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SAVE FISCAL POLICY IN A BALANCE SHEET RECESSION

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"Il solo rimedio davvero sicuro alla recessione è una domanda robusta da parte del consumatore, così come la debolezza della domanda è la recessione. Negli Stati Uniti, specialmente in periodi di stagnazione e recessione, i cittadini a basso reddito necessitano sia di istruzione e cure mediche, sia di maggiori consumi familiari. Tuttavia, di fronte all'aumento delle richieste di aiuto, i governi, a livello federale e locale, tendono a diminuire l'intervento sociale pro capite. [...] È una reazione che riduce ulteriormente il reddito personale e familiare, aggravando la recessione senza nessuna contropartita. Ma questo è il livello dell'attuale intelligenza economica." J.K.Galbraith.

(da L'economia della truffa)

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INTRODUCTION

1.1 A NEW CONCEPT OF DEBT

In all international discussions debt is the central theme that is dealt with in the issues concerning the crisis and its solutions. Between 2000 and 2008, household debt increased from 96% of the US personal income to 128%, in the UK it has gone from 105% to 160%, and in Spain from 60% to 130%. In pubblic discussions, it is often said that such a rapid growth in debt has set the stage for the crisis, and that excessive debt, compared to the ability to repay it, continues to be an obstacle to the recovery.

As Eggertsson and Krugman explain in "Debt, Deleveraging, and the Liquidity Trap: a Fisher-Minsky-Koo Approach", the current concern about debt draws on a long tradition in economic analysis, from debt deflation theory of Irving Fisher to the current concept of Balance sheet recession of Richard Koo. The problem is the lack of monetary and fiscal policy models that respond to the concerns on debt, given that most of the economic analyses are conducted on the basis of models with a representative economic agent, who cannot explain the consequences of the fact that some people are debtors and other creditors.

The new model proposed by Eggertsson and Krugman (2012) incorporates the traditional neo-Keynesian models, but assumed that there are two groups of people: "impatient" and "patient", where impatients borrow from patients. The central issue, however, is the existence of a debt limit of each individual, established by the ideas of what is the sustainable level of leverage.

There is therefore a reduction of leverage, a downward revision of the acceptable debt levels, the so-called "Minsky moment". This requires debtors a strong reduction of their expenses and then other agents should be encouraged to spend more through a fall in interest rates, to avoid economic recession. If this deleveraging shock is strong enough , even a reduced interest rate to zero may not be low enough . Thus, a strong shock from deleveraging pushes the economy into a liquidity trap.

Making reference to the Fisherian debt deflation, if debts are defined in nominal terms and deleveraging leads to a fall in prices, the real burden of debt rises, also due to the spending of debtors decline. The direct implication of the Fisherian debt effect is that, immediately after the shock, aggregate demand curve is positively sloped and not negatively: a lower level of prices reduces the demand for goods and services. This strong shock from deleveraging leads the economy in a world upside down characterized by the "paradox of thrift" (if interest rates are up against the zero lower bound, a collective attempt to save more will depress the economy, leading to lower investment and to lower savings), the "paradox of toil" (when wages are pushed down by the simultaneous efforts of everyone in the labor force to work more even at lower wages, with interest rates against the zero bound, demand must fall because the only source of added demand would be added credit to compensate for those lower wages, credit which can't be made available on any looser terms; this loss of demand leads to loss of jobs), and the "paradox of flexibility" (wage and price flexibility do not facilitate recovery from recessions during a liquidity trap, but actually exacerbate them).

Turning to fiscal policy, in everyday debates the requests for expansion of fiscal policy in response to unemployment are usually rejected because of "high debt already present".

This argument does not take into account the debt relations, but only the debt itself. If, as analyzed by Eggertsson, you look to the world as a whole, the overall level of debt makes no difference to the net value of the aggregate wealth given that items in surplus and those in deficit compensate. Considering the distribution of debt, we understand that the heavily indebted agents face different constraints than agents with low debt, and thus the borrowing by some agents can repair balance sheets of agents that in the past resorted to excessive debt. Public expenditure financed in deficit can so allow the economy to avoid unemployment and deflation, while agents heavily indebted, in private sector, healed their balance sheets and the government can repay debts once deleveraging crisis has passed.

This is, in a nutshell, what my thesis will attempt to address.

1.2 BALANCE SHEET RECESSION

-AN OVERVIEW ON GROWTH OF DEBT AND LEVERAGE BEFORE THE CRISIS AND DELEVERAGING AFTER THE CRISIS

Enabled by the globalization of banking and a period of unusually low interest rates and risk spreads, debt grew rapidly after 2000 in most mature economies. By 2008, several countries (United Kingdom, Spain, South Korea, France) had higher levels of debts as a percentage of GDP than the United States, as we can see in the figure.



From: "Debt and deleveraging: the global credit bubble and its economic consequnces", McKinsey Global Institute.

Taking as a reference the analysis of the McKinsey Global Institute (2010), from the point of view of economic sectors, we find that households increased their borrowing

substantially, particularly home mortgages. Conversely, the nonfinancial business sector in most countries entered the crisis with lower leverage than at the start of the decade (the measure is ratio of debt over book equity).

The only exception was the commercial real estate sector, while the Government debt prior to the crisis was flat or even declining in most countries. Within the financial sector, the evidence shows that bank leverage in aggregate increased modestly relative to historic levels in most countries.

As of the second quarter of 2009, we find that total debt relative to GDP had fallen, and only slightly, in some countries, like United States, United Kingdom and South Korea. One reason for the small deleveraging overall has been the increase in government debt, which has offset declines in household sector debt. On the contrary in the eurozone countries, which not only have not increased their public deficit to compensate for the need of the private sector to have a surplus, but have also reduced them with the austerity policies, deleveraging has been much more intense (Graphs in the next paragraph about balance sheet recession). Financial sector leverage, in contrast, has already fallen to the avarage historic levels prior to the crisis. In most countries, by the second quarter of 2009, the banking system had deleveraged to the point at which capital levels were at or above the avarage levels of the 15 year preceding the crisis.

-WHAT IS BALANCE SHEET RECESSION?

