

ported by the practice in Lithuania), the scope for reliance upon the state compulsion defence seems minimal, while in US the immunity of competition policy was treated as *de facto* automatic in the presence of sectoral regulation. In these circumstances the EU gives a strong preference to the industrial policy over the benefits for the customers or to the long-term over the short-term objectives, i.e. possibly the higher retail prices because of the need to foster competition. While the US experience raises the doubts whether the automatic regulatory immunity afforded in *LinkLine* will be challenged going forward, given that the expansion of economic regulation will result in a correlating elimination of competition policy.

In the EU the concurrent application of the competition policy and sector-specific regulation and relevant issues can be explained by the different way of the implementation. In the EU the competition law is the law of the constitutional level and is directly adopted and applied in national legislation of the member states. Whereas the regulation (emerging from the liberalization framework) is implemented through the directives and member states has a certain level of discretion to alter it when applying to the local sectors.

In this respect the tough application of competition policy may seem necessary to finish the liberalisation of network sectors and attempt to create an internal market. As the application of competition policy and law is fundamental there is a need to adapt the regulatory policies respectively. Accordingly a more active involvement of competition authorities to the regulation activities may seem beneficial. One of the possible solutions would be implemented

firstly by aggregation of different sector regulators to one institution. The next step further would be the merger of sector regulators and a competition authority (already implemented in some countries).

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## THE SOCIAL CONSEQUENCES OF THE PUBLIC DEBT INCREASE IN THE DEVELOPED AND EMERGING ECONOMIES

*Досліджено основні соціальні наслідки збільшення державного боргу в залежності від рівня економічного розвитку країни і рівня заборгованості. Виявлено нелінійний зв'язок між рівнем заборгованості та обсягом державних витрат на охорону здоров'я й освіту як в розвинених країнах, так і в країнах, що розвиваються. Рівень фінансування системи охорони здоров'я в них зменшуються, коли державний борг перевищує 90% та 60% ВВП відповідно. Обсяг державних витрат на освіту починає скорочуватись, коли рівень заборгованості досягає 60% ВВП. Проаналізовано вплив державного боргу на рівень безробіття.*

*Ключові слова:* державний борг, рівень безробіття, державні витрати на охорону здоров'я та освіту.

*Исследованы основные социальные последствия увеличения государственного долга в зависимости от уровня экономического развития страны и уровня задолженности. Выявлена нелинейная связь между уровнем задолженности и государственными расходами на здравоохранение и образование как в развитых, так и в развивающихся странах. Уровень финансирования системы здравоохранения в них уменьшаются, когда государственный долг превышает 90% и 60% ВВП соответственно. Объем государственных расходов на образование начинает сокращаться, когда уровень задолженности достигает 60% ВВП. Проанализировано влияние государственного долга на уровень безработицы.*

*Ключевые слова:* государственный долг, уровень безработицы, государственные расходы на здравоохранение и образование.

*Certain social consequences of the government debt increase are examined depending on the income and debt-to-GDP ratio level of the country. Nonlinear link between the government debt and the public expenditures on healthcare and education are revealed both in the developed and emerging markets. The public healthcare spending starts to decrease when the public debt exceeds 60% and 90% of GDP in the emerging and developed economies respectively. The expenditures on education diminish after debt-to-GDP ratio reaches 60%. The unemployment rate augments with the growth of the state debt.*

*Keywords:* public debt, unemployment rate, public health expenditures, public expenditures on education.

The purpose of the paper is to provide detailed analysis of the influence of public debt on the government expenditures on healthcare and education as well as its correlation with unemployment rate.

The government debt increase may result in reduction of the public expenditures on education, healthcare and other social services by creating additional burden on the state budget related to the debt servicing. Many factors define the existence of such influence and the degree of its intensity. First of all it is the level of country's economic development and the level of public debt. The way in which those factors are matched defines, in turn, the cost of debt service and

new borrowings, the interest and tax rates, the volume of foreign direct investments inflow etc. Therefore the analysis of the social consequences of the public debt increase should be performed for the various country groups, classed by their economic development and public debt level.

