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THE IMPACT OF PUBLIC DEBT ON ECONOMIC GROWTH WITHIN EU

Comparative
analysis

Keywords

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JEL Classification

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Abstract

The main idea of this paper consists in offering a general view regarding a comparative analysis between different EU countries on public debt and economic growth. In the meantime, this is the evidence that the annual shift of the public dues ratio and the budget deficit to GDP ratio are seen in a bad way and linearly associated with per-capita GDP increase. The conduits term through government's obligation (level or change) is expected to have a big impact over the economical increased rate as: i) secret saving; ii) social investments; iii) all the productivity factors; iv) unlimited long-term nominal and real interest rate. From a political point of view, the results will bring basically arguments for dues reduction to support long-term increase prospect.

Introduction

The main idea of this article is the biggest impact of government debt on per-capita GDP development in twelve countries in a period which is held on 40 years starting with 1970. Safety lapses for the debt twisted point show that the negative development effect of high dues may start from a point of almost 70%--80% of GDP, which calls for a more prudent obligation policy. This reveals that the annual shift of the public dues ratio and the budget deficit to GDP ratio are seen in a bad way and linearly associated with per-capita GDP increase. The conduits term through government's obligation (level or change) is expected to have a big impact over the economical increased rate as:

- i) Secret saving;
- ii) Social investments;
- iii) All the productivity factors;
- iv) Unlimited long-term nominal and real interest rate.

From a political point of view, the results will bring basically arguments for dues reduction to support a long-term increase prospect. Analyzing the relation between external dues and economical developments, all the data collected is basically the second during 1980-2010. All the collected data is taken back using OLS technique and Augmented Dickey Fuller to test for the stationary of the variables. Findings show negative relations between external dues and economical developments in time: the political „creators” may also build credibility including political wish in order to hurry the investor's confidence for both local and investments. The substantial rise was at all times the most fascinating and all in one macroeconomics process; the effect of saving instalment, one of the determining key in the development of GDP, in very long-run, represents the first subject in a lot of different studies. On this way, significant are the works of Aghion et al. (2009), Barro and Sala-i-Martin (2004), Mankiw (2003), Acemoglu and Ventura (2000), Romer (1996). By thinking twice,

the neoclassical and endogenous development theory's predictions, a lot of this work, using the cross - countries regressions, in a way to explain the connection between saving and real economic increase, ended with: (i) i Solow's type, a forever rise in the saving instalment goes to a faster development only for a time – it has only moderate effects on the level of output;

(ii) in a lot of endogenous models, countries try to develop in a faster way according to their permanent state level of the saving instalment - the higher the saving instalment is, the higher the increase is;

(iii) in the long-run, the effects of saving on the economic rise are stronger for the rich economies than for the poor economies.

These paper works show the fact that there is an important positive connection between the two macroeconomics variables, but they do not give any information about the way and the direction of the causality relation. To spot the existence of one direction connection, in one sense to the other, or the living of two direction links, the most useful methods are the Granger causality, the Johansen co-integration procedure, the vector auto-regressive model, the vector error correction model or panel data models.

This work is based on the study of long-run interface between real GDP increase and crude national saving instalments for Euro-area countries. It tries to show two main objectives: the first one is to determine whether saving and GDP are co-integrated, and the second one is to identify the direction of causality between the two macroeconomics variables. The basic empirical rise model is revealed on a conditional concentration equation that shows the GDP per capita increase instalment to the principal level of making per capita, the growth to GDP instalment and population rise instalment. The model is increased to include the level of raw

government due. The basic estimation technique is represented by the panel fixed-effects corrected for heteroskedasticity and autocorrelation.

Against this ground, one of the important and principal questions refers to the economic result of a regime of high and potentially persistent public dues. In time, that economic rise instalment is almost to have a straight negative impact on the public dues-to-GDP ratio (a fall of the economic development is *ceteris paribus*, coupled with a rise in the public dues-to-GDP ratio), the high level of public dues is harmful for development. Potentially, this result is non-linear in the way that it becomes relevant only after a particular verge has been reached.

Literature review

The literature, in a private way of empirical part, on the connection between government due and economic rise is uncommon. Yet, such reviews become more and more important for the euro area governments with conflicts maintaining the fiscal pressure, reviews the impact of financial variables, which also include the government dues, on long-term ways instalment or diffusions against a reference, as an indirect channel that affects the economical growth.

