Ewoud Jansen
Fontys University of Applied Sciences
International Business & Management Studies, the Netherlands

A NEW REALITY FOR FISCAL POLICY

UDC:336.02(4-672EU)

Abstract

The Euro zone is experiencing an economic crisis of a magnitude not seen since the 1930's. The asymmetric shock of the global financial crisis that started in 2007 laid bare the shortcomings of the Euro as a common currency. Peripheral economies such as Greece and Spain witnessed a sudden stop of capital inflow followed by a severe contraction of Gross Domestic Product (GDP) and high unemployment rates. Core countries like Germany and Holland show mounting deficits and sluggish growth at best. These developments are increasingly being blamed on the tight fiscal policy measures imposed by the Stability & Growth Pact of the Maastricht treaty. As a result, pleas for relaxation of the measures are heard from leading economists and politicians. But while more relaxed fiscal policies can offer relief in the short run, the room for fiscal latitude in the longer run becomes increasingly more narrow. The longer term prospects for growth in the EU countries may well fall below what has been normal in the recent past. This means that increased government spending and larger deficits cannot be as readily offset by economic growth as before.

The paper first presents key statistics on GDP and debt levels of EU countries. This is followed by an analysis of developments that may lead to persistently lower growth figures for the area. Next, the current body of research on the effectiveness (or lack thereof) of expansionary fiscal policy in inducing growth of GDP is presented. Finally, the main policy options for restoring economic stability are discussed.

Keywords: *fiscal policy, sovereign debt, euro crisis, fiscal deficit & surplus*

JEL Classification: H60

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1. Introduction

Driven by stimulus packages and bailouts of financial institutions, sovereign debts and deficits of developed countries have rapidly increased since 2007. A common metric to assess the extent of a nation's indebtedness is the debt to GDP ratio. When fiscal deficits are used to finance expenditure, economic growth is vital for keeping debts at sustainable levels. Reinhart & Rogoff (2010) find 90% to be a critical threshold beyond which debt levels become cumbersome and adversely affect economic growth.

The fiscal deficit is normally expressed as a percentage of GDP. With constant fiscal deficits (fd) – and growth rate (g) of GDP, the debt to GDP ratio will eventually stabilize at a fraction equal to fd/g (see appendix). This holds true irrespective of the original debt to GDP ratio. This phenomenon is actually the basis of the fiscal policies formulated in the Stability and Growth Pact (SGP). The SGP dictates that EU member countries should restrict their deficits to 3% of GDP and have debt to GDP levels of no more than 60%.

With a fiscal deficit of 3% and nominal annual growth of GDP of 5%, debt levels will move towards 60% of GDP. If however growth levels would fall to an average of 2%, unchanged levels of deficit spending will eventually result in debt levels of 150% of GDP. This is far beyond the 60% level the SGP dictates and also much higher than the 90% threshold level mentioned above. What long term fiscal policy is sustainable depends largely on (average) growth perspectives. There are a number of developments which may lead to lower growth in mature economies and therefore also the core of the EU. However, these growth perspectives, especially for the short term, may depend on the level of deficit spending itself. In the remainder of this paper we will examine each of these aspects in turn and discuss the implications for fiscal and economic policy.

2. European Deficits, Debts & Growth Levels

The topic of this conference is 'Systemic Economic Crisis'. While the crisis in the EU countries may not yet be called systemic, it is certainly prolonged and deep. The crisis is reflected in deteriorating public finances and a slowdown of growth figures as shown in the following tables:

