Fiscal and Debt Policies for Sustainable U.S. Growth*

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Abstract. In our interpretation, the Great Recession which started in the United States in 2007, and propagated to the rest of the world, was the inevitable outcome of a growth trajectory based on fragile pillars. The concentration of income and wealth, which started rising in the 1980s, along with the stagnation in real wages made it more difficult for the middle class to defend its standard of living, relative to the top decile of the income distribution. This process increased the demand for credit from the household sector, while deregulation of financial markets increased the supply, and the U.S. economy experienced a long period of debt-fueled growth, which broke down first in 2001 with a stock market crash, but at the time fiscal and monetary policy managed to sustain the economy, but without addressing the fundamentals problem, so that private (and foreign) debt kept increasing up to 2006, when a more serious recession started. At present, the long period of low household spending, along with personal bankruptcies, has been effective in reducing private debt relative to income, and, given that the problems we highlight have not been properly addressed yet, growth could start again on the same fragile basis as in the 1990-2006 period. In this paper, adopting the stock-flow consistent approach pioneered by Wynne Godley, we stress the need for fiscal policy to play an active role in (1) modifying the post-tax distribution of income, which along with new regulations of financial markets should reduce the risk of private debt getting out of control again; (2) stimulate environment-friendly investment and technological progress; (3) take action to reduce the U.S. external imbalance, and (4) provide stimulus for sufficient employment growth.

1. Introduction.

According to the standard definition of 'recession', based on the growth rate in real GDP, the U.S. economy is now (spring 2013) well out of trouble, since its real GDP has been rising in the last three years, from the beginning of 2010 to the last available data (first quarter of 2013), with an average growth rate of 1.6 percent. If we compare this figure with average growth rates between recessions, we notice a continuous decline, from 4.2 percent in the 1980s to 3.5 percent in the 1990s, to 2.6 between 2002 and 2007, to the current 1.6 percent.

What was the role of borrowing in U.S. growth, and in the last U.S. recessions? Private sector borrowing[1] between 2001 and 2007 was on average 13.3 percent of GDP, a figure which is not so much larger than the average in the 1970s or 1980s, when borrowing averaged 10.2 percent of GDP between 1971 and 1973, or 10.6 percent between 1975 and 1979. The problem lies in the fact that nominal GDP growth was much smaller in the last period with respect to the 1970s, and when borrowing relative to income is too high, the debt to income ratio increases, eventually triggering a crisis.

Since the Great Recession started in 2007, both households and businesses decreased their indebtedness, restoring the sustainability in private debt, but borrowing – especially for corporations

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[1] Measured as the sum of the change in gross debt of households and non-financial corporations, as published in the Flow of Funds by the Federal Reserve.

– is increasing rapidly again, and this suggests one of the research question we will try to address in this paper: is a high level of borrowing necessary for growth in the United States? And, if so, will this trigger new financial instability?

The other topic we want to address is the role the public sector has on growth, trough its impact of changes in the structure of the fiscal system on consumption, trough its impact on private investment, and as a possible provider of direct employment in times of crisis. The analysis of U.S. public sector borrowing requirement relative to GDP, which will be addressed in more detail in section 4, shows that government deficit was always counter-cyclical, rapidly rising with recessions, and declining when the recession was over and GDP increased again. However, comparing the government deficit to GDP with nominal GDP growth we note that, contrary to all previous historical periods, the current level of the deficit implies a public debt potentially growing relative to GDP, unless either public borrowing is reduced, or GDP growth increased. But while private debt cannot keep growing relative to income, do we have a similar problem for public debt?

Last, but not least, the return to GDP growth in the U.S. has had little impact on employment so far. The level of employment as a share of active population has been increasing steadily since the Second World War, albeit with cyclical fluctuations, but its trend growth slowed down after the 1980s, recovery after the 2001 recession was weak, and the employment rate has not improved yet from the Great Depression. Before the Recession started to hit, employment peaked at 146 million (March 2007) or 63.3 percent of the population in working age. Employment is now (March 2013) at 143 million, or 58.5 percent. 3 million jobs are still missing, and if the economy is to reach the same pre-crisis employment rate, given the growth in population, the U.S. economy would have to create 12 million jobs. It is quite clear that the U.S. needs to get back to a growth level compatible with restoring an adequate level of employment.

In the following we will address these problems, by suggesting an explanation of the growth regime followed by the U.S. in the recent past, and discussing the feasibility of the same path for the future, and the role for fiscal policy. More specifically, in Section 2 we will briefly discuss the failure of mainstream theory in predicting the Great Recession, and therefore in suggesting relevant policies; in Section 3 we will discuss the stock-flow-consistent methodology for analysing a whole economy, and its implications for the analysis of stock-flow and flow-flow ratios, arguing that government debts and deficits should be dealt with in conjunction with private sector net wealth and net foreign assets; in Section 4 we will use this approach to show the evolution of financial balances in the United States, and the role played by changes in taxation and government intervention; Section 5 will discuss the prospects for sustainable U.S. growth and which role fiscal policy should play, while Section 6 will conclude.

2. The state of macroeconomics

Just after the recession started, Blanchard (2009) noted that macroeconomics was in a healthy state, with a large majority of economists converging on what has been labelled as the ‘New Consensus Macroeconomics’ (NCM) model, which had its empirical counterpart in Dynamic Stochastic General Equilibrium (DSGE) models.[2] Minor divergences remained between the 'freshwater' and the 'saltwater'

[2] According to Lavoie (2004). some early features of the NCM were described in Allsopp and Vines (2000) and Taylor (2000). Woodford (2003) is considered to be the best detailed analysis of this approach. According to Fair (2012), more recent DSGE models such as Smets and Wouters (2007) or Edge et al. (2008) based on the NCM share the same characteristics. See also Arestis (2010).

groups,[3] while heterodox approaches were marginalized and basically ignored.

However, the recession which started in 2007 was unexpected by mainstream macroeconomists, casting doubts on their underlying models, and reviving interest in the ideas of Keynes and Minsky. Many of those who had been claiming that a recession was inevitable[4] were in the neglected, heterodox group.

The reasons why the NCM model of mainstream economists failed to foresee the recession is very relevant, since these models seem to have survived their failure, and are still predominant in informing current policies, and are the basis for advocating a reduction in public deficits and debts.

In our view, the flaw lies at the heart of the NCM mainstream model, which assumes a representative agent with rational expectations, so that all decisions are coherent with an inter-temporal maximization of utility. This implies that 'real time' disappears, and the economy is a sequence of atemporal equilibria, where deviations from the optimal growth path only arise from (temporary) random, unpredictable shocks. Adding the hypothesis of efficient financial markets, so that agents can always borrow and lend in order to fulfil inter-temporal optimization, implies that finance does not matter, and debtor position are always sustainable.

Adopting this approach, most economists viewed the housing market bubble of 2001-2006 as the consequence of rational choices linked to increased expectations of future income, and suggested that no policy intervention was required.

Following the idea of efficient financial markets, there was a general agreement – before 2007 – on the fact that less regulation on these markets was beneficial, since it allowed a better allocation of risk.

Another pillar of the NCM model is the Taylor rule as the only prescription for policy, since fiscal policy was (still is) believed to do only harm. The Taylor rule suggests to change the interest rate when inflation is out of target, or unemployment has drifted away from its 'natural' rate. The 2007 crisis proved this rule, largely followed by Central Banks around the world, to be misleading or useless: its proponent, John Taylor, as late as August 2007[5] was praising Central Banks for doing a good job, only to reprimand them in 2009 for failing to adopt his rule.[6] In our view, the Taylor rule is useless in that the 'natural rate of unemployment' is a vague concept which cannot be properly measured.

Summing up, the NCM model is based on the assumption of forward-looking individuals who maximize utility, together with the New Keynesian assumption of some degree of monopoly, or other assumptions that imply that prices do not move instantaneously to clear all markets. The model also 'solves' the dichotomy between growth models and short-run models, since it is both compatible with long-run equilibrium growth, and as a tool to address short-run deviations from the 'natural' level of output.

Money and credit do not appear explicitly: it is assumed that the stock of money can be adjusted so to get the interest rate to the level required by the Taylor rule, while credit may be (implicitly) provided to households to increase current consumption whenever (rational) expectations of future income increase.

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[3] 'Fresh water' economists are New-classicals, mainly identified with the 'Chicago School', while 'Salt water' economists are New-Keynesians, and work in coastal areas of the U.S. See Krugman (2009)

[4] See Bezemer (2010).

[5] Welt am Sonntag (2007)

[6] As Taylor (2009) notes “there is clearly evidence that there were monetary excesses during the period leading up to the housing boom” (p.3)

A crisis can occur in this framework either because of an unexpected shock (usually modelled as a supply-side or technology shock), or because of policy failure (i.e. failure to adopt the Taylor rule). Accordingly, the mainstream interpretation of the recession focused (1) on the fact that the recession was triggered by an extraordinary shock ("it is not so surprising that models designed to capture the average quarter in the economy's life would not do so well when very unaverage events arise", Altig, 2009); (2) on policy failures ("there is clearly evidence that there were monetary excesses during the period leading up to the housing boom.", Taylor, 2009, p.3); or (3) failure of the theoretical and empirical models to capture recent evolution of financial markets.

When we move to the empirical counterpart of NCM models, Fair (2012) notes that practical shortcomings must be added to the theoretical flaws. In particular, many estimated models are not coherent with national accounting, are overly simplified, and do not provide any evidence of the appropriateness of rational expectations. He also notes that, when theoretical models get estimated, they are often modified in 'ad hoc' ways to fit the data, and therefore lose the strong micro-foundation, which supposedly makes them superior to other methodologies for model building. From a different perspective, Arestis (2010) also finds NCM models to be ad hoc at least as much as models in other approaches. Notwithstanding the failure of NCM models, they still inform policy action on the presumption that 'excessive' levels of public debt are detrimental to growth, and that austerity measures must be enforced whenever public debt is too high.

3. A post-Keynesian approach

Our methodology for analysing the growth path of the U.S. economy is based on the theoretical post-Keynesian approach of Godley and Lavoie (2007), known as 'stock-flow-consistent' modeling.

This class of models is usually labelled as 'stock-flow-consistent' (SFC), in that one of the main features - with respect to other heterodox approaches - is the emphasis on dynamic stock-flow accounting for the whole economy. However, this requirement should be explicitly or implicitly valid for any consistent model, be it mainstream or heterodox. A better label is needed, but for the time being we will keep using 'stock-flow-consistent post-Keynesian' (SFC-PK) models when referring to this approach. It's crucial features are the following:

1. The model is dynamic, and the position of the system in a given period is crucially affected by its previous historical path;
2. The model is consistent, in that every monetary flow is recorded as a payment for one sector and a receipt for another sector. In addition to flow consistency, every relevant stock - of real or financial assets - is linked to a corresponding flow. For instance, the net stock of assets for the household sector changes its value in a given period through household saving and capital gains;
3. The banking system is explicitly represented;
4. The accounting structure of models adheres to the principles laid down in the System of National Accounts (SNA) for flows, flow of funds and stocks accounting, helping to move from theoretical models to applied models.
5. Prices do not necessarily clear markets. At any moment in time, the stock of an asset may differ from its 'desired' level. Quantity adjustments towards 'desired' or 'equilibrium' levels for model variables require some buffers.

