# Unemployment and Goverment's Subsidizing

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Unemployment has become more and more pressing matter nowadays. Governments all across the world are implementing policies to increase the employment rates back to the levels before the economic downturn. One of the most important policies implemented by countries governments were employment subsidies, which means that companies got government funding when employing and also that private citizens had the possibility for entrepreneurship stimulus packages. The scope of our study was to determine how the gross domestic product and the government's subsidizing on a country's level affect the number of unemployed on a country level. We have conducted the empirical part of our study on the case of Slovenia and found out that gross domestic product has a bigger effect on the number of unemployed than government's subsidies.

**Keywords:** unemployment, employment, crisis, government subsidizing, GDP

## 1 Introduction

Unemployment is always a pressing matter for governments all around the world. Since 2008 when the global economic crisis began it has become even more pressing. To fight high unemployment rates and citizen dissatisfaction governments implemented various policies to reduce unemployment or at least to keep it under control.

The most often used government tactic to reduce unemployment and increase employment are government subsidies which enable companies to employ under different circumstances than those that the labor market allows by itself. Subsidies also give private citizens the possibility for entrepreneurship stimulus packages which also reduces unemployment.

We will explore how government's subsidizing and country's GDP affect unemployment in a country. Subsidizing is a well known measure to reduce unemployment so we believe that it has an effect and on the other hand we believe that the unemployment is also affected by the country's GDP. Also, we want to find out how unemployment is affected by the two selected variables and which variable has a stronger affect. Our research will be conducted on the case of Slovenia.

## 2 Theoretical Backgrounds

### 2.1 Unemployment

Unemployment is defined in the resolution relating to statistics of the economically active population, employment, unemployment and underemployment, which was adopted by the Thirteenth International Conference of Labour Statisticians that took place in Geneva in 1982. As the »unemployed« are defined all persons above a specified age who are during the reference period: »without work«, i.e. are not in paid employment or self-employment as defined in paragraph; »currently available for work«, i.e. are available for paid employment or self-employment during the reference period; and »seeking work«, i.e. have taken specific steps in a specified recent period to seek paid employment or self-employment (LABORSTA Internet: Main statistics (annual) - Unemployment (E), 27.03.2010). The prevalence of unemployment is measured using the unemployment rate. The unemployment rate is defined as the percentage of those in the labor force who are unemployed (Blanchard, 2005).

Economists distinguish different types of unemployment: cyclical unemployment, frictional unemployment, structural unemployment and classical unemployment. Occasionally are mentioned also seasonal unemployment, hardcore unemployment, and hidden unemployment. Real-world unemployment is usually the combination of different types (Sullivan & Sheffrin, 2003).

There is a constant debate on how to solve the persistent unemployment problem. One of the problems is that the extent and timing of the shift varies across countries and those countries lagging behind in this process of restructuring experience lower growth levels and this has consequences for the level of unemployment in different countries (Thurik, 2003). Aghion and Howitt (1994) argue that unemployment is affected by

economic growth, both, directly through the job-destruction rate, and indirectly, through its effects on the incentive for firms to create job openings and hence on the job-finding rate.

Many authors claim that entrepreneurship reduces unemployment. Faria, Cuestas and Gil-Alana (2009) argue that when unemployment is high, more people create new businesses and successful new startups create new jobs which lead to a reduction in unemployment. Moreover, the unemployment rate can on one hand stimulate the start-up activity of self employment, but a higher rate of self-employment may on the other hand indicate increased entrepreneurial activity, which in the subsequent period of time reduces the unemployment. These two effects have resulted in considerable ambiguities about the interrelationship between unemployment and entrepreneurial activity (Audretsch et al., 2005). The response to unemployment or lack of outside alternatives in the labor market can be the individual's decision to start a new business (Cowling & Bygrave, 2002).

## 2.2 GDP

Gross domestic product (GDP) has an important role in economics, public policy, politics and society. Combining all theories about GDP influence lead to overall conclusion that GDP is not only an inadequate proxy of social welfare but also has a considerable impact on public and private economic decisions (Van der Bergh, 2008). Guest and McDonald (2007) point out that the share in global GDP of a region is of interest because it indicates, to some extent, the economic, political and cultural importance of that region. GDP is an indicator of social welfare and progress; it witnesses the common substituting phrase »standard of living« (Van der Bergh, 2008).

