that the relationship between labor productivity and real wages indeed works from the former to the latter. This permits to reject the possibility of "efficiency wages" mechanism in Russia as inoperative.

While studying the labor market, one needs to take into account that it is made up of inter-connected segments with their own peculiarities. First, the labor market is divided into two sectors: the sector funded by the federal government and the remaining sector (non-government or private sector) The works by Gimpelson, Lukyaniva, Sharunina (Gimpelson, Lukiyanova, 2009; Sharunina, 2013) compared work wages in these sectors, but connection between the changes of wages in the state sector and in the private one is also of top importance. Ivanova (Ivanova, 2015) has shown a close link between wages dynamic in these two sectors. Such conclusion raises the further question of what sector plays the leading role in wage changes: the state or the private one? The conducted analysis manifested, that the private sector leads the trend in wage determination in the long run. However, it is the leadership of the state sector in wage determination in the short run. These findings are in agreement theoretically and empirically with the results for other countries.

There is an important lesson for policy-making here: decisions to raise wage rate in the public sector should be carefully considered with the possible implications for the private sector. First of all, one needs to assess the impact of induced work pay increase in the private sector and its implications for the Russian economy competitiveness, inflation, employment, etc.

Work pay share in the GDP and its dynamics are the most important overall characteristics of the wage rate formation. It has been a long time convention that this share is rather stable and is determined by the ratio of capital and labor productivity, on the one hand, and the strength of collective bargaining positions between the employers and the employees, on the other hand. Lately, the situation has changed and even more so in Russia where it has become drastically different. The calculated work pay share in GDP (numbers adjusted to include the alteration of the statistical standards since 2011) has gone up from 40% to 54% in 2016 (Fig. 1). The same parameter stayed stable in the countries of the Eurozone or exhibited a declining trend as in the U.S.A. and Poland. Yet another exception to the common trend was observed in Brazil, but to a smaller scale than in Russia.



**Fig. 1**

*Calculated work pay share in GDP, %*

Source: authors calculation based on data from OECD and RosStat.

The authors (Vakulenko, Gurvich, 2015b) have provided an explanation for anomalous dynamic of work pay share in GDP: according to them when elasticity of work pay to its productivity is largely less than 1, the weight of labor in GDP, at first glance, should not go up. However, the unemployment has markedly gone up at the same time and thus put additional upward pressure on wages. During the last three years the work pay share in GDP has stabilized (as it was in 2008), but if the economy gains growth momentum and growth models remain the same this share will resume its climbing again. This will lead to further decline of the profit margin and a depletion

of companies' own funds which would affect this important source of investment. As a whole, these two effects would impose tight limits to achieving desirable growth rate of the GDP.

### Labor market parameters and inflation

The Phillips curve describes the fundamental link between rate of inflation and rate of unemployment. Their relationship was studied in the works of Bragin, Osakovsky, Gafarov, Sokolova et al. The authors (Bragin, Osakovsky, 2004; Gafarov, 2011; Sokolova et al., 2014; Sanjani, 2017) have built a hybrid New Keynesian Phillips curve with time variable coefficients for the period of inflation targeting. This model is quite good at describing inflation dynamic (with the exception of individual periods of the drastic prices hikes). It is noteworthy that the construed Phillips curve has a steeper slope than would be typical for the majority of the emergent markets which implies that inflation exhibits a rather strong effect of the declining rate of unemployment. Furthermore, for the case of Russia, the Phillips curve slope is expected to increase with gradual return of the economy of Russia to stable growth. One of the lessons to draw from this analysis is to have the Central Bank of Russia be ready to make every effort to restrain inflation facing the feasible fall of unemployment below the "natural" level.

The Phillips curve mechanism formation comprises two links. The first link is the inverse relationship between real wage rate and the rate of unemployment, the second – the connect between nominal wage rate and prices.

According to the model of "cost push inflation", the increase of work pay makes the cost of the product go up and further on prices going up too. Alternatively, under the model of "demand pull inflation", the causality works its way in the opposite direction: inflation rate rising gives upward pull to wages in the economy. For the developed countries (for instance, the U.S.A.) only one-way link is present, i.e. from inflation to wage rate which corresponds to the findings of demand-pull inflation.

Ivanova in (Ivanova, 2016) has shown that in Russia the link between inflation and the wage rate works in both directions: this means that

both models of cost-push and demand-pull are operational. Hence this situation can bring about the risk of a potential classic inflationary spiral. International experience has proven inflationary targeting, implemented by the Bank of Russia since the end of 2014, to offset inflation hike and, moreover, to alter its mechanism that eventually can result in “demand-pull” inflation model.

### Adjustment to shocks

Cross-country comparative analysis conducted to draw conclusions from “Great Recession” (i.e. the international financial crisis of 2007–2008) by (Aiginger, Horvath, Mahringer, 2012; Eichhorst, Feil, Marx, 2010) and the others allow to summarize findings with regards to labor markets mechanism.