The first four features are based on accounting identities linking sectors in the economy, and therefore

should be present, implicitly or explicitly, in any macro model.[7] The last feature, on the contrary, is an hypothesis specific of Godley's approach. Other features of SFC-PK models may and do vary. Generally speaking, authors adopting this approach do not feel the need for micro-foundation of the aggregate behaviour of agents,[8] while they prefer the post-Keynesian or Marxian approach of splitting individuals into different groups, say 'rentiers' or 'capitalists' and 'workers'. Other crucial features are easily derived: there is no distinction - in principle - between a SFC-PK model built to evaluate the short-run dynamics of an economy, and one where the long-run growth path of output is obtained through a sequence of short-run adjustment processes.[9]

We will not discuss further the theoretical foundations of SFC-PK models here[10], and focus more in the relevance of this approach for empirical applications and its relative merits in predicting the current recession. We will specifically focus on the financial balances of the major sectors in the economy, which have become a key synthetic indicator of the state of the economy.

Adopting the Social Accounting Matrix (SAM) approach pioneered by Richard Stone, and largely incorporated into the System of National Accounts (U.N. 2008), a complete set of flow accounting for a simplified economy can be represented as in Table 1,[11] where monetary payments are recorded in the columns, and receipts in the rows.

For simplicity, as is often done when using the SAM as the natural extension of an input-output matrix, all activities related to production are recorded separately, so that the SAM can be seen as an input-output matrix to which we add a matrix of transfers among sectors, and a column and row for the capital account.

The SAM has the property that the value of each row is equal to the value of the corresponding column. For the first row and column, the accounting identity is between the value of aggregate demand (including the ex-post change in the stock of inventories) and the value of production. A standard simplification is to classify imports as a 'cost' of domestic production, implying that imported goods are acquired by domestic firms, and later sold as consumption or investment goods. When the SAM is used to record the ex-post accounting, any change in inventories is classified in the capital account column, so that the value of production is always equal to the value of sales (which will now include the change in inventories).

For the other rows and columns, the identity between the sum of each element in the row and the sum of each element in the corresponding column is defining saving (in the Capital Account row) as the difference between income (the row total) less expenditure and net transfers.

Accounting consistency requires that the sum of saving for all sectors (i.e. our financial balances) be zero, i.e.

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[7] Authors in the SFC tradition have used this approach to show that some mainstream and heterodox models were inconsistent. See Godley et al. (1987) or Zezza (2012) among others. Some mainstream economists, notably Sargent (1987), have developed stock-flow-consistent models, which sometimes assume that stocks adjust instantaneously to their desired level to ensure equilibrium.

[8] Although interest is growing for SFC consistency in the methodology known as 'Agent based modeling' which simulates behavior at the micro level.

[9] See Dos Santos and Zezza (2008) for a simple model.

[10] The classical reference for SFC-PK models is now Godley and Lavoie (2007)

[11] In Table 1 we report only the largest monetary flows among sectors, leaving some cells empty to improve readability. We also report a limited number of financial assets, with simplifying assumptions about issuers and holders.

$$Sh + Sb + Sf - GD^* - BP = I \quad (1)$$

where *Sh* is household saving, *Sb* and *Sf* are undistributed profits in the business and financial sector, respectively, *GD** is government deficit on its current account, *BP* the balance of payments on current account and *I* gross investment (public plus private).

Sector saving in row 7 of Table 1 are linked to uses and sources of funds, so that, for any sector, saving equals the change in assets less the change in liabilities. Merging together the business and financial sectors, equation (1) can also be written as

$$(Sh - Ir) + (P - In) = GD + BP \quad (2)$$

where now *Ir* is residential investment, *In* non-residential investment, *P* profits for all firms, and *GD* is the overall government deficit (that is *GD** above plus public investment). The first bracket measures the net acquisition of financial assets (*NAFA*) by the household sector, which are detailed in the rows 7a to 7e as the net increase in financial assets of this sector less the increase in liabilities. The second bracket measures *NAFA* for the business sector, showing the sources and uses of funds, and so on.

When *NAFA* is positive, the sector is cumulating financial assets, and some other sector is increasing its net liabilities. A negative *NAFA* is a signal for the increase of liabilities over assets, or – to put it differently – for the increase of the financial fragility of this sector.

Having derived the financial balances from the GDP accounting identity it should become clear how such balances are linked to the components of aggregate demand. An increase in domestic investment will have an impact on the *NAFA* of the business sector only when the increase in demand, spurred by investment, does not generate a sufficient level of profits. In this case, for instance, we would expect higher income to increase household saving, government tax revenues and imports, so that investment-led growth should imply a larger *NAFA* for the household sector, a smaller government deficit and an improvement in the external balance.

When aggregate demand increases because of a shock to net exports, we would expect an increase in profits and saving of household, and an increase in tax revenues, so that *NAFA* should increase for both the household and the business sector.

Finally, an increase in aggregate demand generated by additional government spending may improve the balances for the private sector while deteriorating the external balance, through the effects of government expenditure on income, and therefore saving, profits and imports.[12]

[12] Theories based on the 'Ricardian equivalence theorem' deny the impact of government expenditure on income, on the basis that additional government spending implies a future increase in taxation, which is discounted by rational household who increase saving, so that aggregate demand remains constant. The empirical relevance of such theories is, however, questionable.

Table 1. Social accounting matrix and flow of funds for a simplified economy

	Production	**Households**	**Non-financial business**	**Financial sector**	**Government**	**Rest of the World**	**Capital Account**	**Total**
1. Production		Consumption			Government expenditure	Exports	Investment	Aggregate demand
2. Households	Wages		Dividends	Dividends, Interest payments	Govt. transfers to households, Interest payments	Net income payments		Household income
3. Non-financial business	Profits				Govt. transfers to business			Business s. income
4. Financial sector	Fin. Profits		Interest payments		Interest payments	Interest payments		Financial s.income
5. Government	Net indirect taxes and s.c.	Direct taxes and s.c.	Taxes on profits					Govt. receipts
6. Rest of the World	Imports	Households net transfers to RoW		Interest payments	Govt. net transfers to RoW			Payments to RoW
7. Capital Account		**Household saving**	**Undistributed profits**	**Undistributed profits**	**Govt. surplus**	**-(C.Account Balance)**		**Receipts on capital account**
7a. Deposits		*+ΔDeposits*		*-ΔDeposits*				*0*
7b. Loans & mortgages		*-ΔLh*	*-ΔLb*	*+ΔL*				*0*
7c. Government liabilities		*+ΔBh*		*+ΔBb*	*-ΔB*	*+ΔBw*		*0*
7d. Equities		*+ΔEh*	*-ΔE*	*+ΔEb*		*+ΔEw*		*0*
7e. Foreign liabilities				*+ΔF*		*-ΔF*		*0*
7f. Real assets		*Residential investment*	*Non-residential investment*	*Non-residential investment*	*Public investment*			*Investment*
TOTAL	Value of output, plus imports	Households income	Outlays of non-financial b.	Outlays of the financial s.	Govt. outlays	Receipts from RoW	Payments on capital account	

Source: adapted from Zezza (2011)

Following the 'New Cambridge' approach, the Levy model uses a simplified version of the economy, with no distinction between household and business. The financial balances equation reduces to

$$NAFA = GD + BP \tag{3}$$

where *NAFA* is the net acquisition of financial assets for the private sector as a whole. A negative *NAFA* implies that household saving plus profits are not sufficient to finance investment, so that the private sector is a net borrower.[13]

This class of theoretical models has been applied by Godley and others to develop the Levy model of the U.S. economy, described in Godley (1999) and Zezza (2009). The key feature of this model is the determination of financial balances for the private, public and foreign sectors of the economy, which in turn imply variations in the stocks of net credit/debt for each sector, which will influence saving and spending decisions. In this model, therefore, there is no distinction between a 'short' and a 'long' term, since growth is determined by the sequence of short-term (dis)equilibria, and the economy is path-dependent.

Godley (1999) used this model to point out seven unsustainable processes of the period of fast U.S. growth in the second half of the 1990s, correctly predicting the 2001 crisis. As we will argue, most of these imbalances were not addressed at the time, and were the major determinants of the Great Recession, as Godley pointed out in several publications[14] warning about the crisis to come.

The seven unsustainable processes were related to the fall in private saving, the conduct of monetary and fiscal authorities, and the implications for private and foreign debt, as we shall see in detail in the next section. Most of these processes are based on deviations of some stock-flow norm – or flow-flow norm – from values compatible with stable growth, and this is why the SFC approach is particularly useful.

In the next section we will update and extend Godley's analysis to shed some light on the current prospects for U.S. growth, the role fiscal policy has to play, and the consequences for debt. In particular, we will try to show that government deficits and debts should not be targeted per se under the presumption that their excessive values could be detrimental for growth, but on the contrary they should be used as instruments to achieve full employment, in a set of coordinated policies which ensure that the other financial balances reach sustainable levels relative to income.

4. Main features of U.S. Growth

The approach adopted by Godley, on which the Levy model is rooted, was based on the 'New Cambridge' hypothesis that private sector net financial assets were positive and roughly stable relative to income or GDP. Since net financial assets of the private sector are always equal, in an accounting sense, to net foreign assets plus net public debt, the New Cambridge hypothesis is verified whenever these two stocks are stable relative to GDP, or – less frequently – when they move in opposite directions, say because an increase in public debt is entirely financed by the rest of the world, so that net foreign assets decrease at the same speed of the increase in public debt.