Table 1 Fiscal deficit & debt as percentage of GDP

	2008		2009		2010		2011	
	Fd	D/GDP	fd	D/GDP	fd	D/GDP	fd	D/GDP
EU27	-2.4	62.2	-6.9	74.6	-6.5	80.0	-6.5	82.5
EA17	-2.1	70.2	-6.3	80.0	-6.2	85.4	-6.2	87.3
Belgium (BE)	-1.0	89.2	-5.5	95.7	-3.8	95.5	-3.8	97.8
Bulgaria (BG)	1.7	13.7	-4.3	14.6	-3.1	16.2	-3.1	16.3
Czech Republic (CZ)	-2.2	28.7	-5.8	34.2	-4.8	37.8	-4.8	40.8
Denmark (DK)	3.2	33.4	-2.7	40.6	-2.5	42.9	-2.5	46.6
Germany (DE)	-0.1	66.8	-3.1	74.5	-4.1	82.5	-4.1	80.5
Estonia (EE)	-2.9	4.5	-2.0	7.2	0.2	6.7	0.2	6.1
Ireland (IE)	-7.4	44.5	-13.9	64.9	-30.9	92.2	-30.9	106.4
Greece (EL)	-9.8	112.9	-15.6	129.7	-10.7	148.3	-10.7	170.6
Spain (ES)	-4.5	40.2	-11.2	53.9	-9.7	61.5	-9.7	69.3
France (FR)	-3.3	68.2	-7.5	79.2	-7.1	82.3	-7.1	86.0
Italy (IT)	-2.7	106.1	-5.4	116.4	-4.5	119.2	-4.5	120.7
Cyprus (CY)	0.9	48.9	-6.1	58.5	-5.3	61.3	-5.3	71.1
Latvia (LV)	-4.2	19.8	-9.8	36.7	-8.1	44.5	-8.1	42.2
Lithuania (LT)	-3.3	15.5	-9.4	23.9	-7.2	37.9	-7.2	38.5
Luxembourg (LU)	3.2	14.4	-0.8	15.3	-0.8	19.2	-0.8	18.3
Hungary (HU)	-3.7	73.0	-4.6	79.8	-4.4	81.8	-4.4	81.4
Malta (MT)	-4.6	62.0	-3.9	67.6	-3.6	68.3	-3.6	70.9
Netherlands (NL)	0.5	58.5	-5.6	60.8	-5.1	63.1	-5.1	65.5
Austria (AT)	-0.9	63.8	-4.1	69.2	-4.5	72.0	-4.5	72.4
Poland (PL)	-3.7	47.1	-7.4	50.9	-7.9	54.8	-7.9	56.4
Portugal (PT)	-3.6	71.7	-10.2	83.2	-9.8	93.5	-9.8	108.1
Romania (RO)	-5.7	13.4	-9.0	23.6	-6.8	30.5	-6.8	33.4
Slovenia (SI)	-1.9	22.0	-6.0	35.0	-5.7	38.6	-5.7	46.9
Slovakia (SK)	-2.1	27.9	-8.0	35.6	-7.7	41.0	-7.7	43.3
Finland (FI)	4.4	33.9	-2.5	43.5	-2.5	48.6	-2.5	49.0
Sweden (SE)	2.2	38.8	-0.7	42.6	0.3	39.5	0.3	38.4
United Kingdom (UK)	-5.1	52.3	-11.5	67.8	-10.2	79.4	-10.2	85.0

(Adapted from Eurostat News release 149/2012, October 22, 2012)