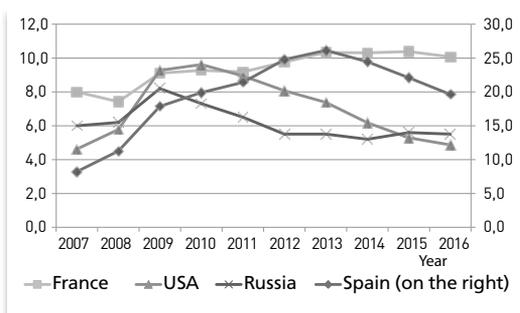
1. Greater flexibility of the labor market during crises has made adverse shocks implications less painful.
2. Greater flexibility of the labor market provided faster restoration of full employment (the return to the natural rate of unemployment).
3. Labor market reaction to adverse shocks during crises is quite different from labor market adjustments during times of stability due to the unique extent and nature of adverse shocks during crises and also due to the state implemented anti-crises packages.

Labor market flexibility in the majority of studies depends on degree of the institutional constraint imposed on employers. (Artha, Haan, 2011) have demonstrated that if the cost of labor hiring (broadly defined) is lower to employers, then the GDP losses from crisis are lower too, all other things held constant. In their turn, (Aiginger, Horvath, Mahringer, 2012) have found that regulation burden to labor market might increase fall of employment in crisis per unit output drop.

The main macroeconomic parameter, that characterizes the ability of labor market to react fast and effectively to crisis shocks, is real wage elasticity to unemployment. According to (Blanchard, 2006), high elasticity of real wage rate attests to the fact that market mechanisms are not subjected to

excessive regulatory constraints and the labor market can expediently restore its equilibrium. Fig. 2 illustrates the ability of labor markets to adapt in various countries. This figure shows that in Russia and the U.S.A. the conditions of a crisis lead to a relatively short term increase in unemployment after which it goes back to the prior level. The situation in Spain was the opposite: after the crisis the unemployment soared (almost by a factor of three), and only then it started slowly to head to pre-crisis (after 9 years its level remained 2.5 times higher than before the crisis). Finally, in France, the initial unemployment increase was not as drastic, but it has not shown any signs of returning to the pre-crisis level.

Labor market rigidity prevents its prompt adjustment to adverse shocks and it is rooted in the institutional constraints pertaining to hiring and firing of workers, to setting and altering wage rates, etc. At the macroeconomic level, labor market inflexibility (rigidity) has to do with the low elasticity of real wage rate to rate of unemployment. A number of authors have demonstrated that these aspects of rigidity are closely intertwined. Thus, (Babetský, Dybczak, 2012), pointed out that the presence of trade unions (assessed by the share of workers involved in collective bargaining process with the employers) or strict workers’ rights protection by the state can significantly lower real wage elasticity to unemployment.



**Fig. 2**

*Rate of unemployment dynamic after the great recession, %*

Source: OECD and RosStat data.

Authors (Vakulenko, Gurvich, 2016) have carried comparative analysis of the Russian labor market rigidity using three different specifications’ models describing the link between the real wage rate and

the unemployment. Independent of the method of assessment, the elasticity of real wage rate to unemployment in Russia turned out to be higher (in absolute terms) compared to almost all of the other countries with similar assessments present. This allows asserting that the Russian labor market has very high flexibility. This conclusion is in agreement with the dynamic of the unemployment observed after the Great Recession of 2008–2009 and during the financial crisis that started in the second half of 2014. In both cases the level of pre-existing rate of unemployment was quickly restored to the pre-crisis (or thereabout) level.

### Conclusion

The summary of the conducted analysis permits us to conclude that the Russian labor market as a whole is quite flexible and adapts well to adverse shocks. The resultant level of natural rate of unemployment is consecutively going down and the actual unemployment remains at the low and stable level. This means that the state regulatory activity does not produce significant distortions in the conduct of the employers and the employees. Saying that, one needs to be aware that the more recent decisions like a dramatic wage hike in health care and education (President's Decree, 2012) along with dramatic increase of minimum wage could negatively affect the labor market.

Economic policy-makers in the coming years would face the challenge to confront intertwined acute problems in the Russian labor market. First, the increasing worker pay share in the GDP has contributed to the lower competitiveness of the Russian economy and, thus, reduced overall profitability which, in turn, plays a crucial role as the main source of investment. Second, demographic forecasts project that Russia has entered a prolonged stage of fast contraction of labor force. Given that the level of the unemployment has gone below its natural benchmark, and the real wage elasticity to unemployment is record high, labor market situation might turn out to be a serious impediment to future economic growth, if urgent and energetic measures to offset these trends are not enacted.

Therefore, the processes in the labor market will play a key role in the prospects of the

Russian economic growth in the near future. Its success, largely, will depend on finding solutions to the above-mentioned problems, using present and forthcoming findings of the respective economic research.

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