The real GDP per capita (corrected for inflation) is generally used as the core indicator in judging the position of the economy of a country over time or relative to that of other countries (Van der Bergh, 2008). It is important to distinguish between real GDP on one hand and real domestic income on the other. Real GDP is often used as a proxy of a country's real income and focuses on production possibilities, whereas real income stresses consumption possibilities and welfare (Kohli, 2004).

Researchers often employ some form of a generalized autoregressive conditional heteroskedasticity (GARCH) modeling strategy to examine the volatility of real GDP growth. Most such studies assume a stable GARCH or exponential GARCH (EGARCH) process capturing the movement in instability (Fang & Miller, 2009). Sato (2001) stresses the importance in macroeconomic contents of potential output and the GDP gap. In his research he demonstrates that GDP gap estimate makes much better economic sense in comparison with other important macroeconomic indicators.

GDP in each country is determined by a country's specific production function that incorporates the usual three arguments: employment, capital and total factor productivity (Guest & McDonald, 2007). GDP per capita is often construed as information about productivity. But it is important to note that a correct productivity measurement needs to be related to the number of hours worked, which shows many variations between countries, as well as over time. GDP per

hour is therefore a more useful indicator of productivity than GDP per capita (Van der Bergh, 2009). One of the reasons why many economists are interested in GDP figures is also because an increase in real GDP is usually associated with a rise in employment (Kohli, 2004).

## 2.3 The relationship between unemployment and the GDP

In economics, there are a few well-known stable empirical relationships among macroeconomic variables. In this subchapter, we talk about two such relationships; one is the Okun's Law and the other is Taylor Rule. In summary, Okun's Law and the Taylor Rule represent relationships among key macroeconomic policy variables that appear in most textbooks (Mitchell & Pearce, 2009).

Mitchell and Pearce (2009) argue that Arthur Okun was the first to note a stable, negative relationship between unemployment and real output in a policy-oriented article aimed at clarifying the costs of unemployment. The stability of the relationship together with its simplicity may in their opinion explain the popularity of Okun's Law among policy-makers, as well as its inclusion in macroeconomics textbooks. Okun (1970) suggested that a one-percentage point change in the unemployment rate is associated with an approximately three-percentage change in output in the opposite direction. This rule of thumb is regarded as a benchmark for policymakers to measure the cost of higher unemployment. Recent economic developments, however, have raised challenges to the three-to-one ratio as an empirical regularity (Lee, 2000).

John Taylor (1993) more recently proposed a simple rule to guide the Federal Reserve in setting its nominal federal-funds-rate target, thereby joining the long-standing debate on whether rules-based or discretionary monetary policy better achieves price stability consistent with high employment. Like Okun's Law, the Taylor Rule quickly came to prominence among policy makers and academic economists alike.

When considering the relationship between unemployment and the GDP, it is also important to understand the importance of time lags between particular economic phenomena. First, GDP declines, followed by adjustment in employment (the reactions of the companies are always somewhat late, comparing to the GDP performance of the countries), and the state lag (also the Governments take their time to prepare the policy measures) being even more significant.

## 2.4 Government's subsidizing

In general, any policy that reduces profits raises the unemployment and vice versa - those that enhance profits reduce the unemployment. Therefore, employment subsidies should reduce unemployment and unemployment benefits raise it (Pissaridies, 1985). But some researchers also criticize subsidies and argue that because of the subsidies some workers may lose their jobs. This is either due to changes in relative wages (substitution effects) or because subsidies reduce the market share of some firms relative to others (displacement effects) (Betcherman et al., 2008).

Unemployment subsidizing systems vary widely among countries and also among different periods, but they all tend to decrease the unemployment rate, particularly of vulnerable groups, and its negative influence on countries' welfare. In this chapter we will focus on government subsidizing of unemployment in Slovenia. We will also look at the effects of the current crisis on employment policies and happenings in the Slovenian economy as of mid-2009 and consider the actions of the Slovenian government to mitigate the effects of the crisis.

In general, the employment subsidies intend to reduce the cost of labor to employers. They can be either applied to all employment or only to marginal subsidies. They can also be general, in the sense of applying to all workers and establishments, or to only certain types of workers (for example, low-wage, youth, long-term unemployed, women, or disabled workers) or certain sectors or geographic areas within the state (Betcherman et al., 2008). Orszag and Snower (2003) distinguish two types of policy proposals in reducing unemployment and working poverty: hiring subsidies and wage subsidies. The hiring subsidies are targeted entirely at the unemployed and are provided only for a limited period of time, the wage subsidies, on the other hand, are granted to all low-wage earners regardless of their employment history and are of limitless duration. Their analysis indicates that the relative effectiveness of the two policies depends on workers' prospective wage growth.

