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THE IMPACT OF PUBLIC DEBT ON ECONOMIC GROWTH AND INFLATION

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Abstract

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The paper on hand of the long term data from public debt, GDP and inflation in selected countries analyzes their interconnection. The analysis method is similar to the methods used by Reinhart, Rogoff (2010a). The original study did not include all new EU countries. The aim of this paper is to assess the impact of the debt level on the economic growth and inflation in the selected new EU countries, which are not listed in the original paper from Reinhart, Rogoff.

Keywords: public debt, debt level, economic growth, inflation

INTRODUCTION

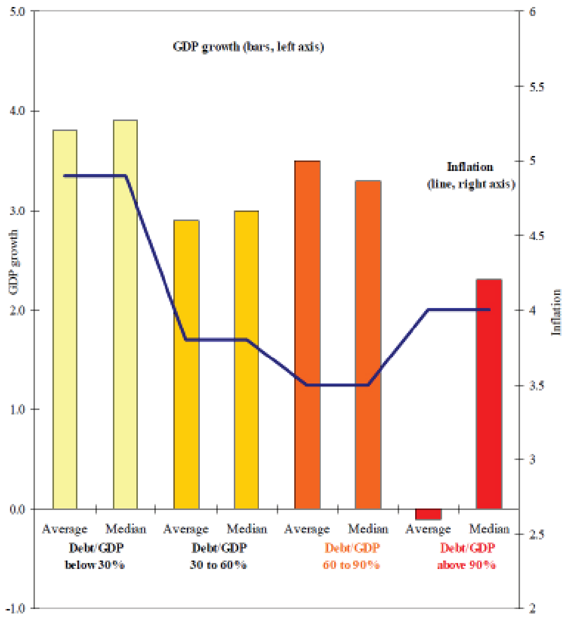
The work comes from the study of the authors Reinhart, Rogoff, who, on the basis of long-term historical data, compared to the correlation between the level of the government debt and its impact on GDP development and inflation. Similarly, the authors tried to compare the impact of the external debt to GDP development and inflation in the selected countries. The authors conducted a study in a sample of the developed and emerging economies. However, newly acceding EU countries are not among these countries. The aim of this work is therefore, based on the methodology of the authors Reinhart, Rogoff, to compare the impact of the government debt and external debt to the GDP development and inflation in the newly acceding EU countries. Likewise, the aim of this work is to point out whether the newly acceding EU countries within the correlation of debt, GDP and inflation show signs typical for the developed or emerging economies.

Impact of the Public Debt Level on Economic Growth and Inflation

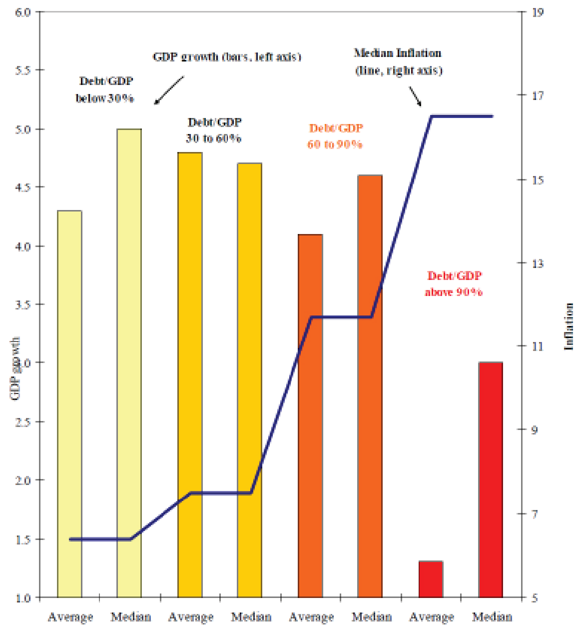
The authors Reinhart, Rogoff (2010a), in their studies on the basis of long-term historical data, analyze the correlation between the economic growth, inflation and levels of government and the external debt. They conducted the analysis on a sample of 44 countries. In some countries, long-term data goes back to 200 years ago. Thus, on the basis of a large database, the authors can compare the correlation between the variables studied under the conditions of different political regimes, institutions, exchange rates and different historical conditions as well.