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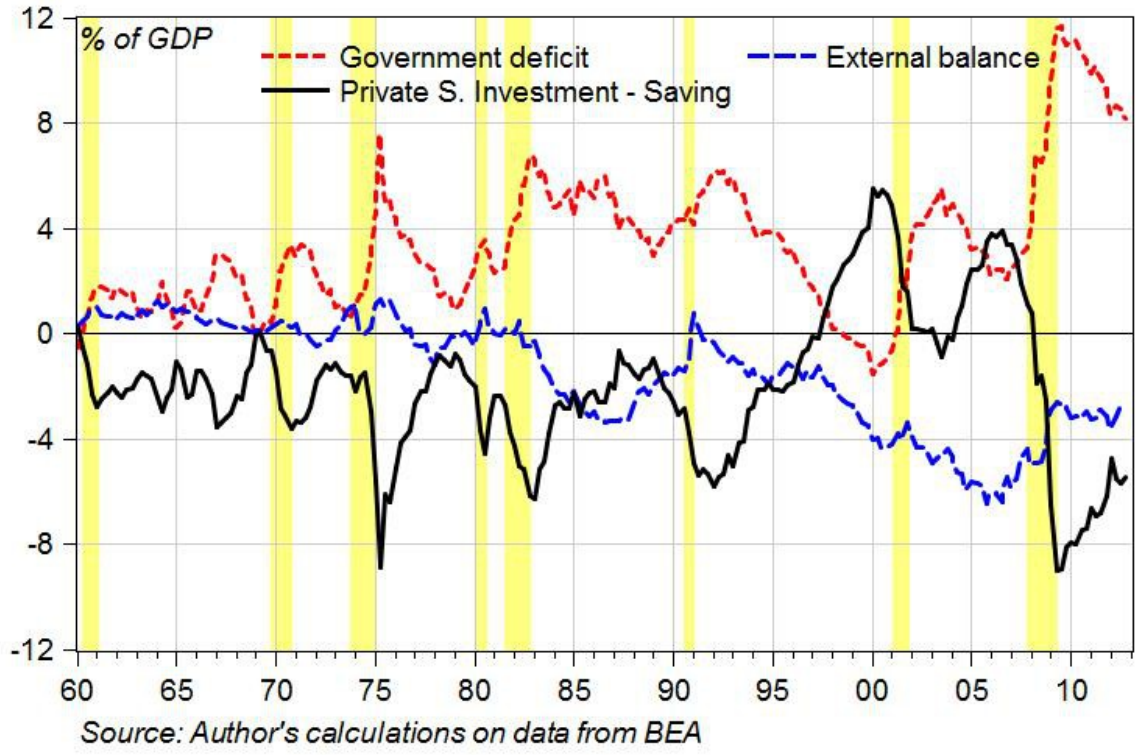
[13] The 'New Cambridge' hypothesis was based on equation (3), and claimed that any increase in government deficit would be mirrored in an external deficit. This result was based on the empirical regularity that the *NAFA* was stable – in the UK - relative to income, thus suggesting that aggregate expenditure of the private sector was adjusting to both income and the stock of net financial assets. According to our results for the U.S. economy, the hypothesis seems to hold for the medium term. See Zezza (2009).

[14] See Godley et al. (2004) and Godley et al. (2007) among others.

Figure 1. U.S. Main Sector Balances



Using simple accounting, calling *S(t)* the stock of net financial assets, and *D(t)* the corresponding financial balance, so that

$$S(t) - S(t\text{-}1) = D(t) \tag{4}$$

and using lower-case letters to denote ratios to GDP, it follows that

$$s(t) = s(t\text{-}1) = s^* \tag{5}$$

implies

$$d^* = s^* g/(1+g) \tag{6}$$

where *g* is the growth rate of nominal GDP, and a star (*) is used to denote stable stock-flow and flow-flow ratios. Equation (4.3) can be inverted to determine the stable stock-flow ratio for a given flow-flow ratio

$$s^* = d^*(1+g)/g \tag{7}$$

In Figure 1[15] we report the financial balances for the three sectors of the U.S. economy. The chart shows that the Cambridge hypothesis was holding relatively well up to the 1980s, when the external account was roughly in equilibrium – it had an average surplus of 0.3 percent of GDP, and the private sector balance was mirroring public deficit almost exactly. The private sector as a whole was saving 2.2 percent of GDP in excess of investment (against an average government deficit of 1.8 percent of GDP) and these figures, along with an average growth rate in nominal GDP equal to 8 percent, implied a positive stock of financial assets for the private sector close to 30 percent of GDP.

[15] See the appendix for details on data sources.

In the 1980s the external account worsened, and again the Cambridge hypothesis was holding, since most of this deterioration was matched by an increase in public deficit. On average, over the period between 1980 and 1994 the current account was a deficit of 1.4 percent of GDP, while public deficit rose to 4.6 percent of GDP, still implying a positive stock of net financial assets for the private sector. With the Clinton era (1993-2000), however, public deficit started to shrink, while at the same time the external account deteriorated, with an acceleration in the second half of the 1990s. These movements implied a rapid decline in private saving relative to investment, which turned negative in 1997. In terms of our accounting, balances were moving in a direction which implied that the U.S. private sector would become a net debtor: a process which would trigger a crisis sooner or later, and motivated Godley's (1999) analysis.

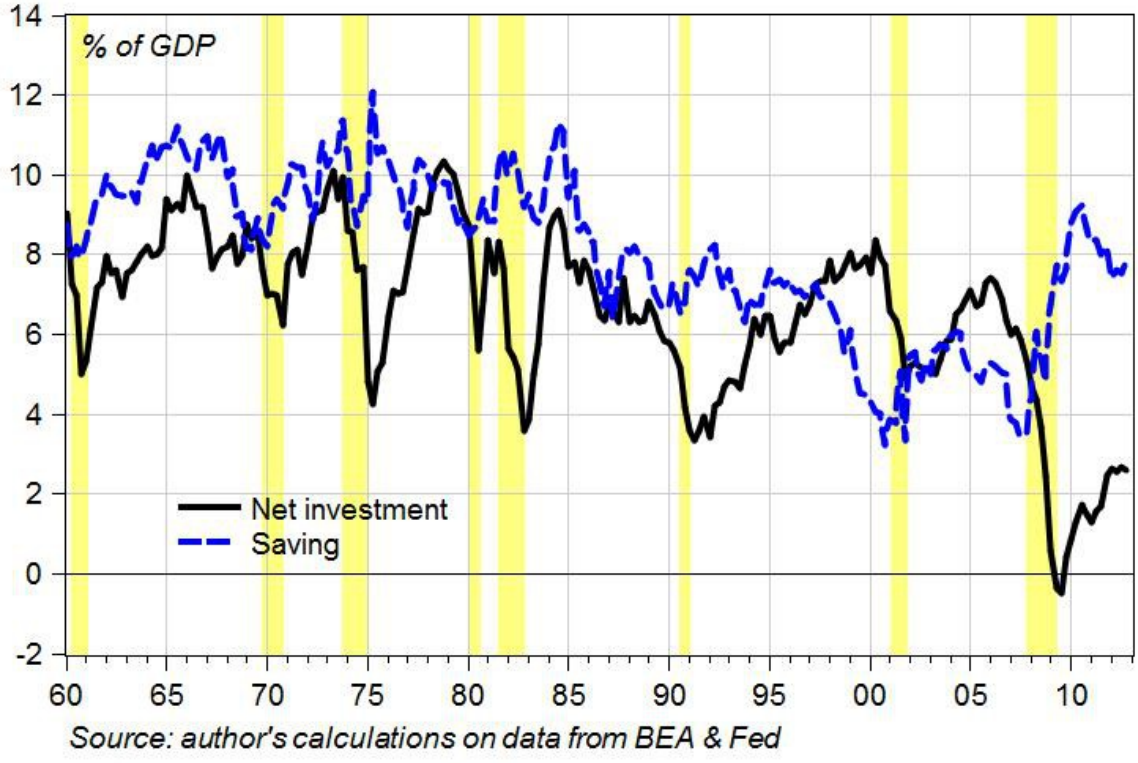
The crisis indeed came in 2001, starting with a stock market crash, but the fall in aggregate demand from the private sector was compensated by an expansionary fiscal policy: government deficit in Figure 1 rose in one year from a surplus of 0.6 percent of GDP to a deficit of 3.7 percent, and a further increase in 2002. As we will argue, however, the underlying processes that had shifted the U.S. economy into an unsustainable path were not addressed. As a result, the private sector balance did not return to its historical average but deteriorated again shortly after the end of the 2001 recession, while the external balance continued to worsen, laying the ground for the Great Recession.

4.1 The private sector balance

What are the determinants of the balances depicted in Figure 1? We can start decomposing the private sector balance into investment and saving, reported in Figure 2.

The analysis of data in Figure 2 reveals some interesting patterns:

Figure 2. Private sector saving and investment



- investment and saving were both higher, as a share of GDP, in the 1960-1985 period than they were in the following period. Net private investment was an average 7.8 percent of GDP, and dropped to an average of 5.5 percent in the later period, while saving was 9.7 percent of GDP, and dropped to 6.6 percent.[16] Before the Great Recession, saving had fallen more than investment;
- with few exceptions, aggregate saving was larger than investment up to 1997, and dropped below investment between 1997 and the Great Recession. When aggregate saving is insufficient for investment, the latter is being financed by net private sector borrowing, which implies a reduction in private sector net financial wealth;
- as a consequence of the Great Recession aggregate saving have increased dramatically as a share of GDP, although they are still below their average values in the 1960-80 period, while investment has not recovered yet. The large gap between saving and investment is, we will argue, what needs to be filled to restore sustainable growth.

As we already noted, the U.S. economy has witnessed increasing levels of borrowing. One reason is the decline in saving relative to investment discussed in Figure 2, which implies an increase in the stock of liabilities, or a decline in the stock of financial assets, or both.

The stock of private sector debt has increased steadily, at a reasonable pace, up to the second half of the 1990s, when it accelerated relative to GDP up to 2008, shortly after the beginning of the recession. It is interesting to note that the 2001 recession had little impact on this stock of debt. The increase in debt is the result of the interactions between the demand for credit from households and firms, and the supply of credit from the banking sector. Innovation in this sector has progressed steadily, with a growing number of people accessing financial instruments of increasing complexity. For instance, revolving consumer credit – which includes credit cards – only appears in the Federal Reserve statistics in 1968, amounting to about 1 percent of total consumer credit, which in turn was about 12 percent of GDP. Between 1960 and 1995 the level of consumer credit outstanding was fluctuating between 11 and 14 percent of GDP, and started to increase rapidly in 1995 to reach 18 percent of GDP: another signal of the increased dependence of aggregate demand from financial conditions.

The increase in the demand for credit was matched by an increase in the supply. The financial sector accounted for only 4 percent of gross value added in 1960, and its share in the production of the country – which is a measure of the relative size of the financial sector – started to increase rapidly by 1970, since it doubled its initial size in 2005. An acceleration in the relative growth of the financial sector can be noted in the Clinton era, when the Glass-Steagall act – which prevented commercial banks from engaging in speculative behaviour – was abandoned.