There is a wide range of literature dealing with the influence of the public debt on the national economies. Among the main channels through which high debt adversely affects the economy are: capital accumulation and growth constraining via higher long-term interest rates [1, 9]; future distortionary taxation [3, 7], inflation [2, 5, 13].

Despite these studies, the impact of the high public debt on government's capability to provide social services (education, healthcare, housing etc.) has not been systematically analyzed. The purpose of the paper is to provide detailed analysis of the influence of public debt on the government expenditures on healthcare and education as well as its correlation with unemployment rate.

Countries are grouped into four categories by debt-to-GDP ratio: 30 percent (low debt), 30–60 percent (medium

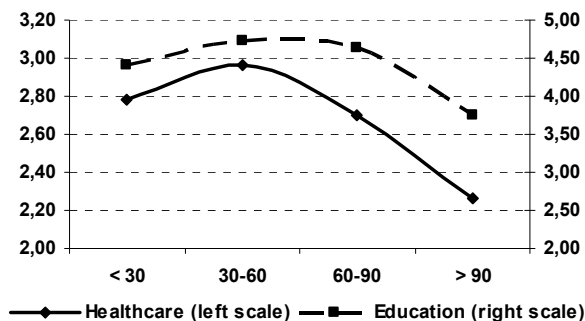
debt), 60–90 percent (high debt), and above 90 percent (very high debt). Such grouping is made for both developed and emerging markets and includes data on 33 countries over the period of 1980–2010 and 69 countries over the period of 1990–2010 respectively. Table 1 contains arithmetical averages of the main indicators of the social and economic development for all groups of countries.

**Table 1. Dependence of the main social and economic indicators on the public debt level**

Developed countries				
Public debt, % GDP	< 30	30-60	60-90	> 90
Public health expenditures, % GDP	5,26	6,14	6,18	5,45
Public expenditures on education, % GDP	4,91	5,64	5,59	4,49
Unemployment rate, %	5,89	6,75	6,72	7,64
Emerging markets				
Public health expenditures, % GDP	2,78	2,97	2,7	2,26
Public expenditures on education, % GDP	4,41	4,73	4,63	3,75
Unemployment rate, %	7,5	9,66	10,89	9,92
Average years of total schooling, age 15+	6,5	7	6	5

Source: calculated by author using World Economic Outlook Database, World Development Indicators & Global Development Finance statistics, Barro-Lee Dataset

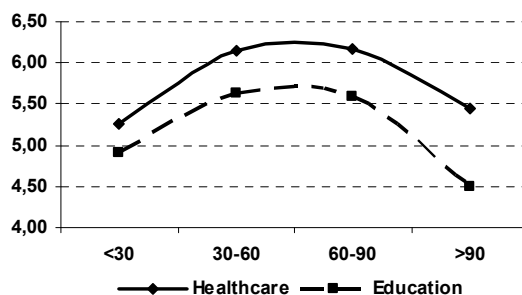
The link between the government debt and the public expenditures on healthcare and education is estimated to be nonlinear both in the developed and emerging markets. Nevertheless there are significant differences. The most sensitive to the growth of public debt is the volume of healthcare expenditures in the emerging economies (figure 1, left scale). It decreases drastically when the public debt exceeds 60% of GDP.



**Fig. 1. Public spending on health and education depending on the state debt level in developing and emerging markets**

Source: World Development Indicators & Global Development Finance, Barro-Lee Dataset, authorial calculation

Figure 2 shows that advanced countries' government healthcare expenditures start to decline when the debt level exceeds 90% of GDP. It is remarkable that even in the highly indebted developed countries healthcare expenditures stay at higher level than in the countries with low debt.