In the analysis the authors divided the countries in the developed and emerging economies. The sample includes 20 developed economies and 24 emerging economies. In order to study the impact of government debt on GDP and inflation, the authors also divided the ratio of the government debt to GDP according to its height into four categories, namely the ratio of the debt to GDP in that year was below 30%, between 30–60%, between 60–90% and above 90%. Similarly, the authors determined not only the average but also the median value of GDP and inflation in varying amounts of government debt. Due to the fact that the rise to extreme values, especially in the emerging economies, occurred frequently during the crisis, the median is more appropriate fro the interpretation of results.

These findings are shown in Figs. 1 and 2 as well as in the Tabs. I and II. The correlation between the government debt and GDP development is relatively weak in the "normal" level of debt. However, if the debt begins to exceed the limit of 90%, a significant decline in GDP will occur. The average GDP growth in advanced economies, at the debt level below 30% of GDP, is 3.7% (Tab. I). If

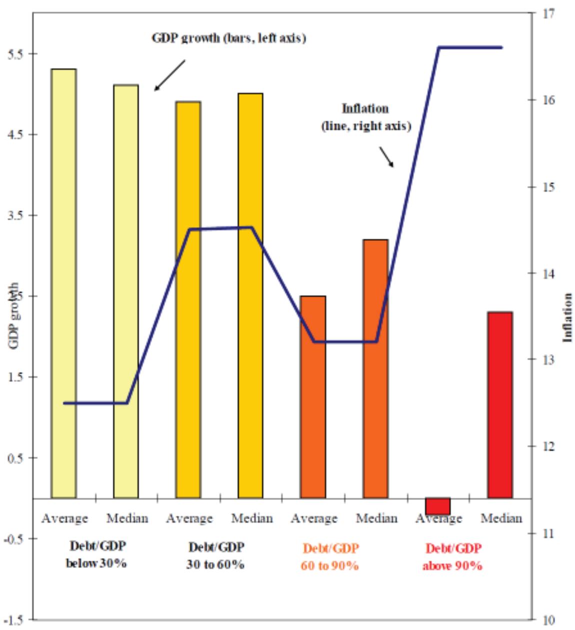


1: *Relationship of the government debt, GDP and inflation in advanced economies*
Source: Reinhart, Rogoff: Growth in a Time of Debt, NBER WP 15639



2: *Relationship of the government debt, GDP and inflation in emerging economies*
Source: Reinhart, Rogoff: Growth in a Time of Debt, NBER WP 15639

it exceeds 90%, the threshold of growth falls to 1.7%. In the case of emerging economies, if the debt is below 30% of GDP, the average annual GDP growth is 4.3%. However, if the amount of the debt is above the 90% GDP, its growth will slow down to 1%. Evidently, the relationship between the amount of the government debt and GDP is the same as for the developed as well as for emerging economies.



3: *Relationship of the external debt, GDP and the inflation in emerging economies*
Source: Reinhart, Rogoff: Growth in a Time of Debt, NBER WP 15639

In the case of inflation in advanced economies there is no significant correlation between the level of the government debt and the amount of inflation. If the level of government debt is below 30% of GDP, the average annual inflation in the reporting period was 5.2% (Tab. II). If the debt is above 90% of GDP, the average annual inflation was 3.9%. In the case of emerging economies with the growth of the government debt, the rise of inflation occurs, too. The rise of inflation increases significantly if the debt level is above 90% of GDP. If the government debt is below 30%, the annual inflation in emerging economies reaches 64.8%. However, if the debt reaches the level of 90% of GDP, the average annual inflation in these countries will reach 119%.

Considering the fact that it has not been possible to obtain data on the amount of the external debt for the advanced economies, its impact was assessed by Reinhart, Rogoff only for emerging economies. Based on these data, it is seen that these economies show a higher sensitivity to the external debt. While by the government debt, there was a significant impact on GDP to the 90% threshold, by the external debt this threshold shifts to 60% of GDP. While by the debt threshold to 60%, average annual GDP growth reaches 4.9%, after it exceeds the 60% threshold, it slows down to 2.5%. The amount of external debt does not have the level of inflation in emerging economies so significant impact as in the case of government debt. At the level of external debt below 30% of GDP, the average annual inflation reaches 10.3% and at the level above 90%, its height reaches 23.4%.