The Koo theory about the Balance Sheet Recession is an useful model to better understand the process of deleveraging that occurred after the crisis of 2008. As Koo explains in "The Escape from Balance Sheet Recession and the QE Trap", this phenomenon occurs after the burst of a speculative bubble, when the private sector, having accumulated a large amount of debt in the period before the crisis, finds itself

unable to repay a large part of those debts and starts to cut spending to repair their balance sheets, leading to a collapse in demand and private investment. We have evidence of this dynamic both in Japan, in the years that preceded the real estate bubble burst in the early nineties, and in Europe and in the USA in the years that preceded the burst of the subprime mortgage bubble in 2008. In both these episodes, the private sector was heavily in debt, fueling speculative bubbles characterized by a disproportionate increase in the value of assets. When these bubbles burst, the value of these assets collapses very quickly, eroding the wealth of households and businesses. As Koo illustrated at the panel discussion "How Can We Govern Europe" in Florence (2014), when those bubbles bursted in 2008, with collapsing asset prices in most European countries and in the USA, households and businesses have done exactly what Japanese households had done twenty years before: cut costs and then pass in a few years from a net financial position in deficit, in which investments are greater than the savings, to a net financial position in surplus, thus making deleveraging to repair their balance sheets. Unlike the Eurozone, both Japan (from the nineties onwards) and the United States (from 2008 onwards) have realized that in a situation where the private sector has a strong propensity to save, monetary policy can do little to boost demand, as demonstrated by the fact that the huge injection of liquidity practiced by central banks following the crisis of 2008 has not resulted in a significant increase nor in lending to households and businesses, nor in money supply, even with interest rates close to zero, and that when the private sector save and doesn't invest is the State that have to increase public spending to prevent an economic recession. Private sector surplus should therefore necessarily correspond to the public sector deficit to avoid a collapse in demand. The following image shows the Japanese corporate sector balance sheet (blue line), sector affected more than others by balnce sheet recession of the early nineties, and the public sector (green line): the second's trend is the mirror image of the first's trend. So, as it has increased corporate sector surplus, public sector deficit is proportionally increased.



From:"The escape from Balance Sheet Recession and the QE trap", Koo

Also the American public sector deficit has grown a lot after the subprime bubble burst in 2008, compensating for the needs of families (red line) and business (blue line) to save and bring their net finacial position in surplus.



Note: All entries are four-quarter moving averages. For the latest figures, four-quarter averages ending in 2014 Q2 are used. Sources: FRB. US Department of Commerce

From:"The escape from balance sheet recession and the QE trap", Koo

Thus, fiscal policy has allowed Japan and US to prevent that the private sector's balance sheet recession dragged down with it the whole economy.

The austerity policies implemented in the Eurozone are therefore, as already mentioned, in sharp contrast to the optimal fiscal policy (during a balance sheet recession). As Koo analyzes, optimal deficit of a State can't be fixed arbitrarily, but depends on private sector savings rate.

In many Eurozone countries, because of economic policy decisions taken by the European establishment, the savings rate of private sector far exceeds public deficit level, as shown in the graph below (in which the blue box on the right is the savings rate in the private sector and the red box is the public deficit of a sample of countries).



* Private Sector = Household Sector + Non-Financial Corporate Sector + Financial Sector Note: All entries are four-quarter moving averages. For the latest figures, four-quarter averages ending in 2014 Q2 (only Ireland, 2014 Q1) are used. Budget deficits in Euro area in 2013 are from Oct. 21, 2014 release by Eurostat. Sources: Eurostat, Office for National Statistics, UK, Banco de España, National Statistics Institute, Spain, The Central Bank of Ireland, Central Statistics Office Ireland, Banco de Portugal, Banca d'Italia and Italian National Institute of Statistics

From:"The escape from balance sheet recession and the QE trap",Koo

In most Eurozone countries (especially those of the periphery) public deificit should be much higher than current levels: in the case of Italy, deficit should be at least 7 % to equal private sector surplus. Therefore, abandoning Maastricht constraints, it might allow for States in balance sheet recession to pick up their level of public deficit to the required standards. According to the economist, the unused liquidity of the private sector would be more than enough to finance the deficit increase .

1.3 REASON FOR EUROZONE DEBT CRISIS

While western economies experience balance sheet recessions and most government bond yelds fall to historic lows, investors continue to demand high yields to hold the debt of Eurozone countries like Spain and Ireland because fixed-income fund managers can buy government bonds issued by other Eurozone countries without taking on any exchange rate risk.

So, if they grow worried about their own government's fiscal position, they can simply buy other governments' debt.

Spain and Ireland are both in balance sheet recessions (graphs below), with private sector deleveraging reaching 17 percent of GDP in Spain and 21 percent of GDP in Ireland, all under low interest rates.

But the governments of both Spain and Ireland is unable to tap their own private savings surpluses to fight the balance sheet recessions bacause Spanish and Irish fixed-income fund managers can easily buy German government bonds.

SPAIN IN BALANCE SHEET RECESSION



Financial Surplus or Deficit by Sector

lote: For figures, 4 quarter averages ending with 1Q/11' are used. iource: Banco de España

IRELAND IN BALANCE SHEET RECESSION



From:"The world in balance sheet recession: causes, cure, and politics",Koo

Countries in balance sheet recession s such as Spain are in need of fiscal stimulus but are unable to take advantage of the rapid increase in domestic savings and are forced to engage in fiscal consolidation of their own, and since the countries receiving those savings are not borrowing and spending them, the eurozone economy is rapidly weakening.

Therefore, within the Monetary Union, when times are good, funds flow into booming economies in search of higher returns, exacerbating the bubbles; but, when the bubbles burst, the funds shift to the countries least affected by the boom. This is a pro-cyclical mechanism that amplify swings in the economy.

Koo 's suggestion is that a measure should be introduced to ensure that a substantial part of a "weak" country savings remains in that country. So, the solution could be the introduction of lower "risk weights" for possession of domestic bonds instead holding foreign bonds (with higher requirements for the possession of non-domestic bonds), so as to encourage the recycling of savings in the country where it originated. The proposed rule would allow individual governments to pursue autonomous fiscal policies within its constraint. In effect, governments could run larger deficit sas long as they could persuade citizens to hold their debt, and so overcoming the 3% constraint. This would both instill discippline and provide flexibility to individual governments.