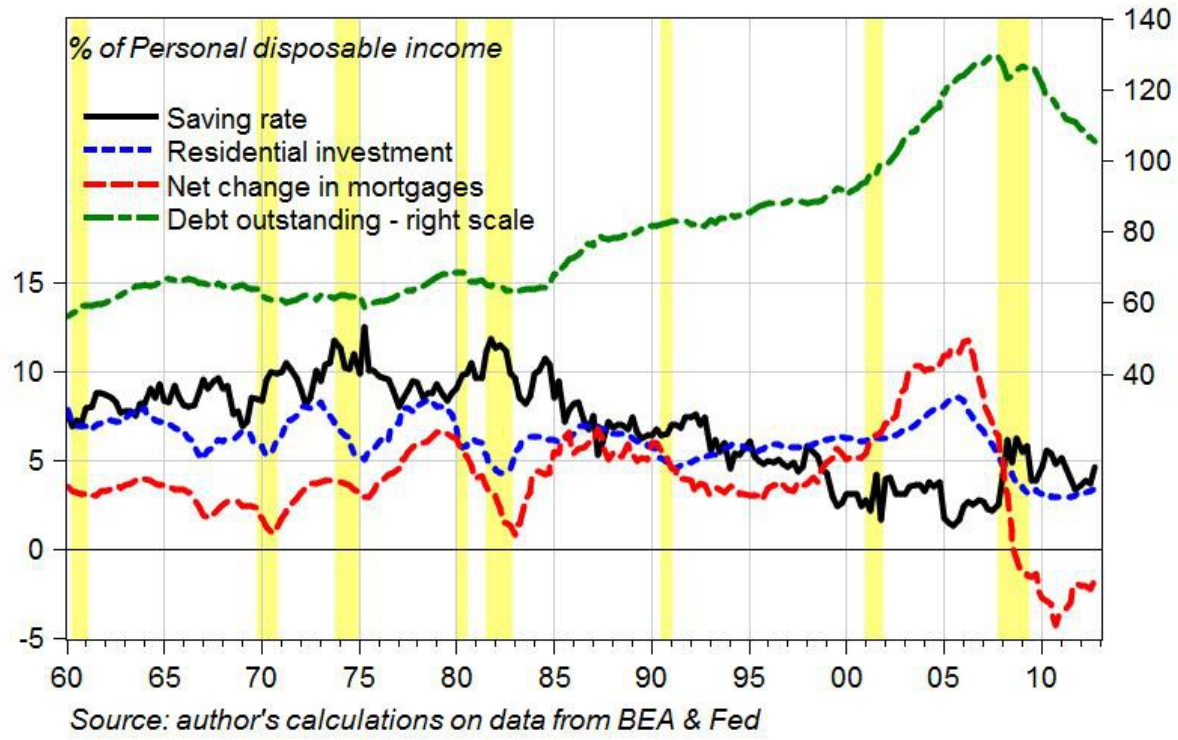
4.2 The personal sector

More detail on the dynamics of borrowing, debt and investment can be obtained by splitting the private non-financial sector into the personal and the corporate sectors. In Figure 3 we report residential investment – which is the largest component of capital expenditure of the personal sector – personal saving in percent of disposable income, and the annual increase in the stock of mortgages outstanding, all measured on the left axis, while the stock of gross debt outstanding is reported on the right axis, again as a share of disposable income.

The chart in Figure 3 shows clearly that personal saving were more than sufficient as a source of finance for residential investment up to the 1990s, with mortgages playing a relatively smaller role. The situation started to deteriorate around 1985, when the saving rate started to decline, and the overall stock of debt for the personal sector started to increase relative to income. In 2001 the net

[16] Both investment and saving are measured net of consumption of fixed capital.

Figure 3. Personal saving, borrowing, investment and debt



increase in mortgages became larger than residential investment. Households were therefore not borrowing to purchase newly built homes, but rather to be able to afford existing homes which were registering fast increases in their market prices. In this period, the stock of debt accelerated even further, up to the turning point in 2006, when the mortgage market peaked, and the bubble in the housing market burst.

4.3 The corporate non-financial sector

We can compute similar measures of saving and investment for the non-financial corporate sector. Saving for this sector are basically non-distributed profits, that can be compare to non-residential investment. Contrary to the standard mainstream textbook story, which states that investment needs to be financed by household saving, data analysis shows clearly that investment was largely financed by corporate saving, i.e. retained profits, at least up to the 1980s, with an average gap between profits and investment of about 1 percent of GDP, over the 1960-1984 period, which had to be financed externally. Between 1985 and 1995 there was a prolonged period where profits exceeded investment, albeit by a small amount, up to the start of the 'internet economy' period from 1995 to the 2001 recession. In this period investment was booming even though profits were not following, and as a result the sector increased its borrowing relative to GDP. Investment and profits balanced again roughly after 2001, and since 2008 – shortly after the start of the Great Recession, profits started to increase again relative to GDP, even though investment was still dropping at unprecedented low levels. In recent quarters investment has increased, but the gap between retained profits and investment is still at an historical all-time high.

4.4 The financial sector balance

It is also interesting to analyse retained earnings (saving) for the financial sector, compared with investment, as reported in the Flow of Funds published by the Federal Reserve. In most mainstream

models, as well as in most SFC models, the banking sector is never assumed to have a financial balance different from zero. In the standard mainstream model, the banking sector is an intermediary, collecting saving from the household sector and lending to the business sector, and competition should reduce saving to a level sufficient to pay for capital expenditure, which are small. Note that saving is given by after-tax profits which are not distributed, and therefore should not be linked to any measure of the return on investment in the financial sector.

In a post-Keynesian, SFC framework, banks are not intermediaries between savers and investors of money created elsewhere, but create credit money by granting loans to business and households. Even in this framework, however, a common assumption is that banks distribute all of their profits, so that their financial balance is zero.

The analysis of the data, however, shows that these assumptions are roughly in line with the U.S. economy only up to 2000, but that during the last housing bubble the financial sector increased profits to unprecedented levels, accumulating net financial assets. The same distance between profits and investment for this sector is evident after the 2007/8 crash, although the sector is now returning to balance.

In 2008 profits of the financial sector collapsed, but net lending did not fall by a similar amount because public institutions came to the rescue, with net capital transfers to this sector which roughly matched the fall in profits. The largest fall in profits occurred in the last quarter of 2008, when profits fell by 1.9 percent of GDP from 1.1 percent of GDP to -0.8 percent, and capital transfers amounted in the same quarter to 1.9 percent. Capital transfers continued to sustain the financial sector up to the beginning of 2012.

4.5 Speculation and bubbles

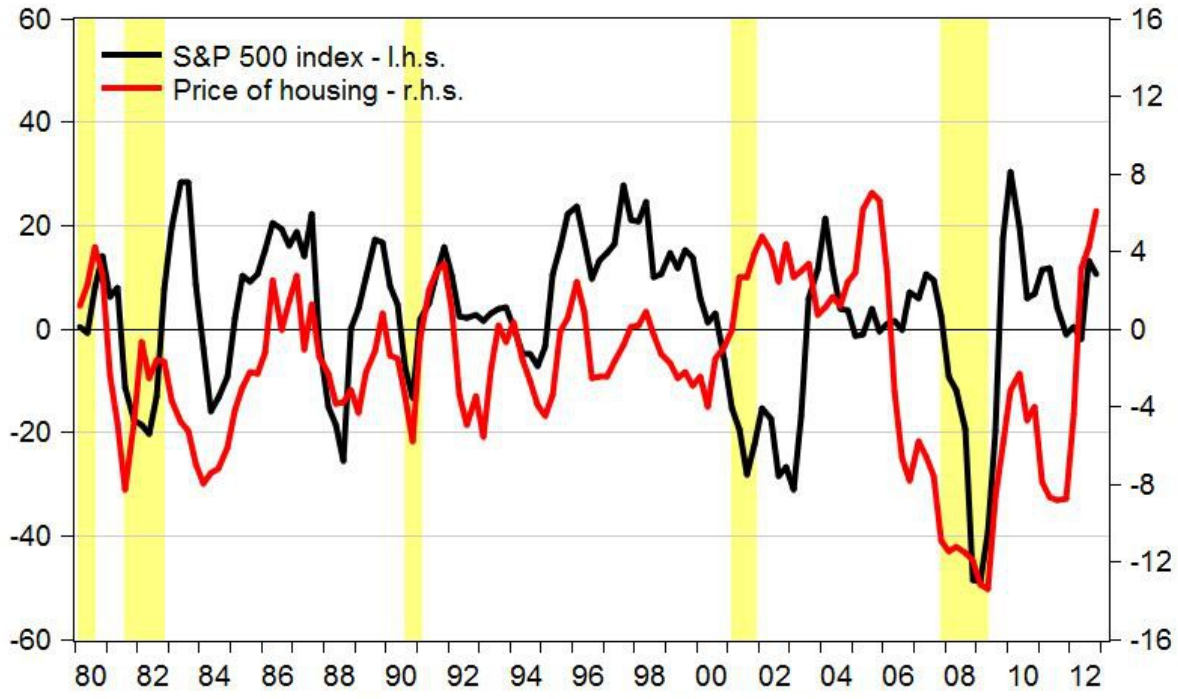
Summing up our findings so far, we have seen that the 1995-2000 boom was accompanied by a large increase in corporate investment over profits, which increased borrowing from this sector, while the 2001-2006 boom was driven by rapidly increasing borrowing from the personal sector. In both cases, speculation has played a role, as revealed in Figure 4, which report two proxies for the rates of return in the stock market and the housing market.

The chart in Figure 4 computes the difference between the annual growth rate in stock market prices, as measured by the Standard & Poor's 500 index, and the annual growth rate in nominal GDP, and proposes a similar measure for the housing market, where the price index is now obtained from the median price of existing dwellings, as published by the Association of Realtors. The first figure measures the ex-post return on investing in the stock market for speculative purposes, against what can be earned by investing in any asset with a price growing in line with the economy. We therefore don't take into account dividends obtained from holding equities over time. As can be expected, up to 1994, periods of market booms were followed by downturns. The existence of a bubble in the second half of the 1990s was evident from the exceptionally long period (21 quarters) when relative stock prices were growing at high rates.

In a similar way, the figure for the housing market shows the relative gain, abstracting from the rent which can be obtained from housing. In this case, therefore, relative gains fluctuate around a negative 1.8 percent up to 2000, a figure which can be taken as a proxy of what is earned out of rents from purchasing a house. After 2000 the relative price of housing grows for an unprecedented time span, again signalling a bubble in the market, which ended in the second quarter of 2006.

Both measures of net capital gains in Figure 4 crashed with the Great Recession, with the S& 500 stock market index losing 46 percent of its value from its peak in the second quarter of 2007 to the through in the first quarter of 2009, and the housing market price index falling by 26 percent from the peak in the first quarter of 2007 to its trough in the third quarter of 2011.

Figure 4. Difference between growth in asset prices and growth in GDP



Source: author's calculations on data from BEA; S&P & Realtor.org

Since then, the stock market has recovered all of the lost ground, and it is now 3 percent higher than it was before the recession, while the housing market price index is still 17 percent below its previous peak, although it has been growing rapidly in the last two quarters.

4.6 Income distribution and borrowing

What can simultaneously explain the decline in the saving propensity of the personal sector and a long period of financial bubbles? In our view, these phenomena are both connected to what happened to the functional and personal distribution of income.