Based on these results, we can compare the results for the newly acceding EU countries and examine

I: *Relationship of the government debt to GDP*

		to 30%	30–60%	60–90%	above 90%
Advanced economies	Average	4.1	2.8	2.8	–0.1
	Median	4.2	3.0	2.9	1.6
Emerging economies	Average	4.3	4.8	4.1	1.3
	Median	5	4.7	4.6	2.9
Bulgaria	Average	3.2	5.6	4.2	–2.5
	Median	6.2	5.5	4.5	–1.6
Czech Republic	Average	3.3	1.5		
	Median	3.2	1.7		
Estonia	Average	4.8			
	Median	6.6			
Latvia	Average	5.9	–4.5		
	Median	6.9	–0.3		
Lithuania	Average	3.8	2.7		
	Median	6.8	3.6		
Hungary	Average		4.2	1.4	–1.6
	Median		4.1	1.6	–0.2
Poland	Average		4.6	–0.3	
	Median		4.8	2.5	
Romania	Average	1.1	0.3		
	Median	4.0	0.3		
Slovakia	Average	3.2	3.9		
	Median	4.4	4.6		
Slovenia	Average	4.2	–2.3		
	Median	3.9	–0.2		

Source: own calculations, Reinhart Roggof

the impact of the level of the government and external debt on the development of their GDP and inflation. Likewise, we can compare whether the development in these countries shows signs of development similar to the emerging or advanced economies.

Statistics for the newly acceding EU countries that have been available are not as extensive as used by Reinhart, Rogoff in their sample of countries. The data for the new EU members except Hungary and Poland (date back to 1982 and 1986) are available to the early 90's. It is a consequence of changes in the economic system or as a result of the formation of new states. The transition from a planned to a market-oriented economy as well as a "spontaneous" breakdown of certain states (Yugoslavia, USSR) are the factors that led to significant inflation in the first years of the existence of these states (Slovenia, Estonia, Latvia, Lithuania). Similarly, the transformation of the economy brought a significant drop of GDP in the early years in all countries. Therefore, it is necessary to take into account this fact when interpreting the results and in some cases and it is better to follow the median instead of the average.

Comparing the correlation of the government debt and GDP in newly acceding EU countries, we can see that the results are similar to the study by Reinhart, Rogoff. The level of government debt has no significant impact on the level of GDP. Even though, in some countries at the level of the debt below 30%, the growth of GDP was lower than at higher levels of the government debt. However, this fact is a reflection of the fact that after the change of a system, most countries had low levels of debt. With the transformation progress, GDP growth as well as the indebtedness of the states accelerated. Considering the fact that the majority of newly acceding EU countries does not reach the level of debt above 90% of GDP, it is not possible to verify whether the crossing of this threshold has a significant impact on GDP growth. In Bulgaria and Hungary there were periods when the debt levels were above 90%. After crossing this threshold, the same reaction to the GDP is seen as in the advanced economies.

When comparing the impact of the amount of the government debt to the inflation, there are noticeably mixed results. The decline in inflation is often associated with the growth of debt. This fact is again related to the transformation of the economy, when the countries had a low level of debt at the beginning but due to the economic transformation in all countries there has been a rise in prices. Similarly, with the gradual transformation, within the monetary policy, many countries focused on the maintaining of the price stability or they gradually moved to inflation targeting. For Bulgaria

II: *Relation of the government debt to inflation*

		to 30%	30–60%	60–90%	above 90%
Advanced economies	Average	6.4	6.3	6.4	5.1
	Median	5.2	3.7	3.5	3.9
Emerging economies	Average	64.8	39.4	105.9	119.6
	Median	6	7.5	11.7	16.5
Bulgaria	Average	6.1	4.8	9.7	250.4
	Median	5.0	5.8	8.8	93.7
Czech Republic	Average	5.0	2.4		
	Median	4.3	1.7		
Estonia	Average	7.4			
	Median	4.4			
Latvia	Average	9.9	2.3		
	Median	6.5	3.5		
Lithuanina	Average	11.3	2.7		
	Median	4.1	2.7		
Hungary	Average		8.3	9.8	17.5
	Median		8.0	6.7	16.4
Poland	Average		11.7	164.2	
	Median		4.9	61.0	
Romania	Average	69.9	5.9		
	Median	34.5	5.9		
Slovakia	Average	8.0	4.5		
	Median	6.7	3.9		
Slovenia	Average	9.2	1.5		
	Median	7.7	1.8		