In Slovenia, the employers-employees relations are in a large extent responsible for the adaptability of workers to the changing market conditions. The country's employment policy also plays a great role in reducing the unemployment problem in a country. Country measures to promote employment in Slovenia can be roughly divided into passive (unemployment benefits), active (active employment policy programs) and interventional (partial subsidizing of full-time employment).

Unemployment benefits for unemployment time are intended to anyone whose employment relationship did not end by their own fault. Compensation for the first three months is 70% and the following months 60% of average monthly income received within 12 months prior to unemployment. The compensation paid can be no lower than 45.56% of the minimum wage and no higher than three times the amount of the lowest benefit thus determined. During the time of receiving money compensation one is involved in the compulsory insurance - pension and disability insurance, health insurance for parent protection and unemployment benefits. Contributions are paid by the Institute of Slovenia for employment (Ministry of Labour, Family and Social affairs, 2009).

The state assists it mainly through the tools of active employment policy, while the size of the unemployment funds is small, due to the low contributions. Active employment policy (AEP) measures represent a range of measures which the government actively engages in the labor market and eliminate disparities between supply and demand. The amount of 102.7 mio EUR was dedicated to this purpose in the year 2009. The main actions under the AEP are advice and job search assistance, training and education, promoting employment and self employment and programs to increase social inclusion (AEP 2007-2013). In the context of promoting employment and self-employment of unemployed persons, the state is providing subsidies for self-employment, an employment subsidy for difficultly employable persons (e.g. young, long-term unemployed) and grants for reimbursement of labor costs, which includes reimbursement of the employer subsidy and part-time work (Ministry of Labour, Family and Social affairs, 2009).

Currently, in Slovenia is a special emphasis placed upon the last – the subsidies for shortening the working time and the implementation of a so called "wage guarantee fund". In February 2009 the government adopted a set of measures that

*Table 1: Data on total subsidies, GDP and the number of unemployed in Slovenia for the years 1999 to 2008*

| Year | Total subsidies in Slovenia (in mio €)* | Slovenia's GDP (in mio €)* | Number of unemployed in Slovenia |
|------|------|------|------|
| 1999 | 459,25 | 18786,00 | 114348 |
| 2000 | 407,24 | 19682,00 | 104583 |
| 2001 | 427,84 | 21024,00 | 104316 |
| 2002 | 332,80 | 23492,00 | 99607 |
| 2003 | 371,20 | 24592,00 | 95993 |
| 2004 | 408,70 | 25919,00 | 90728 |
| 2005 | 267,20 | 28243,00 | 92575 |
| 2006 | 276,27 | 30397,87 | 78303 |
| 2007 | 268,14 | 33105,51 | 68411 |
| 2008 | 323,32 | 35691,43 | 66239 |

\* The average Bank of Slovenia rate for EUR 1 was SIT 193,6253 in 1999, SIT 205,0316 in 2000, SIT 217,1851 in 2001, SIT 226,2237 in 2002, SIT 233,7045 in 2003, SIT 238,9 in 2004, SIT 239,6371SIT in 2005 and SIT 239,64 in 2006.

Source: Četrto poročilo o državnih pomočeh v Sloveniji (za leta 1999, 2000, 2001) (2002); Sedmo poročilo o državnih pomočeh v Sloveniji (za leta 2002, 2003, 2004) (2005); Osmo poročilo o državnih pomočeh v Sloveniji (za leta 2003, 2004 in 2005) (julij 2006); Enajsto poročilo o državnih pomočeh v Sloveniji (za leta 2006, 2007 in 2008) (julij 2009) [Reports on State Aid in Slovenia, 1999 to 2008, Ministry of Finance].

subsidized full-time working week for particular companies that have been affected more than others by the fall in export demand and had to move to a temporary 36-hour or 32-hour working week. The total amount of funds available for this measure is 230.4 million euro (ESS, 2009). The Employment Service of Slovenia has until March 2009 entered into a contract for the partial subsidization of full-time with 207 employers, for 32,597 employees.