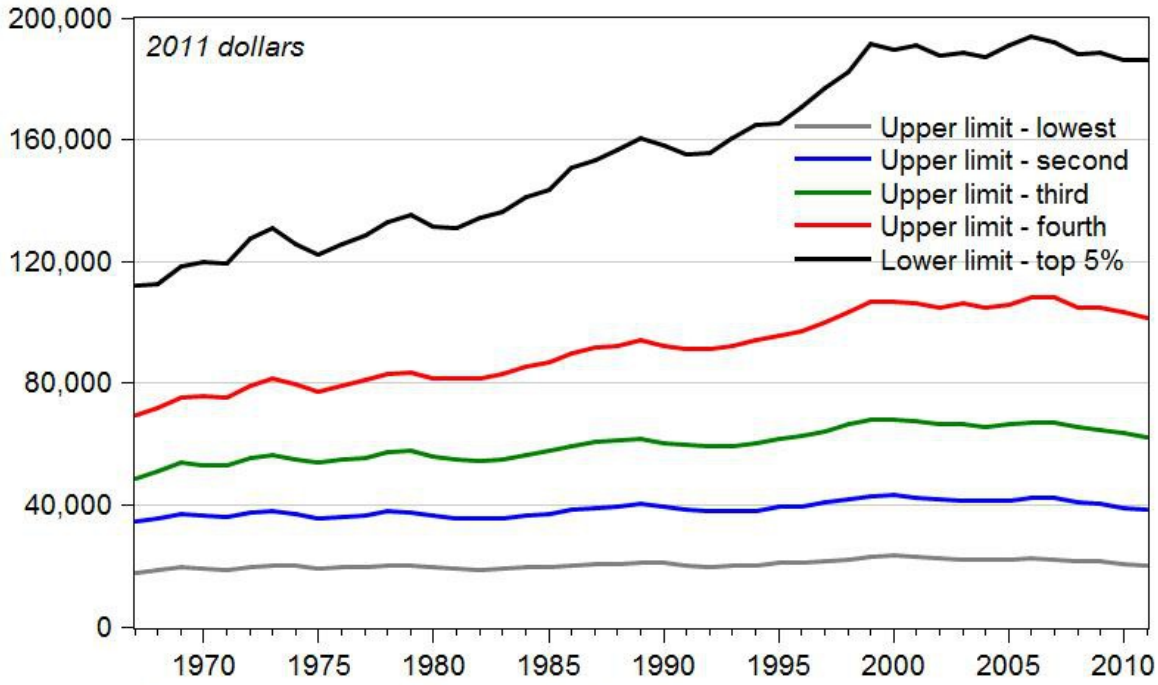
The functional distribution of income has witnessed a trend decrease in the labour share of output. If we measure the labour share from the ratio of the wage bill on GDP from national accounts data, we get a trend decline from a high of 53 percent in 1970 to the 43 percent in 2012. Of course, this measure does not take into account changes in the personal distribution of income within wage earners, since compensation of CEOs started to increase, relative to those of blue collars, and they seem to have accounted for most of the reported increase in wages.

A possible measure of real wage income which does not include shifts in the earnings of top managers can be obtained by the weekly earnings for production non-supervisory workers, measured in 2000 dollars using the CPI index. Analysis of this measure shows a dramatic drop in real earnings which occurred during the 1980s, from a peak of 600 dollars in 1972 to 450 dollars in the beginning of 1991, mainly because nominal wages never adjusted completely to inflation.

Average real weekly earnings remained relatively flat in the 1990s, with an increase of about 6 percent over a five years period between 1995 and 2000, and again remained flat afterwards. Recent increases in real earnings are usually due to a negative inflation rate, rather than from sustained increases in nominal wages.

Another crucial indicator can be obtained by a different measure of real wages, obtained from

Figure 5. Income limits for each fifth and top 5% of households



Source: author's calculation on data from Census

national accounts dividing the wage bill per worker by the consumption deflator, with productivity, measured as real GDP per worker. Analysis of these data show that real wages and productivity grew in line up to 1980, and then wages slowed down, with some recovery in the second half of the 1990s. Data analysis shows clearly that real wages have again been growing less than productivity since 2000, implying a fall in the wage share on output. At the end of 2012, real wages were 6.8 percent higher than at the beginning of 2000, while productivity was 18 percent higher.

The decline in wages relative to output has come together with significant changes in the personal distribution of income. In Figure 5 we report one measure of income distribution,[17] obtained from the income limits of households quintiles, expressed in 2011 dollars. The bottom 60 percent of households have experienced a very modest increase in their average income, while income has increased considerably at the top, implying a strong increase in income inequality.

The plausible impact of the shift in income distribution, and the reasons why income distribution started to change, were discussed as early as 1999:

> "There is nothing mysterious about this trend towards greater inequality. Policies are specifically designed to give the already rich more disposable income, particularly through tax cuts and by pushing down wages. The theory and ideological justification for such measures is that higher incomes for the rich and higher profits will lead to more investment, better allocation of resources and therefore more jobs and welfare for everyone. In reality, as was perfectly predictable, moving money up the economic ladder has led to stock market bubbles, untold paper wealth for the few, and the kind of financial crises we shall be hearing a lot about…" (George, 1999)

The shift in the distribution of income has continued since then, and is by now well documented, and common to countries other than the U.S.

[17] For an influential reconstruction and analysis of the evolution of income distribution in the United States see Piketty and Saez (2003)

The change in income distribution, however, presents a puzzle when compared to the fall in the saving rate documented in Figure 3. A well established result in consumption theory is that the propensity to save out of disposable income increases with income, and therefore a shift in income distribution from the bottom to the top should imply an increase in in the aggregate saving rate, rather than a fall. On the contrary, the saving rate has declined over this period and up to the beginning of the recession.

In Zezza (2008) we have discussed these issues in light of a theoretical model, checking, first of all, whether the increase in income at the top could be the result of increased net capital gains or other sources of revenue connected to the bubbles we have discussed on the stock market and the housing market. The answer is negative on two grounds: income distribution can shift as a result of successful speculation on asset markets only if the price of such assets keeps rising in relative terms, and on the other hand, when the stock market collapsed in 2001, and the housing market collapsed in 2006/7, the shift in income distribution was not reversed.

We concluded that the main source of changes in income distribution had to be tied to shifts in the distribution of wage earnings. In fact, although it is difficult to have robust statistical evidence on the average pay of top managers as compared to that of blue collars, several measures exist, based on CEO compensation publicly reported. According to one of such measures, calculated by a workers association,[18] the CEO-to-Worker pay ratio was 42 to 1 in 1982, had risen to 281:1 in 2002 and to 354:1 in 2012.

It is unreasonable to believe that the fall in the saving propensity can be explained by a strong increase in consumption at the top of income distribution, and therefore theories which emphasize the role of relative consumption have taken ground.

Reich (2007) suggested that

> "middle-class families have exhausted the coping mechanisms they've used for over three decades to get by on median wages that are barely higher than they were in 1970, adjusted for inflation (…)
> [The coping mechanisms have been:]
> [1] moving more women into paid work. (…)
> [2] The typical American now works two weeks more each year than 30 years ago (…)
> [3] We began taking equity out of our homes"

According to Reich (op.cit.), and in line with the evidence we have reported, the fall in the relative income of the median family against the income of the top quintile had started in the 1970s, but the median household tried to defend its standard of living, or even increase it to 'keep up with the Joneses'. On the face of stagnant real wages, this was accomplished first by an increase participation of women into the workforce: female share of non-farm employment increased steadily from 32 percent in the 1960s to 48 percent in the 1990s, and stabilized afterwards (with a small increase again at the beginning of the Great Recession, when apparently men were laid off before women). The second process, the increase in the average weekly hours of production, started in the 1990s, but again there is a natural limit to the amount of time which can be dedicated to work each week in order to increase income, and therefore the last coping mechanism, borrowing, started to get more importance, as we have documented above.

According to this approach, therefore, the increase in household borrowing relative to income, which fuelled U.S. growth since the 1990s, was the result of the attempt of the median U.S. household to keep pace with families at the top of income distribution, which were instead increasing their real standard of living because were experiencing consistent increases in their real

[18] Data computed by AFL-CIO, "the umbrella federation of U.S. Unions", published in their "CEO-Pay-and-You" section of their web site at http://www.aflcio.org/Corporate-Watch/CEO-Pay-and-You. Data accessed June 2013.

income.[19]

Other possible explanation of the increase in consumption out of income (and therefore borrowing) are based on the increase in the price of some key goods and services relative to wages, notably health care and education. In this case, borrowing is not so much a result of households struggling to keep their relative position in society, but a necessity arising from more basic needs.

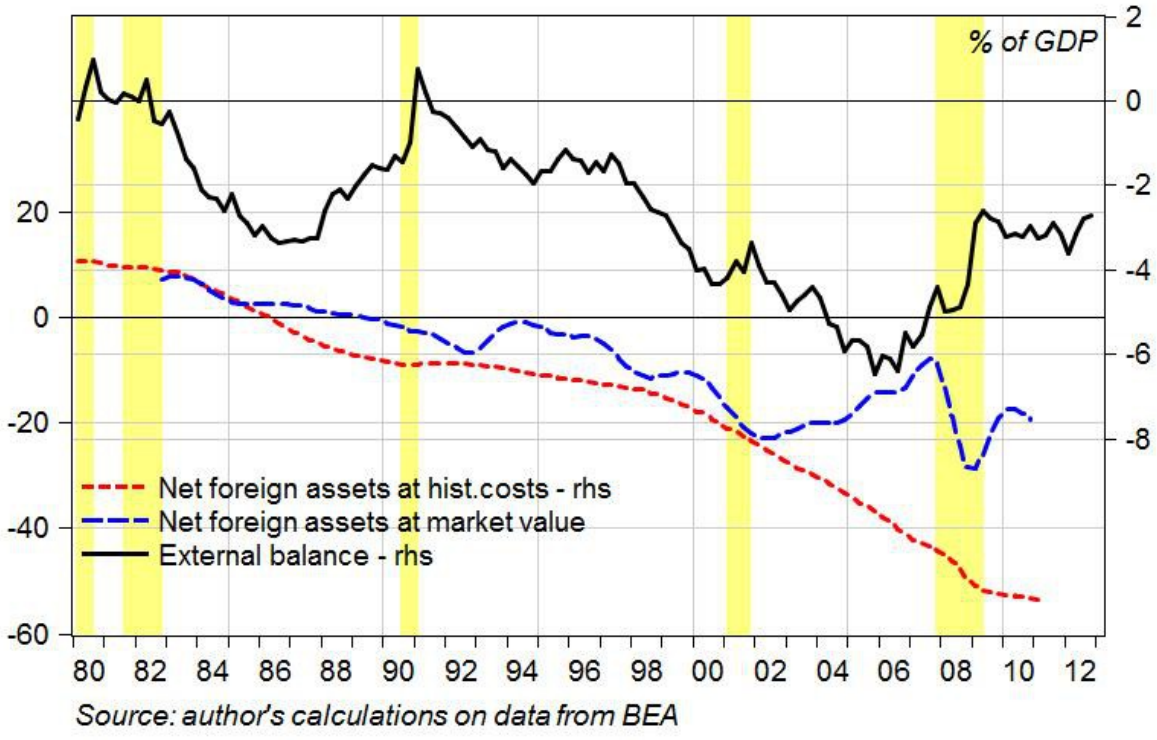
As we noted above, the increase in the demand for borrowing would not have been sufficient to determine an effective increase in lending without a corresponding increase in the willingness to lend of the financial sector. This willingness increased considerably with the deregulation of the financial sector, which allowed banks and other institutions providing mortgages to combine the mortgage with other financial asset into a derivative, according to the 'originate to distribute' model. The derivative was opaque in terms of risk, and this asymmetric information generated moral hazard behaviour in the financial sector which has been widely discussed and documented, and believed to be the sole determinant of the Great Recession, and we will therefore not discuss it further here. What we wanted to stress is that this irresponsible behaviour from credit institutions would not have generated such extensive damages if there had not been an increasing need from the part of households to get into debt to keep their real standard of living.