The theoretical literature on this connection between official dues and economical increase bring into attention the negative point of this link. Advanced models improved with public agents issuing debt to finance intake as capital goods try to show a negative connection between public dues and economic increase, in a particular way in a neoclassical setting. An important and particular channel through which official dues accumulation can affect increase is that of long-term interest instalment. Greater long-term interest instalments, result from more dues-financed government batch deficit, can crowd-out particular investment, thus dampening potential output increase.

Diamond (1965) appends the effect of taxes on the capital supply and different between public external and internal dues. He concludes that through the impact of taxes needed to finance the interest payments, both types of public dues reduce the available lifetime intake of taxpayers, as well as their savings and thus the capital store. In addition, he contends that internal debt can produce a further reduction in the capital stock arising from the substitution of government dues for physical capital in individual portfolios.

Adam and Bevan (2005) find interaction effects between deficits and debt supplies, with high dues stores aggravate the adverse consequences of high deficits. In a simple theoretical way, integrating the government budget constraint and dues financing, they find that a growth in productive government outlay financed out of a rise in the tax rate will be growth-enhancing only if the level of (domestic) public debt is sufficiently low.

Saint-Paul (1992) and Aizenman *et al.* (2007) analyze the impact of financial policy, proxies inter alia by the level of public debt, in endogenous rise types and find a negative connection as well.

Channels for the impact of public debt on growth

Another important question relates to the channels through which public dues is likely to have an impact on the financial increase instalment. To this end, we investigate the impact of dues on:

- (i) private saving and private investment (gross fixed capital formation) rate;
 - (ii) public investment (gross fixed capital formation) rate;
 - (iii) total factor productivity (TFP);
- and
- (iv) sovereign long-term nominal and real interest instalments.

We find some evidence for the channels of private saving, public investment, TFP and interest rates. For the

first three channels – private saving, public investment and TFP – a non-linear relationship (concave) also predominates across the various models used. Useful is a dynamic panel type since the particular saving rate is likely to be highly persistent (a similar model is also preferred for private and public investment). In addition to the delayed private saving ratio and the dues variable, the other control variables are the main determinants of saving usually employed in the literature.

Hence, the level of the private saving ratio is assumed to depend also on:

a) the level of income per capita;

b) demographic shifts and structure as proxies by the growth rate of the population and the ratio of the non-working age population to the working age population, split between old and young dependency ratio;

c) the level of taxation (proxies by total government revenue as a share of GDP);

d) the depth of the financial system and other financial indicators, as proxies by the share of domestic private credit in GDP and the long-term interest rate;

e) indicators of openness of the economy to capture the possibility of foreign saving inflows or outflows.

While a non-linear impact of the public dues-to-GDP ratio is mostly unveiled for the first three channels, a strong and robust impact on sovereign long-term nominal as well as real interest rates is found to come from the change in the debt ratio (first difference) and from the primary budget balance ratio. The level of the public debt ratio (in either linear or quadratic forms) is not found to be significantly on average in determining long-term interest rates in our sample. The change in the public duty ratio and the primary budget balance prove to be highly statistically significant and remain robust even after controlling for short-term interest rates (the latter variable, which is

highly correlated with long-term interest rates, is included in the regression estimation in order to capture monetary policy effects). One percentage points acceleration in the change of public debt ratio appears to determine on average an increase in the sovereign long-term real interest rate for our sample by about 7 basis points and in nominal interest rates by 11 basis points.

The nonlinear effect of debt on growth is reminiscent of “debt intolerance” (Reinhart et al, (2003)) and presumably is related to a nonlinear response of market interest rates as countries reach debt tolerance limits. Sharply rising interest rates, in turn, force painful fiscal adjustment in the form of tax hikes and spending cuts, or, in some cases, outright default. As for inflation, an obvious connection stems from the fact that unanticipated high inflation can reduce the real cost of servicing the debt.

Of course, the efficacy of the inflation channel is quite sensitive to the maturity structure of the debt. In principle, the manner in which debt builds up can be important. For example, war debts are arguably less problematic for future growth arguably less problematic for future growth and inflation than large debts that are accumulated in peacetime. Postwar growth tends to be high as wartime allocation of manpower and resources funnels to the civilian economy. Moreover, high wartime government spending typically the cause of the debt build up comes to a natural close as peace returns.