Table 2 Percentage growth of GDP compared to previous year

	2008	2009	2010	2011	2012 (f)
EU27	0.3	-4.3	2.1	1.5	-0.3
EA17	0.4	-4.4	2.0	1.4	-0.4
Belgium (BE)	1.0	-2.8	2.4	1.8	-0.2
Bulgaria (BG)	6.2	-5.5	0.4	1.7	0.8
Czech Republic (CZ)	3.1	-4.5	2.5	1.9	-1.3
Denmark (DK)	-0.8	-5.7	1.6	1.1	0.6
Germany (DE)	1.1	-5.1	4.2	3.0	0.7
Estonia (EE)	-4.2	-14.1	3.3	8.3	2.5
Ireland (IE)	-2.1	-5.5	-0.8	1.4	0.4
Greece (EL)	-0.2	-3.1	-4.9	-7.1	-6.0
Spain (ES)	0.9	-3.7	-0.3	0.4	-1.4
France (FR)	-0.1	-3.1	1.7	1.7	0.2
Italy (IT)	-1.2	-5.5	1.8	0.4	-2.3
Cyprus (CY)	3.6	-1.9	1.3	0.5	-2.3
Latvia (LV)	-3.3	-17.7	-0.9	5.5	4.3
Lithuania (LT)	2.9	-14.8	1.5	5.9	2.9
Luxembourg (LU)	-0.7	-4.1	2.9	1.7	0.4
Hungary (HU)	0.9	-6.8	1.3	1.6	-1.2
Malta (MT)	3.7	-2.4	2.7	1.6	1.0
Netherlands (NL)	1.8	-3.7	1.6	1	-0.3
Austria (AT)	1.4	-3.8	2.1	2.7	0.8
Poland (PL)	5.1	1.6	3.9	4.3	2.4
Portugal (PT)	0	-2.9	1.9	-1.6	-3.0
Romania (RO)	7.3	-6.6	-1.1	2.2	0.8
Slovenia (SI)	3.4	-7.8	1.2	0.6	-2.3
Slovakia (SK)	5.8	-4.9	4.4	3.2	2.6
Finland (FI)	0.3	-8.5	3.3	2.7	0.1
Sweden (SE)	-0.6	-5.0	6.6	3.7	1.1
United Kingdom (UK)	-1	-4.0	1.8	0.9	0

http:/epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00115

The impact of the financial crisis is clearly visible in both rising deficits – and debt to GDP levels for the EU27 and EA17. This of course is also reflected in the numbers of individual member states.

In terms of deficits, 2009 was the worst year. In 2010 and 2011 the deficits became again smaller. However, also in 2011 the majority of the countries does not meet the 3% deficit norm of the SGP. Only six Eurozone and four non Eurozone countries have deficits below 3%.

In both the EU27 and in the EA17, the level of debt exceeds the 60% norm of the SGP. Fourteen member states had debts in excess of 60% of which twelve are EA17 countries. The thirteen countries with debt levels below 60% consists of five EA17 countries and eight non euro countries.

Compared to 2010, only 6 member states brought down their debt to GDP levels in 2011. Even though deficits were smaller, debt to GDP levels continue to rise due to sluggish growth. Summarizing, the performance on the SGP targets in 2011 was as follows:

Table 3 Country performance on SGP deficit target

	Deficit < 3%	Deficit > 3%
EA17	6 (DE, EE, LU, MT, AT, FI)	11 (BE, IE, EL, EE, FR, IT, CY, NL, PT, SI, SK)
Non €	4 (BG, DK, HU, SE)	6 (CZ, LV, LT, PL, RO, UK)

Table 4 Country performance on SGP debt level target

	Debt < 60%	Debt > 60%
EA17	5 (EE, LU, SI, SK, FI)	12 (BE, DE, IE, EL, ES, FR, IT, CY, MT, NL, AT, PT)
Non €	8 (BG, CZ, DK, LV, LT, PL, RO, SE)	2 (HU, UK)

For many countries, achieving the 60% debt level target will be a long process. France for instance would require seven years of annual 5% growth of GDP and zero deficits to bring the debt down from the 86% level of 2011. With annual growth of only 2%, the process would take 18 years. In this case a zero deficit means there has to be a primary surplus large enough to allow for interest payments.

The sustainability of debt levels thus obviously not only depends on economic growth, but also on interest rates. After record highs in the summer of 2012, Portugal, Spain, and Italy have seen their rates drop to more manageable levels. Also Greece's rates have dropped but are still too high to allow for independent refinancing of debts on the markets. On the other hand, countries like Germany and the Netherlands can borrow at historically low nominal rates and allowing for inflation the real rates are negative. But with nominal rates at the lower zero bound, the only way they can go is up. It is dangerous to hope on low rates to continue forever and this imposes a need for fiscal consolidation. This need becomes even more urgent when realizing that economic growth which in post World War II (WWII) years helped manage debt to GDP levels may well be below the averages of decades past.

3. Growth Perspectives

Economic growth can be measured in different ways. Commonly the percentage increase of GDP compared to a previous period is used. A more abstract yardstick is the increase of 'national utility'. Many factors may enter the national utility function, many of them not commonly included in GDP figures. Having access to unpolluted air or being able to walk in a pristine forest may add to this utility without contributing to GDP. In fact, some of these aspects like being able to breath clean air run opposite to growth of GDP, especially in the case of developing economies. It is only when economies become more mature that they are willing and able to devote resources to offset the negative environmental impact of increased physical output.