The outcome of these trends in the private sector are therefore, in our view, the most important determinant of the unsustainability of U.S. growth, which in turn generated other unsustainable processes.

4.7 The external balance and net foreign assets

In Figure 6 we report the U.S. external balance, already drawn in Figure 1, along with two measures of the stock of U.S. net foreign financial assets, the first one obtained from cumulating the external balance trough time from a starting benchmark value – and therefore ignoring net capital gains

Figure 6. U.S. net foreign assets and external balance



Source: author's calculations on data from BEA

arising from movements in the exchange rates or in the market price of financial assets – and the second one measured at market value, as reported by the Bureau of Economic Analysis.

After a prolonged period of relative stability in the U.S. current account up to the 1980s, the external account started to deteriorate in the 1990s, as a consequence of several factors. According to our view, a major determinant was higher U.S. growth relative to that of U.S. trading partners which were not (yet) experiencing credit-driven growth in private sector demand. Other determinants were the dynamics of the price of oil, which still accounts for a large share of U.S. imports, and the growing importance of China as a net exporter to the U.S. The Chinese monetary authorities clearly pursued a 'neo-mercantilist' policy by pegging their currency to the U.S. dollar on the face of a large and growing trade surplus against the United States. This implied, of course, a large accumulation of U.S. financial assets, mainly Treasury bills, with the Chinese central bank, which balanced the market for the renmibi against the dollar.

Some commentators (Bernanke, 2005) offered a different view of the emergence of the U.S. external deficit, and the origin of this imbalance, known as the 'saving glut hypothesis'. Namely, the growth in Chinese income derived from export-led growth in this country happened in a country with a very high saving rate, no welfare state, and under-developed financial markets. The Chinese had therefore to rely on risk-free foreign assets to invest their saving, and so they provided a large increase in the demand for U.S. Treasury bills, driving down the interest rate in the U.S., which in turn stimulated the U.S. demand for credit and financial bubbles.

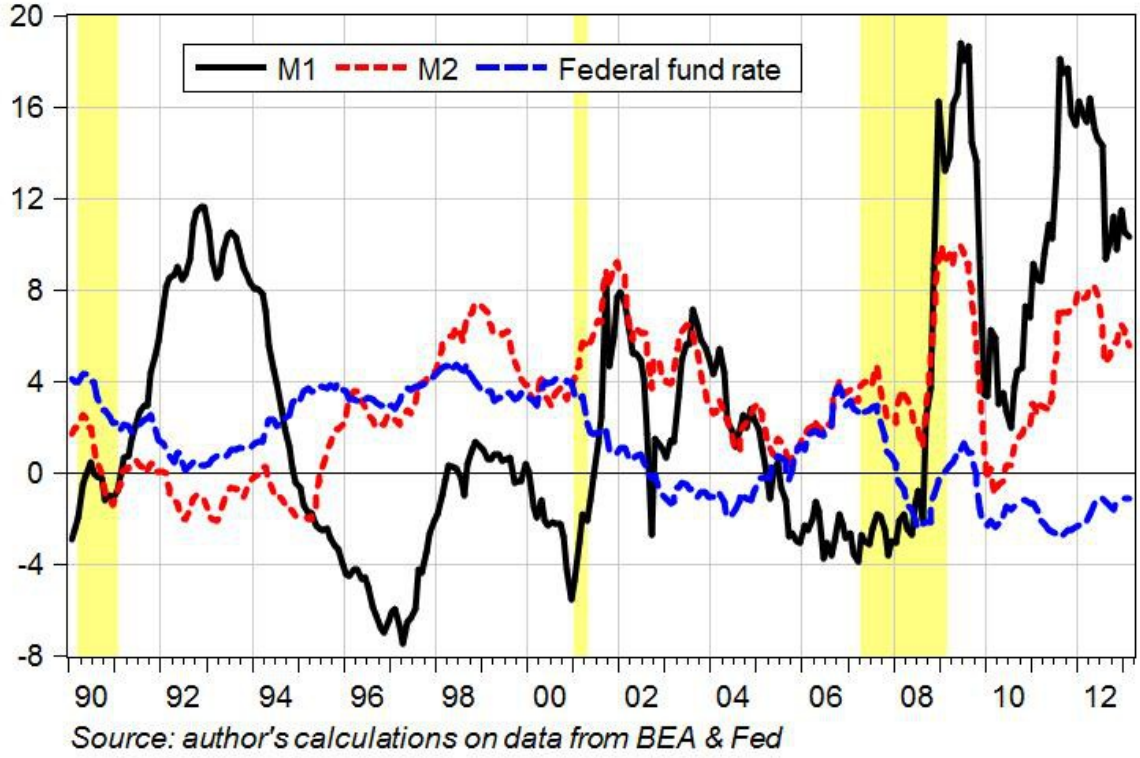
If the 'saving glut hypothesis' were correct, the largest increase in Chinese holding of U.S. Treasury bills should have been with private agents. On the contrary, statistical evidence on the holders of such bills published by the U.S. Department of the Treasury show that the largest share was in the hands of Central Banks – notably in China and Japan – and was therefore a result of monetary and exchange rate policy rather than optimizing decisions on the part of Chinese private agents.

Godley pointed out several times[20] of the danger associated with large and growing external imbalances for the U.S., even though he was well aware of the 'exorbitant privilege' associated with issuing the international reserve currency. Since the U.S. dollar is the dominant international reserve currency, since the gold parity was abandoned in 1971 the U.S. has the privilege of being able to borrow in its own currency, possibly without limits since dollars can no longer be converted into gold, and therefore U.S. gold reserves no longer impose a limit to external borrowing. The ability of the U.S. to borrow internationally in dollars has another important consequence: since U.S. foreign financial assets are in other currencies – euro, yen etc. - when the dollar devalues against such currencies the value in dollars of U.S. foreign assets increases, while the dollar value of U.S. liabilities remains unchanged. This is the reason why our measure of net foreign wealth measured at costs in Figure 6 keeps decreasing when the U.S. dollar depreciates, while the market value of U.S. net foreign assets improves. Of course, net capital gains obtained by the U.S. trough a dollar depreciation correspond to net losses suffered by U.S. creditors. This situation has therefore created a fragile 'balance of financial terror',[21] since a sudden drop in the value of he dollar could generate adverse repercussions on financial markets in developing countries, so much so that the governor of the bank of China has tried to revive the debate on a reform of the international monetary system[22] to reduce global imbalances. Global imbalances have survived the Great Recession, and are still posing a threat to growth at the international level, especially since some countries, recently Japan, are pursuing exchange rate and monetary policies which are perceived to be following the 'beggar thy neighbour' approach. Space consideration, however, prevent us from developing these points further in this chapter.

If the U.S. can borrow in its own currency, why is the external deficit a problem? Godley pointed

[20] See Godley et al. (2004); (2008).
[21] See Bibow (2008) among others.
[22] See Zhou Xiaochuan (2009).

Figure 7. Real growth in M1 & M2, real interest rate



out[23] that the accumulation of net foreign liabilities implies growing interest payments made abroad, which are a leakage from U.S. disposable income and therefore reduce aggregate demand. Net interest payments made abroad have indeed increased with net foreign debt, but so far they have largely been offset by net inflows from direct investment[24], so that net income receipts are still positive. The problem however remains, at least in principle, along with the fact that running a persistent trade imbalance implies net leakages from aggregate demand which must be compensated by additional government or private sector expenditure, in order to maintain the employment level.

4.8 Monetary policy

We noted before that, according to some commentators, mismanagement of monetary policy after 2001 was responsible for the housing market bubble and the crash that followed. In Figure 7 we report three measures of the situation in the money market, namely the growth rate in the stock of M1 and M2, with the former presumably under better control of monetary authorities, and the federal fund rate net of inflation. Godley (1999) used a similar chart, related to M3, noting that

> "The growth rate of the real money stock during the past year far exceeds the high rates of the mid 1980s and has reached the extremely high rates of the early 1970s. The expansion in money supply growth is the flip side of the credit expansion […] and

[23] Godley et al. (2004) among others.

[24] If we compute the rate of return from foreign direct investment by the ratio of income payments to the existing stock, it turns out that the return U.S. investors obtain from their investment abroad largely exceed what foreign investors obtain from direct investment in the U.S. This is paradoxical, and it has been suggested that this outcome may be the consequence of the way multinational firms report their profits, sometime to avoid excessive taxation, or the result of underestimation of the value of U.S. stock of capital abroad

confirms that the growth of net lending did indeed continue up to the first quarter of 1999." (p.5)

In other words, according to Godley (1999) and in line with the post-Keynesian view about the endogeneity of money, the increase in the money supply was driven by the demand for credit. To confirm this view, it is worth noting, from Figure 7, that the M2 measure grows much faster than M1 in both bubble periods, i.e. from 1994 to 2001, and from 2005 to 2008, when monetary policy was apparently trying to cool down the economy trough high real interest rates.

In our view, there is no doubt that the decrease in real interest rates from 2000 sustained the increase in borrowing during the housing market bubble, and the increase in interest rates in 2006 probably set the timing for the start of the Great recession. When debt is rising relative to income, as we documented in Figures 2 and 7, if the interest rate is falling the debtor can get a stable and affordable ratio of the debt burden over income, where the former can be measured by the monthly repayment of the principal plus interest. With the increase in the value of homes - the collateral for mortgages – and the decrease in interest rates, many households could restructure their debt, reduce monthly mortgage payments and obtain additional cash for current expenditure.

Financial innovation in these markets made therefore possible to realize the cash value of capital gains on housing without selling the asset. In theory, capital gains should not matter much for aggregate demand, since when a home owner is obtaining (virtual) capital gains from the increase in the market price of her home, the prospective buyer of the same home should increase her saving in order to be able to afford the asset in the future. If buyer and seller have the same propensity to spend out of income and wealth, the net effect on aggregate demand should therefore be negligible. However, if the increase in the market value of a home can be immediately transformed into additional cash trough mortgage restructuring, there will be a net boost on aggregate demand, which is what happened during the housing boom.