2 IMPORTANCE OF FISCAL STIMULUS

2.1 INEFFECTIVENESS OF MONETARY POLICY AND THE NEED FOR FISCAL STIMULUS

Business and households in balance sheet recession are not interested in increasing their borrowings at any interest rates. There will not be many lenders either, especially when the lenders themselves have balance sheet problems.

This private sector shift to debt minimization is the reason why near zero interest rates by the Federal Reserve and European Central Bank since 2008 and by the Bank of Japan since 1995 failed to produce recoveries for those economies.

The Bank of Japan increased monetary base from 100 in 1990 to 343 today. The BOJ was followed by the fed and the BOE after Lehman Shosk when they also increased thier monetary base massively from 100 in 2008 to 304 and 413 today, respectively. The European Central Bank also, with its LTRO operations, increased the monetary base from 100 in 2008 to 197 today.

In spite of record low interest rates and massive injection of liquidity, credit growths in all of these countries (the indicator of the amount of funds that was able to leave the financial system and enter the real economy) have been dismal. Stagnant or negative credit growth means the liquidity injected by the central banks could not enter the real economy to support private sector activities.

Private sectors in countries in balance sheet recession are responding to the fall in asset prices , not consumer prices; so as long as their balance sheets are in underwater, they have no choice but to minimize debt. And as long as the private sector is minimizing debt, there is no reason for the economy to respond to monetary easing.

The result is that private debt minimization nullifies effectiveness of monetary policy.

To add other considerations, as pointed out by Krugman on monetary policy, expected inflation is the solution to a deleveraging shock because it i show the economy can achieve the negative natural real interest rate even though nominal rates are bounded at zero. In a world of perfect price flexibility, in liquidity trap conditions, deflation would reduce the current price level relative to the expected future price level, generating expected inflation. But monetary policy can deal with a deleveraging shock by generating the necessary rise in expected inflation directly, without the need to go through deflation first. In fact, central bank could adopt a higher inflation target, but this would only work if the higher target is credible, and so if agents expect the central bank to follow through with promises of higher inflation even after the deleveraging crisis has passed. But this credibility is not easy, because central banks normally see themselves as dfenders against rather than promoters of inflation.

Where Koo and Krugman theories converge is the importance of fiscal stimulus as the only effective remedy.

When the monetary policy is ineffective, the only policy left to keep the economy away from a deflational spiral in this type of recession is for the government to borrow and spend the unborrowed savings in the private sector. Indeed, it was with concerted fiscal stimulus implemented in 2009 that G20 countries managed to arrest the collapse of the world economy triggered by Lehman Shock.

By borrowing and spending the unborrowed savings in the private sector , and so by keeping the GDP from shrinking, the government ensures that the private sector has the income to repair its balance sheets.

When the private sector is minimizing debt by deleveraging, government borrowing and spending causes no crowding out because the government is taking up the unborrowed savings in the private sector; the issue of misallocation of resources does not arise because those resources not put to use by the government will go unemployed in this type of recessions.

This government deficit spending also maintains money supply, which is the liability of the banking system, from shrinking when the private sector as a whole starts paying down debt. This is beacause banks are unable to lend out the money paid back to them by the deleveraging borrowers when the entire private sector is deleveraging at the same time.

Finally, since asset prices never turn negative, as long as private sector has income to repair its balance sheets, its balance sheets will be repaired; once that point is reached and the private sector is ready to borrow again, the government should repair its balance sheet.

2.2 EFFECT OF FISCAL CONSOLIDATION

As Stephanie Lo and Kenneth Rogoff explain, excessive fiscal austerity is the major cause of slow post-financial crisis growth. It is absurd to lump the periphery of Europe, which lost market access, with countries such as Germany and United Kingdom, which enjoyed unfettered access. Governments in the periphery of Europe engaged in austerity programmes for the usual reasons that face IMF programme countries when thay face sharply reduced market access and official rescue funds are insufficient to completely bridge the gap.

Of course, the constraints that periphery countries faced were profoundly affected by northern Europe's reluctance to allow restructuring of private debts, even in cases where sustainability was deeply in question. Even where official funds were injected, they often ended up being used largely to pay off short-term private creditors, rather than provide the problem debtor with short-term fiscal space.

As emphasised in Barro's 1997 textbook treatment of fiscal policy, there is a fairly convincing theoretical argument that fiscal multipliers ought to be larger than usual

when monetary policy is constrained by the zero bound and that the exact form of the government spending or tax cuts is quite important.

Guajardo, Leigh and Pescatori analyzes effects of fiscal consolidation on economic activity from a statistical and analytical point of view. They focus on the effect of fiscal consolidation in the short term (the first three years).

Their baseline regression specification takes the following form:

$$\Delta Y_{i,t} = \mu_i + \lambda_t + \sum_{j=1}^2 \beta_j \, \Delta Y_{i,t-j} + \sum_{s=0}^2 \gamma_s \Delta F_{i,t-s} + v_{i,t}$$

where subscript *i* indexes countries, subscript *t* indexes years, and Y is the logarithm of real economic activity. This baseline results focus on real private consumption and real GDP.

The term ΔF is the series of action-based fiscal consolidations in percent of GDP (the total budgetary impact of changes in taxes and spending in year *t* motivated by a desire to reduce the budget deficit. The term μ_i denotes country-fixed effects, λ_t denotes year- fixed effects, and $v_{i,t}$ is a mean-zero error term. The βs are the autoregressive coefficients capturing the normal dynamics of economic activity, while γs are the direct effects of fiscal consolidation.

The estimates based on this model suggest that fiscal consolidation has contractionary effects on private consumption, with a peak effect of -0,75 percent within two years.

The estimated effect on GDP is -0,62 percent within two years.

Anyway, this main finding that fiscal consolidation is contractionary holds up in cases where one would most expect fiscal consolidation to raise private domestic demand.