Real economic growth can only be achieved when productivity per capita increases. Increases in productivity ultimately are caused by technological, social or organizational innovations and developments. However, there are a number of reasons why developed economies are likely to face lower growth than what was common in the decades following WWII.

3.1. Diminishing Technological Returns

Ever since the late 19th century, today's developed societies have experienced tremendous increases in economic growth and living standards. Living standards that before had basically been stagnant for centuries. Breakthrough innovations like electrical power and all the inventions that followed in its wake dramatically improved quality of life. Not only for the rich, but especially for the common people. Light bulbs replaced candles. Central heating replaced the open hearth. And household appliances like the washing machine greatly reduced time spent on domestic chores. Not only did those innovations improve living standards, they also reduced the time spent on manual labor, both in the workplace and at home. This in turn made it possible for girls and women to spend more time on education and join the workforce thus speeding up the process of economic growth even more.

However, many of these improvements, both sources and results of economic growth, were one time affairs. We can hardly improve domestic living standards anymore. With indoor plumbing, heating and electricity already in place, most of us in the Western world are as comfortable as we are going to get. In this and other areas, the room for improvement and thus growth is small. 'The low hanging fruit' as Cowen (2011) puts it, has been picked. Replacing human labor with that of automated machines appears to be slowing down too. Solow (1987) widely quoted phrase "you can see the computer age everywhere but in the productivity statistics" eloquently expresses this.

Of course Solow made his remark before the rise of the world wide web and all of its applications which did have a positive effect on productivity. However, the impact was much more short lived than that of earlier technological breakthroughs. Gordon (2012) finds the following growth rates of US labor productivity over selected intervals:

Table 5 Annual productivity growth of US labor

Interval	1891 – 1972	1972 – 1996	1996 – 2004	2004 – 2012
Growth (%)	2.33	1.38	2.46	1.33

Adapted from Gordon (2012)

The positive effects of 19th century innovations like the combustion engine, electricity and all of their follow up applications continued until the 1970's. After that, productivity growth diminishes. The widespread adaptation of the world wide web is marked by increasing growth of productivity in the second half of the 1990's. However, the effects wear out by 2004.

Obviously it is dangerous to assume no significant technological breakthroughs will ever occur again. Nobody can predict what marvels may lay ahead in the future. But

equally dangerous is taking for granted that these innovations will have a similar impact on growth of productivity and wellbeing as earlier ones.

3.2. Diminishing Educational Returns

For new innovations and technologies to be fruitfully used on a large scale, a higher level of education is required. Also innovations are more likely to occur when the level of skill of the population is higher. Furthermore, labor saving technologies reduce the need for child labor and increases available time for education. Thus technological progress and increased educational effort reinforce one another and contribute to enhanced prosperity and economic growth. When the untapped potential of the population can still be developed by increased education, economic growth is sure to follow. Investments in education will drive economic growth which in turn increases room and appetite for educational investment. It is a virtuous cycle. But this cycle can not be continued forever. Trostel (2005) finds that at low levels of education the marginal rate of return increases significantly while the opposite happens at high levels of education. Similarly, when comparing educational rates of return across countries as for instance done by Psacharopoulos (1994) and Patrinos & Psacharopoulos (2002), higher returns to schooling are found in those countries with low levels of education. These and similar studies suggest that when higher levels of education are reached, the marginal returns of increased efforts decline.

In advanced economies the percentage of the population that has obtained a college degree or higher has rapidly increased. As more people enjoy some form of higher education, society's opportunity to extract economic benefits from an increased educational level of the workforce becomes smaller.

In a study regarding upward social mobility in the Netherlands, Tolsma & Wolbers (2010) conclude that the level of education of the workforce has increased beyond what the labor market requires. This phenomenon is certainly not uniquely Dutch. In a study on overeducation in Europe, Budría & Moro-Egido (2009) conclude that a significant proportion of the labor force is overeducated.