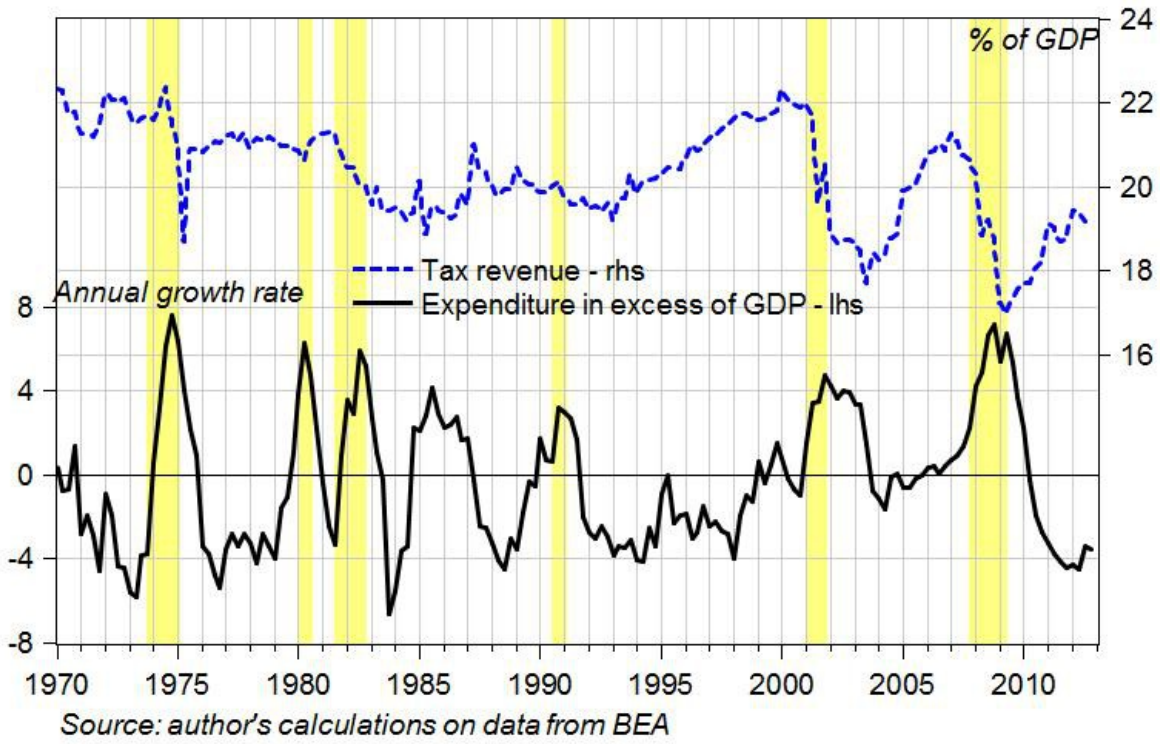
When the Federal Reserve decided to raise interest rates, because increases in the price of oil were perceived as potentially inflationary, the burden of debt repayment increased, households started to default on their mortgages, which in turn led to the crash in the sub-prime mortgage market which spread to the value of the derivatives based on these assets, and the Great Recession started.

As private financial institutions started to go bankrupt, monetary policy changed its course with unprecedented increases in the supply of liquidity. Nominal interest rates were brought just above zero, so that real interest rates became persistently negative, and the economy entered a liquidity trap, where conventional monetary policy was no longer effective in stimulating the economy. At this point, the Federal Reserve was forced to change the rules of the game, with the adoption of so-called Quantitative Easing (QE), by providing liquidity against illiquid, possibly worthless financial assets, to restore the balance sheet of financial institutions and avoid further damages to the real economy. While the impact of QE on output is dubious, we note that the much-feared link between the growth in money supply and inflation has been completely disproved by events after 2008: a lesson that the European Central Bank and the political forces guiding the Eurozone have not yet learned.

4.9 Fiscal policy

What has been the role of fiscal policy? We already noted, when discussing financial balances in Figure 1, that the policy of deficit reduction in the Clinton era contributed to the 2001 crisis by being excessively contractionary. More detailed measures of fiscal policy are reported in Figure 8. On the left axis we measure the annual growth rate of government expenditure on goods and services, less the growth rate in nominal GDP: when the line is above zero, therefore, government expenditure is used in a counter-cyclical way to address a recession. On the right hand axis we measure government total tax revenue, as a share of GDP.

Figure 8. Government tax revenues and expenditure



The chart shows that all recessions in the 1970s and 1980s witnessed an immediate increase in government expenditure, and a modest decrease – if at all – in the implicit tax rate. Fiscal policy at the time was therefore following the standard Keynesian assumption that the multiplier of government expenditure is larger than the multiplier of tax transfers, so that increasing the former will be more effective on output than decreasing taxes. This assumption was clearly abandoned in the last two recessions, where fiscal adjustment operated primarily from changes in the average ex-post tax rates.

Government expenditure during the 'great recession' increased in line with what happened in the 1970s recessions, and therefore possibly by too small an amount, given the severity of the fall in private sector demand.

On average, government expenditure has been growing less than GDP, and therefore the size of government – as measured from the government expenditure to GDP ratio – has been falling, contrary to what could be assumed from political talks on government being "too large".

Of course, government debt has risen, relative to GDP, with the large increase in government deficits in the last two recessions, and given the legislative constraints to the expansion of public debt, the necessity to reduce it has been put as a priority – at least from some political movements – in the government agenda.

Most of the public discussion on public debt, in the U.S. as well as in Europe, ignores the simple principles we have laid down in the second section of this paper: what is debt for a sector is a credit for somebody else, and the 'problem' of public debt – if it is indeed a problem – cannot be tackled without addressing the consequences in terms of the reduction in the net stock of financial wealth of government creditors. When public debt has been financed by domestic residents, a policy aimed at reimbursing the debt through increases in taxation, or cuts to public expenditure, amounts to transferring resources from taxpayers – or beneficiaries of public expenditure - to government

creditors. It is difficult to see why and how this policy should benefit the economy as a whole On the contrary, since creditors are highly concentrated at the top of the income distribution, policies aimed at reducing the stock of public debt by transferring purchasing power from median households to the top percentile will likely reduce aggregate demand, and should therefore be avoided especially at times of high unemployment and slow output growth.

Matters change only marginally for the portion of U.S. public debt which is a credit of the rest of the world. For any other country, this would be a major problem since paying back the debt would require running external surpluses in order to obtain sufficient foreign currency. For the U.S., as long as their foreign debt is denominated in U.S. dollars, paying back the debt means switching a Treasury liability bearing interest with a liability of the Fed bearing no interest. It is hard to see, again, why this is a problem that requires policy intervention.

5. Prospects for sustainable growth

In the last section we have argued that the Great Recession that started in the United States in 2007 was not simply the consequence of fraudulent behaviour in financial markets. If this were the case, fixing the balance sheet of banks and eliminating the rotten apples would be sufficient to restore prosperity. We have argued instead that the crisis was the inevitable consequence of an unbalanced growth path. The imbalances were signalled by the excessive increase in private sector spending relative to income, which generated an increasing private sector debt, and excessive borrowing from households in turn depended on the shift in income distribution which increased the demand for credit, and deregulation of the financial market which increased the supply of credit.

Many of these processes – certainly the concentration of income – were at work before the 1929 crisis, and prosperity was restored – after a world war! - with Keynesian policies, more equitable income distribution, and strong regulation of financial markets.

Are the problems we have highlighted being addressed?

5.1 Income distribution

If data presented in Figure 5 are rebased to show relative gains or losses of each quintile with respect to 2006, the year before the recession started, what we find is that, since wealth is highly concentrated, the top 5 percent suffered a large loss with the collapse in the housing and financial markets in 2007, but recovered in the following years, and in 2011 were the group who suffered the smallest drop in their real standard of living. The recession, and subsequent recovery, has rendered income distribution even more unequal than it was before.

With income and wealth highly concentrated, it is plausible to expect that the search for high returns from speculative activities will continue, possibly in different markets. As a matter of fact, shortly after the collapse of the housing market, at the end of 2008, liquidity moved into the commodity market: the index of non-fuel primary commodities increased by 85 percent between December 2008 and February 2011, only to crash in April. Part of the recent turmoil in European financial markets for sovereign bonds may also be the consequence of speculative activity.

For the lower 90 percent of income distribution, restoring growth in real wages linked to productivity is also fundamental to generate a level of domestic demand compatible with output growth. This is not happening yet: our previous analysis has revealed that productivity is still increasing faster than real wages, and recent improvements in real wages were often attributable to very low inflation rates connected to declines in the price of oil, rather than in higher wage earnings.

The result of this dynamic in real wages against productivity is the increase in the level of profits, which has now reached its highest level as a share of GDP, but it is not translating into investment.

The economy in this stage does not seem to be profit-led, and an increase in the wage share should be one of the pillars for restoring a sustainable growth path.

How can the personal distribution of income be readjusted? The obvious answer is a return to a pattern of direct tax rates similar to what was in place before the Reagan administration. We note that the marginal tax rate in the U.S. had been decreased in the 1920s to 25 percent, down from 7 percent at the beginning of the decade. After the 1929 crash, the marginal tax rate went back to 63 percent. At the end of the 1970s, the marginal tax rate was again 70 percent, and it was down to 35 percent before the 2007 recession, and therefore a return to a more progressive system of taxation should not be unusual, given U.S. history, although it has become more difficult to implement on political grounds.

It is more difficult to suggest how the pre-tax distribution of wages may be readjusted. As we noted, the gap between what an ordinary worker earns in one hour, compared to what a CEO earns, has widened dramatically. A recent chart[25] published by The Economist for Europe shows how this phenomenon extends to Europe, with large differences across countries: it takes 5 weeks of work for the lowest wage-earner to get what her CEO earns in one hour in Germany, and the value rises to almost 30 weeks in Romania, or 21 weeks in Spain.

An interesting result from experimental economics is that "public opinion toward inequality is influenced by actual levels of inequality, leading to a self-reinforcing effect of changes in inequality" (Trump, 2013, p.2) While this result explains why an increase in the concentration of income can get political support in the public opinion,[26] it is not helpful in suggesting how the political attitude may shift or be shifted towards a personal distribution of income which is more coherent with a sustainable level of aggregate consumption. In principle, public opinion may change due to better information, since there is a gap between the perceived and the effective state of income distribution, but the evidence so far is not pointing in this direction.

5.2 Components of demand: net exports

Leaving aside income distribution, we have tried to show that sustainable growth will not be the automatic result of the economy going back towards a non-existent natural rate of unemployment, but rather from the combined growth of the components of demand, financed in such a way to restore a stable and sustainable wealth-to-income ratio for the private sector as a whole, given a sufficient growth in productive capacity.

We have pointed out that one problem for the U.S. is given by the persistent trade deficit. Measures to increase the U.S. export potential, or reduce imports, will contribute to more balanced growth.[27] We are not claiming, however, that the U.S. should restrict all type of imports: a drastic drop in the U.S. demand for foreign goods will have a strong impact on developing countries – notably China – that rely on the U.S. market for their products, and impart a recessionary effect abroad which would not favour an expansion of U.S. exports. A relevant industrial policy, instead, should aim at reducing U.S. dependence from foreign oil products: imports of oil at the end of 2012 amounted to 20 percent of the total value of imports of goods, or 2.6 percent of GDP, while the current account deficit as a whole in that quarter was 2.7 percent of GDP.

Policies aimed at oil substitution should however be aware of the environmental impact of alternatives to oil: shale oil seems to be a promising avenue requiring government intervention to become profitable,[28] and additional efforts should be made towards environment-safe energy sources, like wind turbines and solar plants.

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[25] See http://www.economist.com/blogs/graphicdetail/2013/06/daily-chart-6

[26] See also Osberg and Smeeding (2006)

[27] See also Godley et al. (2004); Godley et al. (2008)

[28] Friedman and Cohen (2013).

Policies aimed at increasing exports could be aimed at reducing production costs trough fiscal incentives,[29] but policies aimed at increasing technological innovation – mainly investment in research and education – should reinforce the industrial specialization of the U.S. in production with economies of scale that should also imply spill-over effects to other industries, enhancing growth prospects.