In particular, even large spending-based fiscal retrenchments are contractionary, as a fiscal consolidations occurring in economies with a high perceived sovereign default risk.

As regards the effect on the public debt / GDP ratio, fiscal consolidation (increases in taxes and cuts in government spending) increases it.

In the period 2011-2013 the IMF revised upwards its previous estimates of fiscal multipliers . The upward revision has various justifications : the ineffectiveness of monetary expansion close to the zero interest rate lower limit , the lack of opportunity to devalue the exchange rate in the Eurozone , the existence of a large gap between potential income and effective income, simultaneous realization of recent consolidations in several countries .

Fiscal consolidation necessarily mean an increase rather than a decrease in the public debt / GDP ratio as long as the weighted average of the fiscal multipliers applicable to the level and composition of the fiscal package is greater than the inverse of public debt / GDP ratio .

Then the greater the fiscal multiplier and the higher public debt, the greater is the probability that fiscal consolidation has the effect of increasing ratio of government debt to GDP. Thus, fiscal consolidation will only work in countries that, having a public debt / GDP ratio low enough to force multiplier, do not really need a consolidation.

In fact, we can analyze that:

∆D=-xY

where D= public debt, Y=GDP, and x= amount of fiscal consolidation expressed as a share of GDP.

 $\Delta Y = -mxY$

where m is the appropriate fiscal multipler.

 $\Delta(D/Y) = [(\Delta D)Y - (\Delta Y)D]/Y^2 - [(-xY)Y - (-mxY)D]/Y^2 =$

 $= -xY^2/Y^2 + mxY D/Y^2 =$

=-x + mxD/Y =

=mxd-x

where d is D/Y. Finally,

 $\Delta(D/Y) = x(md-1) = xd(m-1/d)$

We can see that D/Y ratio must increase (Δ (D/Y)>0), only if m>1/d.

The interest of this proposition is that the inverse of the D / Y ratio is much smaller than the more a country is heavily indebted, and particularly small relatively to the order of recently established fiscal multipliers greatness. Therefore, the counterproductive character of fiscal consolidation in advanced countries , especially in highly indebted countries with high fiscal multipliers , becomes the norm.

In this context, therefore, also the continuation of an unproductive investment, as engage workers to dig holes and other workers to fill them (as suggested by Keynes) is still higher than the fiscal consolidation.

2.3 WHAT ARE THE REAL FISCAL MULTIPLIERS

With many economies in fiscal consolidation mode, there has been an intense debate about the size of fiscal multipliers. A natural question therefore is whether forecasters have understimated fiscal multipliers, that is, the short-term effects of government spending cuts or tax hikes on economic activity.

If forecasters understimated fiscal multipliers, there should be a negative ralation between fiscal consolidation forecasts and subsequent growth forecast errors.

In other words, growth disappointments should be larger in economies that planned greater fiscal cutbacks.

MIF assumed estimates of fiscal multipliers from 1970 to 2008 ("normal times") around a value of 0,5 in advanced economies.

Blanchard and Leigh, looking at the results for other time intervals since the start of the crisi sas well as the results for "normal times", find evidence of more understimation of fiscal multipliers earlier in the crisis (for the time intervals 2009-10 and 2010-11) than later in the crisis (2011-12 and 2012-13). Results for the earlier samples yield coefficients typically between 0,7 and 1,0. Results for the later samples yield coefficients typically between 0,3 and 0,5 and are less statistically significant. They find no evidence of systematic forecast errors related to planned changes in fiscal policy during the precrisis decade (1997-2008).

Furthermore, they find a significant negative relation between fiscal consolidation forecasts made in 2010 and subsequent growth forecast errorse. The estimate of coefficient on the forecast of fiscal consolidation, is -1,095, implying that, for every additional percentage point of GDP fiscal consolidation , GDP was about 1 percent lower than forecast. The results suggest that economies with larger planned fiscal consolidations tended to have larger subsequent growth disappointments.

When they decompose the effect on GDP, they find that planned fiscal consolidation is associated with significantly lower-than-expected consumption and investment growth. The coefficient for investment growth (-2,681) is about three times larger than that for private consumption growth (-0,816), which is consistent with research showing that investment varies relatively strongly in response to overall economic conditions. Conventional models predict that fiscal consolidation is normally associated with lower interest rates, supporting investment. The fact that investment growth falls by more than expected in response to fiscal consolidation could reflect the lack of the conventional interest rate effect during this period.

So, if we use the range of coefficients of growth forecast errors reported by Blanchard and Leigh, we find that actual multipliers are substantially above 1 early in the crisis. The smaller coefficient of forecasts made in 2011 and 2012 could reflect smaller actual multipliers or partial learning by forecasters regarding the effects of fiscal policy.

A decline in actual multipliers, despite the still-constraining zero lower bound, could reflect an easing of credit constraints faced by firms and households, and less economic slack in a number of economies relative to 2009-10.

Lower output and lower income, together with a poorly functioning financial system, imply that consumption may have depend more on current than on future income, and that investment may have depend more on current than on future profits, with both effects leading to larger multipliers.

In fact, Eggertsson and Krugman show, using a New Keynesian-style model, that when some households with an overhang of debt are forced into rapid deleveraging, their spending depends on current income rather than on expected future income, and that under these conditions, fiscal multipliers rise well above 1.

They find a "consumption function" in wich current consumption is in part determined by current income not, as has become standard in theoretical macroeconomics, solely by expectations of future income.

The explanation is: by their assumption, the borrower is liquidity-constrained, unable to borrow and paying down no more debt than he must. In fact, the marginal propensity to consume out of current income on the part of borrowers is 1.

Regarding investments, in response to a deleveraging shock, the main adjustment should take place via cuts in spending on investment or durable goods rather than on perishable consumption goods. If agents need to cut their spending in the short run to satisfy a debt limit, it makes sense to do so by cutting those spending components that yield benefit over a long period of time.

Relatively to the model of Eggertsson and Krugman with durable goods, the drop in aggregate demandi s bigger for a given deleveraging shock beacause investment responds even more aggressively than durable consumption, leading to an ever bigger contraction in demand.

Hence the increase in fiscal multipliers explained by the particular impact on consumption and investment for fiscal consolidation during a phase of deleveraging.