The result is 'educational inflation'. Workers with lower degrees are replaced by those with higher degrees who subsequently work below their educational level. At an individual level investing in more education still pays off but at a macro level the investment leads to substitution on the job market. This may not only lead to personal frustration but it also means that macro gains in productivity resulting from further increase in the level of education of the workforce become smaller. Even if it were somehow possible to elevate the entire population to Nobel Prize level, certain menial tasks still would need to be performed leaving significant parts of the population overeducated. Ignoring the joy that can come from learning, investments in education are also subject to the law of diminishing returns. In fact, logic dictates that beyond a certain point, returns of increased educational effort must be negative. Continuously increasing educational effort, not only postpones the age by which people enter the workforce but also requires an ever larger part of that workforce to be employed in education and supporting services. In the most extreme situation the entire population

would be busy with either enjoying or providing education leaving no time to pursue other activities. This of course cannot be an optimal situation.

3.3. Diminishing Demographic Returns

The baby boom of the post WWII years has been a major economic boon for developed economies over the last decades. Initially baby boomers posed a burden on growth through higher costs of education. But when they entered the labor market, their numbers greatly improved the workforce to total population ratio. This effect was strengthened by lower fertility and increasing participation of women. Now, when baby boomers reach retirement age the opposite effect occurs and workforce to total population ratios drop. This is a third reason why economic growth may not be as high as in the years following WWII. The unusual effects of the baby boom are magnified by rising longevity of the population and lower birth rates in mature economies. Combined, these two factors lead to an aging population. While in itself a consequence of increased prosperity, it is likely to put limits on growth in turn. Obviously, a larger share of retired people in the population will have a depressing effect on productivity per capita. But it is also likely to have a depressing effect on the productivity per worker. A growing elderly population requires a growing number of people to be employed in their care. Thus the growing care industry will lead to a crowding out effect in other industries, unless the care industry can realize higher than average productivity gains. Given the fact that care is not very capital intensive this is an unlikely development. Moreover, increases in elderly dependence may also lead to more time spent on providing care by family members, putting additional pressure on the size of the workforce. Decreased savings as result of higher pension benefits payments can also hamper investments and thus put a further impediment on growth. Population aging is a global trend though the effects on growth will be more pronounced in developed economies as for instance Feldstein (2006) and Bloom *et. al* (2011) conclude. In a study on the per capita income growth in the EU for the years 2005 – 2050, Lindh & Malmberg (2009) reveal that growth rates will decline. The trend is more pronounced in older member states compared to the emerging EU economies. Growth rates can fall to around 1% for the first group and to around 2% for the second in a baseline scenario. Their forecasts are not very sensitive to different population scenarios.

Obviously the effect of aging may be offset by working longer. To what extent this will remedy the situation depends on the productivity achieved in the years added to the working life. Also immigration is often promoted by policy makers as a way to offset the effects of aging but as the Feldstein (2006) paper concludes, the net increase in tax revenue from a substantial increase in immigration will contribute little to the extra cost of pensions and health care.

4. Fiscal Policy Effectiveness

Fiscal policy can essentially be used to serve two broad goals. It may be used to serve expansionary goals and promote economic growth. Second the policies may be aimed at fiscal consolidation to bring down debt to GDP levels. Furthermore, the policy may take two general forms. Policy makers can increase spending or lower taxes to serve

expansionary goals. On the other hand lower spending or higher taxes may be pursued for consolidation purposes. Summarizing, four policy options can be distinguished:

Table 6 The fiscal policy matrix

Tool / Goal	Expansionary	Consolidation
Government spending	Increase	Decrease
Taxation	Decrease	Increase

The success of a specific policy will depend on the so called fiscal multiplier. This variable indicates how strongly GDP responds to changes in government spending or taxation. A multiplier of 1.5 means that a €100 increase in public spending (or decrease in taxation) increases GDP by €150. The opposite would happen if spending decreases (or taxation increases). A wealth of literature exists on the effectiveness of the various fiscal policy options.