**Fig. 2. Public spending on health and education depending on the state debt level in advanced economies**

Source: World Development Indicators & Global Development Finance, Barro-Lee Dataset, authorial calculation

Changes in the level of the public debt affect the government spending on education in the same way for both the developed and emerging economies: they increase till the public debt reaches 60% of GDP and start to diminish afterwards. Countries from the very high debt level group demonstrate the least government spending on education. There is direct correlation between the level of the public debt and the average years of total schooling in the developing countries that indicates the lack of financing of their education systems. The average duration of total schooling in the most indebted developing countries is equal to 5 years.

It is remarkable that public spending on education is larger than on healthcare in the emerging economies and vice versa in the developed countries. It may be explained by the differences in the demographic structure of these groups of countries. For example, the average share of children under age 14 was equal to 43% of the total population in the heavily indebted poor countries in 2010, whereas the share of people over 65 was only 3%. In the developed countries the percentage was 17,5% and 15,6% respectively.

The influence of the public debt on the employment rate is negative as well. Moreover in developing and emerging economies such influence is much stronger. Countries of this group with the state debt at level of 60-90% of GDP are characterized by the maximal rate of unemployment.

Meanwhile the states with the maximal debt burden and consequently the lowest rates of economic growth and living standards typically have rather lower unemployment rates (see fig. 3). This can be explained by the readiness of the population to work under any conditions and for any salary as the social security system is unable to ensure

normal existence for unemployed. Taking into consideration that such problem does not exist in the most developed countries the unemployment rate there is directly correlated with the public debt level and consequently inversely correlated with the economic growth.

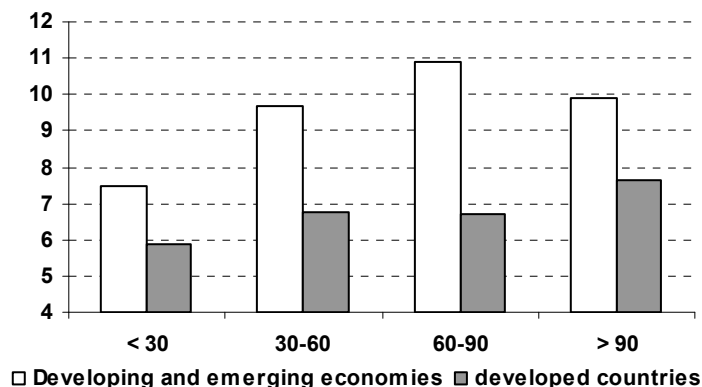


Fig. 3. Unemployment rate depending on the public debt level in emerging and advanced economies

Source: calculated by author using World Economic Outlook Database, World Development Indicators & Global Development Finance statistics

The influence of the state debt on the salary D.W. Elmendorf and N.G. Mankiw relate to the reduction of the capital accumulation: "With less capital available, the marginal product of capital will be higher, raising the interest rate and the return earned by each unit of capital. At the same time, labor productivity would be lower, thereby reducing the average real wage and total labor income". [9, P.12] It may be assumed that decrease of the actual wages caused by the increase of the public debt stimulates great number of employees in the economically developed countries to quit their job: they prefer unemployment compensation and free time to the full employment and the low labor income. The situation can also be explained by the fact that the increase of the debt burden compels the governments to augment tax rates. This in particular negatively influences small and medium businesses which in contrast to corporations do not have the possibilities for the effective tax management. At any case the unemployment rate in the economically developed states with the different levels of the state debt ranges within 1.75 percentage points. Meanwhile for developing and emerging markets this indicator is 3.4 p.p. meaning that the employment sensitivity to the changes of the level of the debt burden for this group of countries is almost twice as much.

**Conclusions.** The public debt negatively influences the social and economic indicators of the states with the different levels of economic development. The intensity of such influence depends on the debt level. The expenditures on the healthcare are the most sensitive to the increase of the state debt in developing and emerging economies. By contrast in the economically developed countries such expenditures increase along with the state debt. Lack of funding for the educational system in developing countries related to the high cost of the debt servicing is manifested in the reduction of the average years of schooling. The unemployment rate

augments with the growth of the state debt, meanwhile in developing and emerging markets with the debt burden of over 90% of GDP it slightly decreases that can be explained by the poor social security for unemployed.

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