We argue that the introduction of "wage guarantee funds" is a better tool to increase flexibility in the labour market, especially if they would become a part of the welfare accounts and also resulting in positive correlation with the GDP stabilization in the beginning and growth further on. Taken together with the skill accounts and pension accounts, unemployment accounts could be a good way to reform the present welfare state in Slovenia. The welfare state would both emphasize a greater individual responsibility and expose some mechanisms that have thus far not played an important role (e.g. sustainable level of inequality and the preservation of the environment).

# 3 Methodology

The scope of our study is to determine how the gross domestic product and the government's subsidizing on a country's level affect the number of unemployed on a country level. The research questions of our research are as follows:

R1: *How is the number of unemployed affected by the GDP (gross domestic product)?*

R2: *How is the number of unemployed affected by the government's subsidizing on a country's level?*

The variables used in our research are the following: (1) the total subsidies in Slovenia, (2) the Slovenia's GDP, and (3) the number of unemployed in Slovenia.

As a basis for the empirical part of our research, we've gathered the data on total subsidies, GDP and the number of unemployed in Slovenia for the years 1999 to 2008. This data are presented in the table 1.

# 4 Results and discussion

## 4.1 Results

We began our analysis by constructing the frequency table (Table 2) and the correlation matrix (Table 3) for the variables used in our research.

From Table 3 we can see that »Total subsidies in Slovenia (in mio €)« and »Number of unemployed in Slovenia« have a positive and high Pearson r Correlation Coefficient which is statistically significant. On the other hand the Pearson r Correlation Coefficient between »Slovenia's GDP (in mio €)« and »Number of unemployed in Slovenia« is also high and statistically significant but the correlation is negative. The authors had an idea to estimate the two regressions together in order to find the partial effects of both variables on unemployment. However, because we wanted to avoid the effect of autocorrelation between »Total subsidies in Slovenia (in mio €)« and »Slovenia's GDP (in mio €)«, we conducted the two separate regression analyses of their affects on the »Number of unemployed in Slovenia«.

*Table 3: Pearson r Correlation Coefficients (n=10)*

| | Total subsidies in Slovenia (in mio €) | Slovenia's GDP (in mio €) |
|---|---|---|
| **Slovenia's GDP (in mio €)** | -0,793** | |
| **Number of unemployed in Slovenia** | 0,749* | -0,978** |

\*   Correlation is significant at the 0.05 level (2-tailed).
\*\* Correlation is significant at the 0.01 level (2-tailed).

In Table 4 we used the regression to analyze the relationship between the independent variable representing »Total subsidies in Slovenia (in mio €)« and the dependent variable »Number of unemployed in Slovenia«.

With the predictor »Total subsidies in Slovenia (in mio €)« that we have used in our regression analysis, 50.6% variance of »Number of unemployed in Slovenia« is explained. »Total subsidies in Slovenia (in mio €)« have a positive effect on »Number of unemployed in Slovenia« ($\beta$=0.749 and is statistically significant at the 0.013 level).

In Table 5 we used the regression to analyze the relationship between the independent variable representing »Slovenia's GDP (in mio €)« and the dependent variable »Number of unemployed in Slovenia«.

With the predictor »Slovenia's GDP (in mio €)« that we have used in our regression analysis, 95.2% variance of »Number of unemployed in Slovenia« is explained. »Slovenia's GDP (in mio €)« has a negative effect on »Number of

*Table 2: Frequency tables for the variables (n=10)*

| | | Total subsidies in Slovenia (in mio €) | Slovenia's GDP (in mio €) | Number of unemployed in Slovenia |
|---|---|---|---|---|
| **n** | **Valid** | 10 | 10 | 10 |
| | **Missing** | 0 | 0 | 0 |
| **Mean** | | 354,1960 | 26093,2810 | 91510,30 |
| **Median** | | 352,0000 | 25255,5000 | 94284,00 |
| **Std. Deviation** | | 70,70344 | 5712,52006 | 15953,013 |
| **Minimum** | | 267,20 | 18786,00 | 66239 |
| **Maximum** | | 459,25 | 35691,43 | 114348 |

*Table 4: Regression Analysis for the Dependent Variable »Number of unemployed in Slovenia« (n=10)*
*R=0.749; $R^2$=0.561; Adj. $R^2$=0.506*

| Predictors | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 31672,701 | 19062,489 | | 1,662 | ,135 |
| Total subsidies in Slovenia (in mio €) | 168,939 | 52,879 | ,749 | 3,195 | ,013 |