Alesina & Ardagna (2009) find that expansionary policies are more likely to increase growth when the stimulus is a tax cut rather than a spending increase. On the other hand, spending cuts are more likely to reduce deficits and debt over GDP levels than tax increases. Also they find that fiscal adjustments through spending are less likely to lead to recessions than tax increases. In earlier studies both Alesina & Perotti (1997) and Alesina & Ardagna (1998) arrive at similar conclusions. Likewise, Romer & Romer (2010) conclude that tax increases are contractionary. Mountford & Uhlig (2008) find that both tax hikes and spending increases have an adverse effect on private investment but that spending increases do not lead to an increase in consumption. Their study shows tax cuts to be the most effective way to promote growth. Also Ramey (2009) finds that increases in government spending negatively influence private consumption and thus are less likely to stimulate growth.

All these studies conclude that government spending cuts lead to 'crowding in' of private investment and consumption while spending increases have the opposite effect. Thus decreasing government spending is the tool of choice when pursuing a policy of fiscal consolidation since its effects on aggregate demand are mitigated by increases in private spending and investment.

Furthermore, in open economies especially, the effects of lower public spending will to some extent be passed on to other countries through lower imports. Also monetary policy can be used to counter the effects of fiscal policy. Thus interest rate cuts can be used to stimulate private spending, softening the blow of government spending cuts. But when interest rates are near zero levels as they are in countries like the Unites States, Great Britain, Japan and Germany, the room for monetary policy is severely restricted. Christiano *et al.* (2011) demonstrate that the multiplier can rise to more than 3 when interest rates are near zero. Under such conditions, the effects on growth of lower government spending would be much more severe than what Alesina & Ardagna (2009) conclude.

The mitigating effect of 'crowding in' will also be smaller in a situation where unemployment is already high. In such a state, lower government spending will not free up as many resources as when unemployment is at a moderate level. Auerbach &

Gorodnichenko (2011) find that fiscal multipliers can indeed be negative during a boom meaning public spending cuts directly promote growth. But during recessions the multiplier may rise to 2.5 meaning spending cuts are very contractionary. In such a situation spending cuts can actually increase debt to GDP levels since a lower deficit is accompanied by a shrinking economy.

Finally, in a much debated paper, International Monetary Fund's (IMF) economists Blanchard & Leigh (2013) show that the effects of the austerity measures on economic growth exceeded the original IMF's expectations. This would imply that multipliers were larger than assumed in the models. Even though their study is not a specific attempt to exactly quantify multipliers, during the recession they seem to have been between 0.9 and 1.7 instead of 0.5 as implicitly assumed in forecast models.

The combination of low interest rates and high unemployment does seem to magnify the adverse effects of budget cuts throughout Europe. Since cuts happen simultaneously in different countries, the effects can also not be passed on to other countries, especially since European economies are highly connected. Finally, Eurozone countries can not devaluate their currencies to increase competitiveness and promote growth.

Combined these factors create a perfect storm where spending cuts negatively affect economic growth, causing debt levels relative to GDP to rise, despite lower fiscal deficits. This may set of a vicious cycle of larger cutbacks that increasingly worsen short term prospects for growth.

5. Conclusion

High sovereign debt levels are not a new phenomenon. Those resulting from WWII were rapidly brought down by prolonged years of growth. The same happened after the deep recession of the late 1970's and early 1980's. In the late 1990's, the US but also the Netherlands were able to turn deficits into surpluses. This was largely due to exceptional economic growth and not the effect of spending cuts or tax increases as Alesina (2000) shows.

Based on the developments described above, it is too optimistic to expect growth figures as experienced in the 1990's to return. Fiscal adjustments therefore become a necessity to reduce debt burdens. Debt burdens that in the mature and larger EU countries are close or already exceed the 90% level that Reinhart & Rogoff have identified as critical. But coming down from high debt levels is difficult in today's economic climate as recent evidence on the size of fiscal multipliers suggests. Care must be taken not to cut back on productive investments. This will further exacerbate the economic situation of countries already in a recession. However, this does not mean improving fiscal balances is not crucial and needed as also Blanchard & Leigh (2013) conclude. Timing of measures appears to be all important. Policy makers have to walk a tightrope between short term impacts on GDP and long term reforms needed to increase competitiveness.