Focusing also on other points of view, Christiano, Eichenbaum and Rebelo analyze that, because of the binding zero lower bound on nominal interest rates, central banks could not cut interest rates to offset the negative short-term effects of a fiscal consolidation on economic activity. They have shown, using a dynamic stochastic general equilibrium model, that fiscal multipliers can exceed 3.

Finally, a number of empirical studies have found that fiscal multipliers are likely lo be larger when there is a great deal of slack in the economy.

Gorodnichenko has found that fiscal multipliers in U.S. associated with government spending can fluctuate from being near zero in normal times to about 2,5 during recessions. If fiscal multipliers were larger than normal and growth projections implicitly assumed multipliers more consistent with normal times, then growth forecast errors should be systematically correlated with fiscal consolidation forecasts.

3 FISCAL POLICY AT ZERO INTEREST RATE

3.1 EFFECTIVE FISCAL POLICY IN A DEPRESSED ECONOMY

The economic crisis of 2008 started one of the most heated debates about U.S. fiscal policy in the past half century.

With the federal funds rate close to zero, economists argued over alternatives to interest rate cuts to spur a recovery.

Meanwhile, the European Central Bank, the Bank of Japan, tha Bank of Canada, the Bank of England and several other central banks slashed interest rates close to zero.

Hall and Woodward argued for tax cuts, mainly a reduction in taxes on labor income, Krugman emphasized an increase in government spending, and another gropu of economists argued that the best response would be to reduce the government, that is, reduce both taxes and spending.

Even if there was no consensus about the correct fiscal policy, the recovery bill passed by Congress in 2009 marks the largest fiscal expansion in U.S. history since the New Deal and many governments followed the U.S. example.

In a depressed economy, with short term nominal interest rates at their zero lower bound, ample cyclical unemplyment, and excess capacity, increased government purchases would be not offset by the monetary authority raising interest rates.

At the zero bound, as we analyzed before, where the central bank cannot or will not but in any event does not perform its full role in stabilization policy, fiscal policy has the stabilization policy mission that others have convincingly argued it lacks in normal times. As Delong and Summers illustrate, the absence of supply constraints in the short term, together with a binding zero lower bound on interest rates, means that the Keynesian multiplier is likely to be substantially greater than the relatively small value it is though to have in normal times.

This multiplier may well be further magnified by an additional zero-bound effect: the impact of economic expansion on axpected inflation and hence on real interest rates.

At moments like the present, when interest rates are constrained by the zero bound, the output gap is large, and cyclical unemployment is high, because the multiplier is context-dependent, depending in particular on the reaction function of monetary policy, fiscal policy is likely to be more potent than standard estimates suggest.

The authors find that, analyzing the "histeresis effects" (the fact that recessions impose costs even after they end, and that a "high-pressure economy" has continuing benefits) in this particular context, at current and expected future real interest rates on government borrowing, even a very modest amount of "hysteresis", through which cyclical output shortfalls affect the economy's future potential, has a substantial effect on estimates of the impact of expansionary fiscal policy on the future debt burden; additional government spending that mitigates protracted output losses raises potential future output, even if the spending policies are not directly productive in themselves.

Financial crisis and demand-induced recessions appear to have an impact on potential output even after normal conditions are restored. This makes it plausible that measures that mitigate their effects would have long-run benefits.

The most important conclusion of Delong and Summers though is that under some conditions, fiscal policy is self-financing.

Assuming an economy in which output is well below its potential, cyclical unemployment is elevated, conventional monetary policy in constrained by the zero lower bound, supply constrained on short-run demand are absent, and the central bank is unable to provide additional stimulus through quantitative easing or other means, a combination of real government borrowing rates in the historical range, modestly positive fiscal multiplier effects, and small hysteresis effects are together

sufficient to rendere fiscal expansion self-financing (expansionary fiscal policy does not impose a future fiscal burden).

Also Eggertsson, studying the effectiveness of fiscal policy at zero interest rates, analyzes the contractionary effects of labor and capital taxes cuts and the strong expansionary effect of government spending and shows a numerical example:

Fiscal Policy Multipliers	
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	Labor Tax Cut Multiplier	Capital Tax Cut Multiplier	Government Spending Multiplier
Positive interest	.16	.0	.48
rate			
Zero interest rate	-1	1	2.3

The multipliers summarize by how much output decreases/increases if the government cuts tax rates by 1% or increases government spending by 1% (as a fraction of GDP).

At positive interest rates, a labor tax cut is expansionary, but at zero interest rates tax cuts become contractionary; while capital tax cuts are almost irrelevant in the model at a positive interest rate, they become strongly negative at zero.

Meanwhile, the multiplier of government spending not only stays positive at zero interest rates but becomes almost five times larger.

The labor tax cuts, that is, a cut in the tax on wages, cause deflationary pressures by reducing marginal costs of firms, thereby increasing the real interest rate. The Federal Reserve can't accomodate this by cutting the federal funds rate, since it is already close to zero.

From his analysis results that the principal goal of policy at zero interest rates should not be to increase aggregate supply by manipulating aggregate supply incentives; the goal of policy should be to increase aggregate demand (the overall level of spending in the economy).

At zero interest rates, output is demand determined, while aggregate supply is relevant because it pins down expectations about future inflation.

So, the result is that policies aimed at increasing aggregate supply are counterproductive because they can create deflationary expectations at zero interest rates; policy should not be aimed at increasing the supply of goods when the problem is that there are not enough buyers.

Considering, for example, a cutting taxes on capital, we find that a permanent reduction in capital taxes increases investment and the capital stock, which increases the production capacities of the economy.

But at zero interest rate, the problem is not that the production capacity of the economy is inadequate, but that aggregate spending is insufficient.

Cutting capital taxes gives people the incentive to save instead of spend, when precisely the opposite is needed; so, a cut in capital taxes will reduce output because it reduces consumption spending: everyone starts saving more, which leads to lower demand, which in turns leads to lower income for households, reducing their ability to save.

The result is paradoxical because a consequence of cutting capital taxes is a collapse in aggregate saving in general equilibrium because everyone tries to save more.