*Dependent Variable: Number of unemployed in Slovenia.*

*Table 5: Regression Analysis for the Dependent Variable »Number of unemployed in Slovenia« (n=10)*
*R=0.978; $R^2$=0.957; Adj. $R^2$=0.952*

| Predictors | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 162795,924 | 5455,721 | | 29,839 | ,000 |
| Slovenia's GDP (in mio €) | -2,732 | ,205 | -,978 | -13,345 | ,000 |

*Dependent Variable: Number of unemployed in Slovenia.*

unemployed in Slovenia« ($\beta$=-0.978 and is statistically significant at the 0.000 level).

## 4.2 Discussion

Our research shows us that based on the data of the variables that we chose to conduct our research on, we can answer our two research questions. Based on the Pearson r Correlation Coefficients (Table 3) we can conclude that when the »Number of unemployed in Slovenia« increases the »Total subsidies in Slovenia (in mio €)« also increase. On the other hand, we can see that when »Slovenia's GDP (in mio €)« increases the »Number of unemployed in Slovenia« drops. We can also conclude based on the Pearson r Correlation Coefficients that the correlation is higher when it comes to »Slovenia's GDP (in mio €)« than it is in »Total subsidies in Slovenia (in mio €)«.

Our first research question (R1) was about how the number of unemployed is affected by the GDP (gross domestic product), which we have answered using regression analysis (Table 4). »Total subsidies in Slovenia (in mio €)« have a positive effect on »Number of unemployed in Slovenia« ( =0.749 and is statistically significant at the 0.013 level). We were surprised with this result, because based simply on this we can conclude that subsidies actually increase the number of unemployed.

The second research question (R2) was how the number of unemployed is affected by the government's subsidizing on a country's level, which we have answered using regression analysis (Table 5). »Slovenia's GDP (in mio €)« has a negative effect on »Number of unemployed in Slovenia« ( =-0.978 and is statistically significant at the 0.000 level). Such an answer – that higher GDP reduces the number of unemployed – was expected.

The limitations of the research are definitely the small amount of the observations, which might cause that readers might think that the results are not reliable. However, the availability of data was certainly a restricting factor in our research, since the Ministry of Finance holds data on the subsidies only from year 1999 onwards. Should the authors be able to gather more observations, a cointegration analysis would be used within our research.

## 5 Conclusion

Unemployment is a problem that has to be solved. It is the problem that affects citizens of all countries in the world and represents a concern for all the governments. One of the most often used tactics to prevent unemployment, or to lower it, is government's subsidizing. Subsidies should enable people to retain or gain employment which would by itself not be possible without these subsidies.

Through our research we have found that subsidizing is not the right way to prevent unemployment. It is just a bandage to control it for short periods of time, perhaps to lower the dissatisfaction of the citizens and to pose an image that someone is doing something to lower unemployment and to help those who are or are to be unemployed.

The reduction of the unemployment can be achieved through the economic growth. Based on our research, we have concluded that the increase of country's GDP lowers the number of unemployed significantly. Countries with the problem of high unemployment should therefore focus on the development. As a concluding remark, we want to emphasize that the employment by itself is not enough, but the employees should rather aim at producing high value added which will further increase the country's GDP and lower the number of unemployed.

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**Brezposelnost in državno subvencioniranje**

Brezposelnost je postala vedno bolj in bolj pereča zadeva. Vlade po vsem svetu izvajajo politike za povečanje stopnje zaposlenosti nazaj na raven pred gospodarsko recesijo. Ena od najbolj pomembnih politik, ki jih izvajajo vlade držav so subvencije za zaposlovanje, kar pomeni, da so podjetja dobivala vladno podporo pri zaposlovanju, pa tudi, da so bile državljanom dane spodbude za podjetniško delovanje. V raziskavi smo ugotavljali, kako bruto domači proizvod in subvencije na ravni celotne države vplivajo na število brezposelnih na ravni države. Empirični del naše raziskave smo izvedli na primeru Slovenije in ugotovili, da je vpliv bruto domačega proizvoda na število brezposelnih večji od vpliva državnih subvencij.

**Ključne besede:** brezposelnost, zaposlovanje, kriza, državne subvencije, BDP