Regarding the longer term, policy makers should ask themselves to what extent and in what way governments must (re)allocate resources. Core European economies still have relatively high levels of entitlement spending for people aged under 65. In a globalizing economy this is not sustainable. Bringing down dependency rates and increasing participation is a necessity for both adjusting fiscal balances and increasing competiveness. The so called 'Lisbon Strategy', formulated by the European Council in 2000 to turn Europe into the world's most dynamic economy by 2010 has been an utter failure. Europe cannot – and never will be the most dynamic economy if it wishes to maintain its extensive social benefits which encourage non participation and dependency. It's a reality both the policymakers and the general population need to accept. Likewise, labor market reforms that give opportunities to the young and other new entrants are needed. Growth does not occur in an environment that is overly protective towards vested interests.

Regarding education, the Lisbon Strategy's goal of elevating half the workforce to college degree status should be reconsidered. Instead it is essential to determine in what fields people are to be educated. The shortage of technically proficient workers at all levels in countries like the Netherlands, Germany and the UK is something that should be addressed rather than just trying to increase the output of universities and colleges in general. Europe's young are educated higher than ever but not necessarily better in terms of labor market requirements. Of course it is hard to determine exactly when additional investments in education have negative marginal returns but it is not implausible that some mature economies have reached that point by having created a misallocation between educational output and labor market demands.

What is easily overlooked when discussing the effectiveness of fiscal policy measures is that a nation's prosperity in the long run depends on how well it uses its resources and manages to unlock the productive potential of its citizens. An economic crisis will become 'systemic' when there is something systematically wrong with the way the economic system is organized and performs. Ultimately, a systemic crisis results from systematically misallocating scarce resources and talents. This is the key point to focus on when adjusting fiscal balances. Mere spending cuts are not necessarily the same thing as increasing effectiveness and efficiency.

Where the law of diminishing returns appears to apply to technological innovations, there still is vast potential in social change. Reducing crime, promoting healthier living habits and the like offer vast potential for increasing living standards and quality of life. At the same time they also offer opportunities for relaxing pressure on budgets.

Of course this short paper can only scratch the surface of some profound developments and challenges that EU economies face. These developments do not pose a threat per se. They merely make up a new reality. A new reality that will only be a threat if we don't respond to it in a timely fashion. The risk of not responding to the developments out of a sense of misplaced entitlement or denial potentially poses a bigger threat than the developments themselves.

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Appendix

With level annual economic growth (g) and unvarying fiscal deficit (fd) expressed as percentage of GDP, the Debt to GDP ratio (DR) will tend towards g/fd.

With a constant growth rate, GDP in year n years will be:

$GDP_n = GDP_0 * (1+g)^n$

Due to the constant fiscal deficit, absolute debt levels (D) will also increase.

$D_1 = D_0 + fd*GDP_0$

$D_2 = D_1 + fd*GDP_1$

Substituting yields:

$D_2 = D_0 + fd*GDP_0 + fd*GDP_1 = D_0 + fd*GDP_0 + fd*GDP_0*(1+g)$

Subsequently:

$D_3 = D_0 + fd*GDP_0 + fd*GDP_0*(1+g) + fd*GDP_0*(1+g)^2$

$D_n = D_0 + fd*GDP_0 + fd*GDP_0*(1+g) + fd*GDP_0*(1+g)^2 + ….. + fd*GDP_0*(1+g)^{n-1}$

$D_n = D_0 + fd*GDP * \{1 + (1+g) + (1+g)^2 + …..+ (1+g)^{n-1}\}$

$D_n = D_0 + fd*GDP_0 * ((1+g^n) – 1)/g$

So, the debt to GDP ratio of year n will equal:

$DR_n = \dfrac{D_0 + fd*GDP_0 * ((1+g^n) – 1)/g}{GDO_0 * (1+g)^n}$

When n approaches infinity this yields:

$DR_\infty = fd/g.$