In contrast, a peacetime debt explosion often reflects unstable political economy dynamics that can persist for very long periods.

Obreja Braşoveanu, L. (2011) obtains the empirical results that reveal once again that the probability of success is influenced by a complex set of factors: the size of the consolidation effort (significant fiscal adjustments should be more successful in supporting deficit

reduction, while representing a signal change in regime, maintaining policy credibility and irreversibility) and the need of fiscal adjustment (the necessity of applying an adjustment should significantly influence the credibility of the changes).

As Table 1 and Table 2 shows (see Annex), Greece, one of the EU Member States who had serious problems during the economic crisis, recorded the highest level for the general government gross debt from the beginning of the crisis, also from 2008, when it registered 112.9% of GDP. Till the end of the period analyzed through this table, Greece was placed on first position with the value recorded for the debt. On a second rank is placed Italy, other EU Member State who had financial problems during last global economic crisis. The best position was occupied by Estonia with the lowest value for the debt, 4,5% from GDP in 2008 and 9,8% from GDP in 2012. Even one of the new countries who entered EU, Romania and Bulgaria recorded good values for public debt in comparison with the others. Also, Bulgaria had 13,7% from GDP public debt in 2008 and Romania 13,4% from GDP, but Romania recorded an increase of this value till the end of the year 2012, more precisely till the level of 37,9% from GDP.

In contradiction with the good level of public debt recorded by Estonia, regarding the GDP per capita as a measurement of economic growth, Estonia recorded a level of 69% for the index in 2008 and till the end of the analyzed period recorded an increase till the level of 71%. Greece recorded a decrease from the beginning of the crisis till the last year considered, 2012. Romania and Bulgaria have close values for this index, with an

average around 45% for the whole period 2008-2012.

Conclusions

This paperwork presents the anomalies appeared in the intellectuality of the economic increase. The causes that could be intuitively detected may be found by studying the behaviour of the economy. The psychological fundamentals which are on the base of the human behaviour determined people – who were facing a threat and therefore they were mentally forced – to take forethought measures, in order to avoid being unprepared in the following period. In front of rationality stood this time the preservation instinct. Another big problem of the models aiming to explain the economic rise and to offer recovering scenarios is represented by the implementation of these targets.

There are big gaps of the transfer of knowledge between those who develop models (academic world, researchers) and those who are supposed to ensure the flatten running of the economy (both governments and the business community). Nevertheless, there is one single thing which cannot be challenged, i.e.: the more findings we'll have and the bigger the innovation process (closer to the rhythm of occurrence of these technologies), the more we'll have economic growth. One explanation for the relation between public debt and economic growth consists in the definition of public debt itself. Researchers have to decide which public debt to be considered, the gross one or the net one? Studies showed that the relationship between debt and growth is characterized by large cross country heterogeneity.

References:

- [1]Acemoglu D., Ventura J., (2000), “*The World Income Distribution*”, MIT Economics Working Paper No. 01-01
- [2]Adam C.S., Bevan D.L., (2005), “*Fiscal deficits and growth in developing countries*”, *Journal of Public Economics* 89(2005), pp. 571-597
- [3]Aghion P., Comin D., Howitt P., Tecu I., (2009), “When Does Domestic Saving Matter for Economic Growth?”, http://scholar.harvard.edu/files/aghion/files/when_does_domestic_saving_matter.pdf
- [4]Aizenman J., Kletzer K., Pinto B., (2007), “*Economic Growth with Constraints on Tax Revenues and Public Debt: Implications for Fiscal Policy and Cross-Country Differences*”, NBER Working Paper 12750, Bureau of Economic Research, Inc.
- [5]Barro, R., Sala-i-MartinX, (2004), “*Economic Growth*”, MIT Press
- [6]Diamond, P. A., (1965), “*National Debt in a Neoclassical Growth Model*,” *American Economic Review*, 55, pp.1126–1150
- [7]Mankiw N.G., (2003), “*Principles of Microeconomics*”, third Edition, Cengage South-Western Publishing House
- [8]Obreja Braşoveanu, L., (2011), “*Composition and determinants of fiscal adjustment’s succes in the EU27 context*”, *The Review of Finance and Banking*, volume 3, issue 2, December 2011, <http://rfb.ase.ro/articole/P2.pdf>
- [9] Reinhart C. M., Rogoff K.S. and Savastano, M.A.(2003), “*Debt Intolerance*,” *Brookings Papers on Economic Activity (1)*, edited by William C. Brainard and George L. Perry, pp. 1–62
- [10]Romer, Paul M, (1996), “*Why, Indeed, in America? Theory, History, and the Origins of Modern Economic Growth*,” *American Economic Review*, American Economic Association, vol. 86(2), pp. 202-06, May
- [11]Saint-Paul G., Verdier T., (1992), “*Distributional Conflicts, Power and Multiple Growth Paths*,” CEPR Discussion Papers 633, C.E.P.R. Discussion Papers.
- [16]epp.eurostat.ec.europa.eu/portal/page/portal/government_finance_statistics/data/main_tables