Conversely, cutting sales taxes and implementing an investment tax credit are examples of effective fiscal policy, not because of their effect on aggregate supply but because they directly stimulate aggregate spending.

Also a temporary increase in government spending is effective because it directly increases overall spending in the economy.

But a condition for gevernment spending to be effective in increasing demand is that it has to be directed at goods that are imperfect substitutes with private consumption, such as infractructure spending.

Otherwise, government spending will be offset by cuts in private spending, leaving aggregate spending unchanged.

The Woodford proposal for a stimulus plan is a combination of temporary government spending increases, temporary investment tax credits, and a temporary elimination of sales taxes, all of which can be financed by a temporary increase in labor and capital taxes.

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3.2 AN APPROXIMATED EQUILIBRIUM

In this section we analyze a log-linearized version of the New-keynesian model that Woodford and Acemoglu explain and we use it to study the effect of government spending.

Aggregate demand is composed by two relationships.

First, there is the IS equation derived from the optimal consumption decision of the household and the resource constraint (that is, all output is either consumed by the government or the private sector:

$Y_t = C_t + G_t^{S} + G_t^{N}$

Where Y_t is aggregate output, C_t is aggregate consumption, G_t^{S} is that part of government spending that is perfectly substitutable for private consumption, while G_t^{N} is not).

The IS becomes:

$$Y_{t}^{} = E_{t}Y_{t+1}^{} - \sigma(i_{t} - E_{t}\pi_{t+1} - r_{t}^{e}) + (G_{t}^{N} - E_{t}G_{t+1}^{N}) + \sigma\chi^{s}E_{t}(\tau_{t+1}^{S} - \tau_{t}^{S}) + \sigma\chi^{A}\tau_{t}^{A}$$

where $\Upsilon_t^{} = \log \Upsilon_t / \bar{\Upsilon}$, E^t is an expectation operator, i^t is the one-period risk-free nominal interest rate, π_t is inflation, the coefficients $\sigma, \chi^A, \chi^S > 0$, $G^{^N}_t = (G_t^N - \bar{G}^N) / \bar{\Upsilon}$, r_t^e is an exogenous disturbance that is only a function of the shock, $\tau_t^{^S} = \tau_t^S - \tau_t^S$, and $\tau_t^{^A} = (1-\beta)^{-1}(\tau_t^A - \tau^A)$ (where τ_t^S is a sales tax on consumption purchases and τ_t^A is a tax on financial assets).

Finally, β is a discount factor.

Second, there is the monetary policy rule approximated by:

 $i_t = \max(0, r^e_t + \Phi_\pi \pi_t + \Phi_\Upsilon \Upsilon^t)$

where the coefficients $\Phi_{\pi} > 1$ and $\Phi_{\Upsilon} > 0$.

When combining these relationships, we simply refer to the result as aggregate demand (AD) as it determines the overall level of spending in the economy given the monetary policy rule.

The aggregate supply (AS) is derived from the optimal pricing decision of the firms and it is:

 $\pi_t = \kappa Y^{^{\wedge}}_t + \kappa \psi(\chi^w \tau^{^{\wedge}w}_t + \chi^S \tau^{^{\wedge}S}_t - \sigma^{^{-1}}G^{^{\wedge}N}_t) + \beta E_t \pi_{t+1}$

where the coefficients $\kappa, \psi > 0$ and $0 < \beta < 1$; furthermore, τ^{W_t} is a payroll tax.

So, an approximate equilibrium determination is a collection of stochastic processes for $(Y_{t,\pi_t,r_t,i_t}^{\circ})$ that solve this two equations given a path for $(\tau_{t,\tau_t,\tau_t,\tau_t,r_t,r_t,i_t}^{\circ})$ determined by fiscal policy.

Serving us of this model, we will focus our analysis on the expansionary government spending.

• Effect of gevernment spending

Consider the effect of increasing G_{t}^{S} . We know from our model that increasing government spending, which is a perfect substitute for private spending, has not effect on output or inflation.

The reason is that the private sector will reduce its own consumption by exactly the same amount. In fact, the path for (π_t, Y_t^{\wedge}) is fully determined by AD and AS equations, along with a policy rule for the tax instruments and $G^{\wedge N}_{t}$, which makes no reference to policy choice of $G^{\wedge S}_{t}$.

Now consider the effect of increasing government spending $G^{N}_{t}>0$, which is not a perfect substitute for private consumption, in the absence of deflationary shock so that the short-term nominal interest rate is positive.



Fig. 6. Increasing government spending at positive interest rates

From:"What fiscal policy is effective at zero interest rates?", Eggertsson

The figure shows a standard AD-AS diagram. An incrase in $G^{N}{}_{S}$ ("s" is short time), shifts out demand for all the usual reasons, that is, it is an "autonomous" increase in spending.

Government spenging also shifts out aggregate supply. Because government spending takes away resources from private consumption, people want to work more in order to make up for lost consumption, shifting out labor supply and reducing real wages (outward shift in the AS curve).

The new equilibrium is at point B and the multiplier of government spending at positive interest rates $\Delta Y_{S}^{\wedge}/\Delta G_{S}^{\wedge N}$ is >0.

Consider now the effect of government spending at zero interest rates.

The big difference is the AD curve, because of the shock r_s^e and because the zero bound is bidding.

Benigno explains that at zero interest rate, with debt-contrained agents, there are two channels pushing in different directions.

On the one side, an increase in the current price level, everything else being equal, raises the current real rate, lowering the amount of debt that borrowes can borrow in the short run to carry in the long run, therefore lowering their short-run consumption and depressing aggregate demand; through this mechanism the AD equation becomes flatter. On the opposite side, an increase in the current price level reduces the real value of the current debt and therefore raises short-run consumption of the borrowers and expands aggregate demand.

The slope depend on the relationship between long-run and short-run prices. Assuming that inflation between short and long run is tied to zero, the slope becomes positive driven purely by the Fisherian effect; so lower prices increase the real value of debt, reducing the consumption of the borrowers and therefore aggregate demand and output (second channel prevails on the first).