Balanced trade will also require coordinated intervention to reform the international monetary system so that surplus countries play an active role in reducing imbalances, which otherwise will require depressionary policies aimed at reducing domestic unit labour costs or growth in deficit countries.

> "One reason why U.S. imbalances remain so large is that developed countries such as Germany and Japan have been unable to transform from export-led growth to domestic demand–led growth. This, along with free capital flows, is the real cause of persistent and large global imbalances, not domestic industrialization strategies driven by competitive exchange rates or the instability of the international reserve currency" (Kregel, 2010, p. 5)

The debate on this issue is rapidly growing, and will not be addressed further here.

5.3 Components of demand: consumption, investment, and the role of credit

In our view, the key message from our analysis of restoring sustainable growth is based on the analysis of Figure 2, where we have shown the current, unprecedented gap between aggregate saving of the private sector and aggregate investment, with the former exceeding the latter by 5 percent of GDP. Figure 2 shows that aggregate saving is not too high with respect to U.S. history, and could very well increase by a further 2 percent of GDP. It is investment which is too low in historical comparison, and needs to be stimulated.

The discussion in the previous section on saving and investment for the personal and the non-financial corporate sector has provided more detailed. The household saving rate has increased, as households are trying to restore their balance sheets and run down excessive debt, and as we have argued, this process needs to be facilitated by a better distribution of income, as well as by the creation of decently-paid new jobs. Residential investment is still below its historical, pre-bubble level, although recent data for 2013 show that this sector is now recovering rapidly. Most commentators, during the housing bubble, argued that the rapid increase in sub-prime mortgages was part of the 'American dream' - providing a house to all Americans – and should have been promoted. In fact, when the crisis began in 2006, a possible line of intervention would have been for the government to sustain households who could no longer afford their mortgages, instead of allowing the massive wave of foreclosures and the collapse in the value of financial assets linked to sub-prime mortgages. New policies aimed at reintroducing affordable mortgages to perspective home-owners would be a move in the right direction.

It remains to be seen if, given the current wage policies and employment prospects, U.S. households are willing to increase their borrowing again. Recent figures for consumer credit show a modest increase for 2013[30], and the last figure for mortgage debt outstanding, for the last quarter of 2012, also shows a modest increase[31] after a steady decline. Given the current level of households debt relative to income, documented in Figure 3, these trends should be sustainable.

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[29] See Papadimitriou et al. (2008) for additional proposals on how to address the U.S. trade imbalance.

[30] Total consumer credit outstanding is 2,820bn in April 2013, with an increase of about 52bn from the beginning of the year (data from the Federal Reserve)

[31] Total mortgage debt outstanding was 13,137bn in 2012q4, against 13,120bn in the previous quarter, still low against the 2008 end-of-year value at 14,675bn (From Federal Reserve data)

As we have discussed, however, the expansion of credit in the last 15 years was based on rules of the game which implied moral hazard. The reintroduction of strong regulation of the financial sector is essential, if we want to avoid contagion from speculative activities to the balance sheet of banking institutions providing credit to local communities. From this point of view, we endorse the vision of Minsky, as developed in Wray (2010) among others, who pointed out the dangers of letting banking institutions grow at the expense of 'local banking', and favoured instead the strengthening of 'relationship banking', coupled with maintaining exposure to risk (i.e. exclude the possibility to securitize mortgages or loans), so to eradicate moral hazard. If deposit insurance were limited to this category of banks, this would be a further incentive for a de-facto separation between financial institutions who serve the interest of promoting local growth, and financial institutions who manage their portfolio in search of the highest return.

In the previous section we also discussed the second, larger gap between saving and investment, this time referring to non-distributed profits of the non-financial corporations against their investment. Recent data clearly shows that this sector is experiencing very high profits, but investment is lagging behind. In fact, investigation of the flow of funds for this sector[32] reveals that a large portion of undistributed profits has been used for foreign direct investment, which rose to more than 2 percent of GDP. A larger portion of business profits invested domestically is necessary to spur growth.

Finally, when discussing the flow of funds for the financial sector, we noticed the large gap between undistributed profits (saving) and investment, which imply that this sector has been accumulating net financial claims on other sectors. The break down in the acquisition of assets and liabilities of this sector (which includes the Federal reserve) available in the flow of funds does not shed much light, since net lending over the 2009-2013 period measured from the current account for the sector are contrasted with net borrowing measured over the same period in the financial account, with a large statistical discrepancy.

What seems to be happening, but requires further investigation, is that the financial sector is retaining profits in order to recapitalize and restructure its balance sheet, with a large increase in the holding of government securities and a decrease in overall loans to the rest of the private sector: the stock of loans outstanding is still decreasing both for short term loans and for mortgages.

The financial sector as a whole, therefore, despite the efforts of the Federal Reserve, is not fulfilling its primary role to supply credit to the rest of the private economy.

5.4 Fiscal policy

As we have shown in Figure 8, fiscal policy has being contractionary since 2009, with the average ex-post tax rate[33] increasing from a low of 17 percent in the second quarter of 2009 to 19.3 percent at the end of 2012, while government expenditure is increasing more slowly than GDP. As a result, general government deficit is down to 6.3 percent of GDP in the first quarter of 2013, and the 'size of the government' as measured by the ratio of general government current expenditure on goods and services to GDP is down to 18 percent, the lowest level since 1951. What is keeping up government deficit is largely expenditure on health care: social security payments in 2012 amounted to 41 percent of federal expenses on social benefits, while Medicare payments amounted to an additional 31 percent, and these expenses have been growing steadily also during the recession period, by 1.6 percent of GDP from 2007 to 2012. Unemployment insurance payments also rose dramatically – as expected – with the recession, but such payments are likely to drop as employment recovers.

[32] Based on the Integrated Macroeconomic Accounts for the United States, published by the B.E.A.

[33] Measured as the ratio between receipts from personal taxes, taxes on production and imports, and taxes on corporate income over GDP

As government deficit increased with the recession – both from the effects of the counter-cyclical nature of some components of expenditures and revenues, and from the Obama (small) fiscal stimulus – the political debate started to focus on the size of public debt. The political debate became paradoxical when it seemed that Congress, in 2011, was unwilling to raise the public debt ceiling, which is essentially a self-imposed constraint, opening up to the possibility for the U.S. government to be unable to fulfil its obligations, which resulted in Standard & Poor downgrading the credit rating of U.S. government bonds. In our view, this is a paradox because since the Fed and the Treasury usually pursue coherent policies, and the value of U.S. dollars is no longer linked to the amount of gold reserves, the U.S. government as a whole is always able to meet its obligations, if necessary by creating more dollar reserves. Therefore, while it may be reasonable to impose some budget constraint to spending decisions from Congress or from local authorities, it is a political and economic nonsense to force by law the U.S. government to possibly being insolvent.

The other paradox is that the debate on reducing the size of public debt does not address the consequences for creditors. As we have seen, a sizeable portion of U.S. debt is held abroad for reasons connected to exchange rate management, but an even larger share is in the portfolio of U.S. households or of the U.S. financial sector. For given net external assets, policies aimed at reducing public debt imply, therefore, a reduction in the net financial wealth of the private sector: a target which is obviously at odds with the necessity to create jobs and restore sustainable growth.

In our view, fiscal policy should not be directed towards restoring a balanced budget and reducing public debt but, quite to the contrary, to sustain employment, possibly by direct job creation. Initiatives like the Employment of Last Resort (ELR) program, inspired by Minsky,[34] would be a move in the right direction. Under this program, anyone willing to work should have access to a job directly provided by the Federal government, at a wage low enough not to make an ELR job preferable to a job in the private sector. All analyses on the effects of unemployment show that receiving even adequate unemployment benefits does not compensate for the social cost of losing access to a working environment, and that long-term unemployment reduces human capital and workers potential. An ELR job should therefore be better than simple unemployment transfers on both respects, and provide a strong counter-cyclical fiscal instrument, as jobs would automatically be created during recessions, and reduced during a boom when more attractive employment in the private sector becomes available.

A program of this kind would require a dramatic shift in the political attitude, which does not seem to have had fighting unemployment on top of the agenda.

However, as we noted at the beginning, the main problem of the U.S. economy is the lack of jobs, and absent government intervention, a return to sufficient growth in domestic demand will take a long time to exert its effects on employment,[35] and an expansionary fiscal policy will have larger welfare effects in eliminating the social and economic costs of long-term unemployment than possible problems in (temporary) increasing public deficit.

For these reasons, while the fiscal support for environment-friendly investment that we advocated above is not likely to absorb rapidly a sufficient number of unskilled unemployed workers, programs for directly sustain employment should be targeted to those sectors with the highest multipliers in terms of jobs created per dollar spent.

6. Summary and Conclusions

We have argued that recent data for the U.S. economy start to show some timid signs of a return to a stable growth trajectory. Both residential and non residential investment have been increasing, and

[34] See Papadimitriou and Minsky (1994), Wray (2007) and Antonopoulos et al. (2010) among others.

[35] See Papadimitriou et al. (2013)

the adjustments to the balance sheet of households should have reduced the overall stock of gross debt to a sustainable level, provided that interest rates remain very low.

According to the *New Cambridge* approach, sustainable growth, possibly at full employment, implies a small or balanced external account, and a private sector surplus (excess of saving over investment) which implies a positive stock of net financial asset for the private sector relative to income. The accounting consequence of the first two balances is a public deficit, which should not be seen as a threat or a burden, but rather as the source of net financial assets which accommodate the demand for financial assets from the private sector.

Our analysis has shown that the U.S. economy should readjust its external account, possibly by reducing its dependence from oil imports, improving its export potentials and directing a larger share of investment to domestic plants rather than abroad.

Growth in domestic demand should come from further increases in investment, and fiscal policy should play an active role in increasing the profitability of investment in technologies with low environmental impact, and which decrease the dependence of the U.S. economy on imported oil. Increases in consumption will be more sustainable if actions are taken, trough changes in the tax structure, to reduce the concentration of income and wealth.

A reform in the regulation of the financial system is necessary and urgent, in order to separate again financial institutions who are primarily devoted to providing credit to local businesses and households from investment banks who can search for higher returns from riskier investment, without the backing from public funding which leads to moral hazard.

Finally, we believe that the current stance of fiscal policy should be turned upside down: the level of public debt or deficit should not be treated as a target to reach at the expenses of growing unemployment and the destruction of social services, but as the instrument to restore jobs and prosperity.

Appendix – data sources

All charts have been created by the author. Sources for charts are reported in the figures. The details follow.

BEA = Bureau of Economic Analysis. Data were downloaded in April 2013 from the BEA interactive database at http://www.bea.gov

BLS = Bureau of Labor Statistics. Data downloaded in May 2013 from the Database section at http://www.bls.gov

Census = Bureau of the census. Data downloaded in April 2013 from the Data section at http://www.census.gov/

Fed = Federal Reserve. Data were downloaded in April 2013 from the Fed statistical releases section at http://www.federalreserve.gov

S&P = Standard and Poor's 500 index, downloaded in April 2013 from http://finance.yahoo.com

Realtor = Association of realtors. Data downloaded up to April 2013 from the Housing statistics section at http://www.realtor.org/

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