Annex

Table 1 - General government gross debt - annual data

Percentage of GDP geo\time	2008	2009	2010	2011	2012
Euro area (18 countries)	70.1	79.9	85.4	87.2	90.5
Euro area (17 countries)	70.2	80	85.4	87.3	90.6
EU (28 countries)	NA	74.3	79.8	82.3	85.1
EU (27 countries)	62.2	74.5	80	82.4	85.2
Belgium	89.2	95.7	95.7	98	99.8
Bulgaria	13.7	14.6	16.2	16.3	18.5
Czech Republic	28.7	34.6	38.4	41.4	46.2
Denmark	33.4	40.7	42.7	46.4	45.4
Germany	66.8	74.5	82.5	80	81
Estonia	4.5	7.1	6.7	6.1	9.8
Ireland	44.2	64.4	91.2	104.1	117.4
Greece	112.9	129.7	148.3	170.3	156.9
Spain	40.2	54	61.7	70.5	86
France	68.2	79.2	82.4	85.8	90.2
Croatia	NA	36.6	44.9	51.6	55.5
Italy	106.1	116.4	119.3	120.7	127
Cyprus	48.9	58.5	61.3	71.5	86.6
Latvia	19.8	36.9	44.4	41.9	40.6
Lithuania	15.5	29.3	37.8	38.3	40.5
Luxembourg	14.4	15.5	19.5	18.7	21.7
Hungary	73	79.8	82.2	82.1	79.8
Malta	60.9	66.5	66.8	69.5	71.3
Netherlands	58.5	60.8	63.4	65.7	71.3
Austria	63.8	69.2	72.3	72.8	74
Poland	47.1	50.9	54.9	56.2	55.6
Portugal	71.7	83.7	94	108.2	124.1
Romania	13.4	23.6	30.5	34.7	37.9
Slovenia	22	35.2	38.7	47.1	54.4
Slovakia	27.9	35.6	41	43.4	52.4
Finland	33.9	43.5	48.7	49.2	53.6
Sweden	38.8	42.6	39.4	38.6	38.2
United Kingdom	51.9	67.1	78.4	84.3	88.7
Iceland	70.4	87.9	93	99.1	96.4
Norway	48.2	42.8	42.5	28.2	28.8
Turkey	40	46.1	42.4	NA	NA

Source: EUROSTAT

Table 2: GDP per capita in PPS

GDP per capita in PPS Index (EU 28 = 100) geo\time	2008	2009	2010	2011	2012
EU (28 countries)	100	100	100	100	100
EU (27 countries)	100	100	100	100	100
Euro area (18 countries)	109	108	109	109	108
Euro area (17 countries)	109	109	109	109	108
Belgium	116	118	121	120	120
Bulgaria	44	44	44	47	47
Czech Republic	81	83	81	81	81
Denmark	125	124	128	126	126
Germany	116	115	120	123	123
Estonia	69	64	64	69	71
Ireland	132	129	129	129	129
Greece	93	94	88	80	75
Spain	104	103	99	96	96
France	107	109	109	109	109
Croatia	63	62	59	61	62
Italy	104	104	103	102	101
Cyprus	100	100	97	94	92
Latvia	59	54	55	60	64
Lithuania	64	58	62	68	72
Luxembourg	264	253	263	266	263
Hungary	64	65	66	67	67
Malta	81	84	87	86	86
Netherlands	134	132	130	129	128
Austria	125	126	127	129	130
Poland	56	61	63	65	67
Portugal	78	80	80	77	76
Romania	47	47	48	48	50
Slovenia	91	86	84	84	84
Slovakia	73	73	74	75	76
Finland	119	115	114	116	115
Sweden	124	120	124	125	126

Source: EUROSTAT