In Woodford and Acemoglu model the AD and AS equations can be written as:

 $Y_{S}^{*} = \mu Y_{S}^{*} + \sigma \mu \pi_{S} + \sigma r_{S}^{e} + (1-\mu)G_{S}^{N},$

 $\pi_{S} = \kappa Y^{^{\wedge}}_{S} + \beta \mu \pi_{S} - \kappa \psi \sigma^{^{-1}} G^{^{\wedge}N}_{S}.$

Where μ is the probability of the duration of the shock.



Fig. 7. The effect of increasing government spending at zero interest rates

From:"What fiscal policy is effective at zero interest rates?", Eggertsson

Figure shows the effect of increasing government spending. Increasing $G^{N}{}_{S}$ shifts out the AD equation, stimulating both output output and prices.

At the same time, however, it shifts out the AS equation, so there is some deflationary effect of the policy, which arise from an increase in the labor supply of workers. This effect, however, is too small to overcome the stimulative effect of government expenditures.

In fact, solving these two equations together, we can show that the effect of government spending is always positive and always greater than 1:

$$\Delta Y_{S}^{A} / \Delta G_{S}^{N} = [(1-\mu)(1-\beta\mu)-\mu\kappa\psi] / [(1-\mu)(1-\beta\mu)-\sigma\mu\kappa] > 1$$

So, one dollar of government spending, according to the model, has to increase output by more than 1.

The main cause of the decline in output and prices was the expectation of a future slump and deflation. In fact, if the private sector expects an increase in future government spending in all states of the world in which the zero bound is binding, contractionary expectations are changed in all periods in which the zero bound is binding, thus having a large effect on spending in a given period.

So, expectations about future policy play a key role in explaining the power of governemtn spending.

Anyway, the main assumption that we can derive from the model is that the principal goal of policy at zero interest rates should be to increase aggregate demand, that is the overall level of spending in the economy.

Insufficient demand is the main problem once the zero bound is binding, and policy should first focus on ways in which the government can increase spending.

Policies that expand supply, such as some tax cuts and also a variety of other policies, can have subtle counterproductive effects at zero interest rates by increasing deflationary pressure. This can be avoided by suitably designed policy.

4 PERSONAL REFLECTIONS

4.1 THE NEED OF A SYNTHESIS OF ECONOMIC THEORY

The fact that the effectiveness of both fiscal and monetary policies are completely reversed in the world where private sector is minimizing debt compared with the world where private sector is maximizing profits suggests that there are two phases to macroeconomics, the normal world and the world of balance sheet recession (for Koo, Yin is the world in balance sheet recessions and Yang is the normal world).

So, in a normal world, private sector balance sheets are healthy and businesses seek to maximize profits and there aren't State aids. The monetary policy is highly effective because of a forward-looking corporate sector with a strong appetite for funds and fiscal policy should be avoided beacause of its potential to crowd out private investmetn.

The situation is reversed in a economy in balance sheet recession: private sector firms have sustained damage to their balance sheets as a result of the fall in asset prices and are focused on shoring up their balance sheets by minimizing their liabilities.

With a large number of firms trying to minimize debt alla t the same time the economy heads toward a depression.

Now, monetary policy is ineffective because firms are all rushing to pay down debt and private sector demand for funds is nonexistent. The government has to borrow and spend the savings generated by the private sector so that household savings and corporate debt repayments can be returned to the income stream.

So, fiscal policy is essential and in this world there is no danger of crowding out because private sector will be paying down debt instead of borrowing money to invest. All the macroeconomic models are based on the assumption that the economy is in a normal world and most policy interventions presume that private sector is trying to maximize profits.

So, the recommended response to this recession consists of a more activist monetary policy and reductions in the fiscal deficit to prevent crowding out.

But monetary policy is ineffective when there are no private-sector borrowers, and attempts to reduce the budget deficit will only hurt the economy and increase the deficit in a balance sheet recession.

Keynes based his theory on the assumption that firms always maximize profits and so failed to offere any explanation about a recession where monetary policy is ineffective at low interest rates.

Even though Keynes got the solution to a balance sheet recession correct (deficit spending by the government), he was not arguing for deficit spending as an offset to private sector debt minimization.

In that sense, Keynesian theory is incomplete because it fails to see private sector debt minimization as the driving force behind the economic problem it has tried to explain.

Private sector debt minimization is not an exception to the rule (that is Keynesian theory), but is its completion.

We need of a complete General Theory covering both the normal world and the world in balance sheet recession.

Obviously, it will not be easy to analyse if a recession will respond to all requirements of a balance sheet recession (or will only be caused by cyclical factors), but a General model development will mean a step in this direction .

4.2 VALUES OF FISCAL MULTIPLIERS AND CREDIT CRUNCH

Financial crisis in 2007-2008 and sovereign debt crisis in 2011 has led in recent years ECB to exceptional (and unconventional) intervention by expansionary monetary policy designed to support a massive demand for liquidity from the banking sector.

For this purpose were launched repeated extraordinary refinancing operations at a fixed rate with a maturity of over 3 months (6 months and 12 months), characterized by the total satisfaction of demand (full allotment).

At the same time the Central Bank has accepted as collateral of the loan a larger group of securities. Between late 2011 and early 2012 were launched new operations in three years, Long Term Refinancing Operations, which have provided liquidity for over a thousand billion euro to Banking System (at 1%).

Moreover, since 2005, the ECB implemented a quantitative easing program which is an unconventional form of monetary policy where a Central Bank creates new money to buy financial assets (especially of countries with strong fiscal policy problem), like government bonds. This process aims to directly increase private sector spending in the economy and return inflation to target.

Through these operations, the ECB intended to speed up economic recovery in Euro Area exploiting trasmissione channel of monetary policy through the central banks system, then influencing fiscal variables (and aggregate demand) through an expansive monetary policy.

This transmission channel has been blocked by credit crunch implemented by the banking system that prefers, given the high probability of bankruptcy of the private sector during the recession, invest liquidity got at low interest rate through non-conventional operations of ECB in bonds at higher yield.

This mechanism makes difficult the recovery of the economic system, not allowing the private sector to resume investments and durable consumptions.