Source: own calculations, Reinhart Roggof

III: *Relation of the external debt to GDP*

		to 30%	30–60%	60–90%	above 90%
Emerging economies	Average	5.2	4.9	2.5	–0.2
	Median	5.1	5	3.2	2.4
Bulgaria	Average	3.9	1.2	4.9	–2.8
	Median	3.4	1.5	5.2	–1.6
Latvia	Average	–6.4	5.9	7.8	1.4
	Median	–0.9	4.7	2.6	4.2
Lithuania	Average	–7.8	6.3	1.4	
	Median	–9.8	7.4	2.9	
Rumunsko	Average	–2.6	6.0	–3.8	
	Median	–4.8	5.7	–3.8	

Source: own calculations, Reinhart Roggof

and Hungary it is seen that after the threshold of 90% there was a significant increase of inflation. The specific situation is even in the case of Poland, where at the level of debt 60–90% the average rate of inflation reached high levels. This problem, however, means that years 1989 and 1990 were also included to the calculations, when the annual inflation reached 244% and in the following year it reached 555%. Thus, these two years cause significant average value for the inflation. In case of not taking into account of these two years, the average annual inflation at the level of government debt 60–90% would be at the level 46% and the median value would reach 41%.

Like Reinhart, Rogoff, the data on external debt were not available for all the newly acceding EU countries. It is evident from the data that have been available, that the reaction of these countries by GDP was similar to that for emerging economies. If the level of the external debt exceeds the 60% threshold, there is a stronger impact on GDP and after the exceeding of the level of 90%, GDP is declining. By the debt level below 30%, except Bulgaria, the decline in GDP can be seen. This effect

IV: *Relationship of the external debt to inflation*

		to 30%	30–60%	60–90%	above 90%
Emerging economies	Average	10.3	17	37.1	23.4
	Median	10.9	12.1	13.2	16.6
Bulgaria	Average	2.7	9.4	13.1	199.6
	Median	2.7	5.7	7.3	91.3
Latvia	Average	86.1	5.2	3.4	6.8
	Median	35.9	4.7	2.6	6.4
Lithuania	Average	136.7	2.2	5.2	
	Median	55.9	1.1	4.5	
Romania	Average	129.4	17.6	5.8	
	Median	136.8	11.9	5.8	

Source: own calculations, Reinhart Roggof

is a result of economic transformation in the early 90's, when despite the low external debt there was a fall in economic activity.

In the case of the impact of the external debt on the inflation, the interpretation of results is significantly complicated. The highest annual growth rate of the inflation was just at a time when the external debt was below 30% of GDP. This effect, however, is strongly linked with the transformation of the economy in the early 90's. If we do not take into account this period, we can see that the level of the external debt has no significant impact on inflation. A significant increase in inflation occurs after exceeding the level of 90% of the debt (and only in the case of Bulgaria). However, considering the insufficient data, it is not possible to confirm the impact of the amount of the external debt on inflation.

SUMMARY

When comparing the results for the newly acceding EU countries with the results of the authors Reinhart Rogoff, it is evident that in the case of the correlation of the government debt and GDP results are identical. The level of the government debt has no significant impact on the level of GDP. The turning point occurs after crossing the 90% threshold. However, this could be verified only in the case of Bulgaria and Hungary due to the fact that most of these countries did not exceed the government debt of 90% of GDP. Substantial increase in the government debt, which would exceed the threshold of 90% of GDP, would therefore endanger future GDP growth.

When comparing the impact of the amount of the government debt on inflation there are noticeably mixed results. The decline in inflation is often associated with the growth of debt. However, such a relationship is associated with the specifics of the transformation of the economies of the newly acceding EU countries. The relationship between the amount of the government debt and inflation is therefore similar to that of advanced economies.

Under the influence of the external debt to GDP the newly acceding EU countries showed similar features to emerging economies. If the level of external debt exceeds the 60% threshold, there is a stronger impact on GDP and after the crossing of the level of 90% of GDP it is declining. The level of the external debt does not have a significant impact on inflation.

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