Fiscal multipliers may then be even larger than the estimates made by scholars, because of this block of monetary transmission channel that causes an increase of

fiscal expansion potential.

The opportunities for growth induced by an effective fiscal policy may be restricted by credit cruch of banks, the elimination of which would mean an easier transmission mechanism from monetary variables to the real ones .

4.3 PROFIT MAXIMIZING AND DEBT MINIMIZING BUSINESSES

Another point of reflection might be the presence of companies that try to minimize the level of debt, also maximizing profits.

This involves the development of micro and macroeconomic models with two constraints that coexist with each other and that implicitly entail the acceptance of Keynes theory and Koo theory.

Even in times of economic growth situation, companies just out of a business cycle recession could take as objective also minimizing debt .

The reasons could be many, as loans' higher interest rates for failure to restabilisation of elegible collateral of private sector, or the businesses' need to stabilize their financial structure after a period characterized by high interest rate risk and market risk.

In models developed after subprime crisis in 2008, the main assumption is debt minimization and the presence of agents debt constrained.

Probably, the end of this balance sheet reession won't coincide with a marked change in agents and firms behavior.

Through macroeconomic models it should be also analyzed the particular period of the beginning of economic recovery in which, however, agents behavior is countercyclical, because is still affected by the particular constraints existing during the crisis. However, taking account of these subjective tendencies of operators in the economy, are introduced random variables in macroeconomic models and parameters may differ between individuals and also between countries .

For example, a country where the state aid are considered appropriate in the post crisis could affect dicisions and behaviors of families and businesses, making the objectives of maximizing profits and utility higher than those of minimizing debt .

On the contrary, a country with high taxes and lack of state support could make more difficult for agents switching to procyclical behavior of total profit maximization and utility through higher consumption and investment.

Considerations of this kind help to understand that development of models representing every aspect of economic agents behavior is extremely difficult for the differences characterizing agents and countries .

4.4 A FUTURE PROSPECTIVE: UE FISCAL UNION

Laruffa describes the European economic governance as "an economic constitution made by rules, policies and institutional practices aimed to establish a fiscalmonetary policy mix, competition rules, financial markets regulations, the single market and international trade policies. When the euro was created, monetary policy was established as a centralized policy, while fiscal policy remained in the hands of national authorities under some institutional arrangements for sound budgetary policy and an ex-ante control by the European Commission."

The effectiveness of fiscal policies within the Union would certainly be more significant through a Fiscal Union closely linked to Monetary Union.

Despite the sacrifice of national sovereignty in fiscal policy that Union implies, it is definitely more desirable the convergence, although not absolute, of fiscal policy objectives, both to make monetary policy more effective, and to internalize positive externalities because of the best performance of some countries.

A Fiscal Union is required to create a permanent transfer mechanism from countries that by structural and polical reasons have already started economic recovery to those who still suffer from the consequences of the crisis.

A Common European Fiscal Union can also amplify the effects of the implemented expansionary monetary policies with increase of the fiscal deficit of countries, for example to enhance the current operation Quantitative easing by the European Central Bank.

The experience of the sovereign debt crisis and the Greek case, showed that the lack of fiscal discipline on the part of a Member State, can create insecurity across the Union and exert a significant influence on the interest rates of other countries, determining a higher cost for States financing. These spillovers are also linked to a possible default of a Member State.

Fiscal Union, in addition to bring benefits in the cost of debt, also makes it possible to synchronize and balance the economic cycles of countries that are part of the Monetary Union. With exclusively national sovereignty fiscal policy, in case there were two nations, one in a recession and one in economic boom, a possible fiscal contraction - such as a rise in taxes aimed to return the public debt- in the State in boom has the effect of decrease the disposable income of its citizens and bring down the demand on foreign goods.

Fiscal Union appears to be an essential element to complete an asymmetry that is characteristic of the Monetary Union and to make optimal responses in a coordinated way during economic recessions.

REFERENCES

Michael Woodford (2010), "Simple Analytics of the Government Expenditure Multiplier"

Pierpaolo Benigno (2009), "New-Keynesian Economics: An AS-AD View"

Gauti B. Eggertsson, Paul Krugman (2012), "Debt, Deleveraging, and the Liquidity Trap: a Fisher-Minsky-Koo Approach"

Domenico Nuti (2013), "Gli Effetti Perversi del Consolidamento Fiscale"

Richard C. Koo (2014), "The Escape from Balance Sheet Recession and the QE Trap"

Richard C. Koo (2011), "The World in Balance Sheet Recession: Causes, Cure, and Politics"

Richard C. Koo (2012), "Balance Sheet Recession as the Other-Half of Macroeconomics"

McKinsey Global Institute (2010), "Debt and Deleveraging : the Global Credit Bubble and its Economic Consequences"

Oliver Blanchard, Daniel Leigh (2013), "Growth Forecast Errors and Fiscal Multipliers"

Gauti B. Eggertsson (2011), "What Fiscal Policy is Effective at Zero Interest Rates?"

Anton Korinek, Alp Simsek (2014), "Liquidity Trap and Excessive Leverage"

Stephanie Lo, Kenneth Rogoff (2015), "Secular Stagnation, Debt Overhang and Other Rationales for Sluggish Growth, Six Years on"

Jaime Guajardo, Daniel Leigh, Andrea Pescatori (2011), "Expansionary Austerity: New International Evidence"

J.Bradford Delong, Lawrence H. Summers (2012), "Fiscal Policy in a Depressed Economy"

Gauti Eggertsson, Michael Woodford (2003), "The Zero Bound on Interest Rates and Optimal Monetary Policy"

Gauti Eggertsson (2001), "Real Government Spending in a Liquidity Trap"

A.Alesina, S. Ardagnia (2010), "Large Changes in Fiscal Policy : Taxes versus Spending"

Cogan, John F., Tobias Cwick, John B.Taylor, Volker Wieland (2009), "New Keynesian Versus Old Keynesian Government Spending Multipliers"

Michael Woodford (2000), "Monetary Policy in a World Without Money"

A.Alesina, R.Perotti (1995), "Fiscal Expansion and Fiscal Adjustments in OECD Countries"