53.ma Riunione Scientifica annuale della SIE – Società Italiana degli Economisti

Università della Basilicata - Matera 18-20 Ottobre 2012

# THE MONETARY CONDITIONS FOR GROWTH: PARGUEZ'S DEBT STABILITY CONDITION '

Massimo Cingolani

<u>Abstract</u>: This contribution discusses a criteria for debt sustainability in a monetary production economy formulated by Alain Parguez in 2010. This states that public debt should grow in line with private debt in order to avoid the accumulation of financial imbalances. In the light of this principle, one of the causes of the current financial crisis is to be sought in an excessive development of private debt with respect to the growth of public debt, for which statistical evidence is presented in the first two sections of the paper. Simple models presented in sections 3, 4 and 5 explore some of the economic factors that can explain these results. The last section concludes and draws the policy implications of the analysis. Parguez's principle for debt stability implies that, contrary to a widely held opinion, the way out of the current crisis must be sought in a reasoned expansion of public debt, in particular "good" public debt, used to generate real wealth and revenues.

Key Words: Debt sustainability, stock-flow models, monetary circuit, monetary production economy, Domar's debt model, EU crisis.

JEL Classification: E660 Macroeconomics and Monetary Economics: Public Economics: General Outlook and Conditions; H630 National Debt: Debt Management; Sovereign Debt.

<sup>&</sup>lt;sup>1</sup> European Investment Bank, Luxembourg, Opinions expressed are personal. Revised version of a paper presented at the conference: "Contemporary capitalism : Its financial circuits, its transformation and future prospects.", Ottawa - Ontario, Canada, May 31-June 1, 2011. Fourth draft, September 15, 2011. The author is grateful to Alain Parguez, Mario Seccareccia, Marc Lavoie and Randall Wray for discussions and comments and remains responsible for all errors.

# THE MONETARY CONDITIONS FOR GROWTH: PARGUEZ'S DEBT STABILITY CONDITION<sup>2</sup>

## Massimo Cingolani

This contribution discusses a criteria for debt sustainability in a monetary production economy formulated by Alain Parguez in 2010. This states that public debt should grow in line with private debt in order to avoid the accumulation of financial imbalances. In the light of this principle, one of the causes of the current financial crisis is to be sought in an excessive development of private debt with respect to the growth of public debt, for which statistical evidence is presented in the first two sections of the paper. Simple models presented in sections 3, 4 and 5 explore some of the economic factors that can explain these results. The last section concludes and draws the policy implications of the analysis. Parguez's principle for debt stability implies that, contrary to a widely held opinion, the way out of the current crisis must be sought in a reasoned expansion of public debt, in particular "good" public debt, used to generate real wealth and revenues in replacement for private debt created for non-productive purposes, which must be reduced.

## I. Evolution of public and non-financial private debt before the crisis

When talking about the destabilizing effects of "excessive leverage", there is no special reason why one would focus only on public debt and neglect private debt, a theme emphasized in some critical contributions that preceded the adoption of the Maastricht Treaty in Europe. Vaciago (1993) presented figures showing that for most industrialized countries, total debt was comprised between 200% and 400% of GDP, while what differed between them was the allocation of this debt between the public and the private sector. The argument was taken up again by Pasinetti (1998b) and Sylos Labini (2003)<sup>3</sup>. Pasinetti (1998a, 2003) also illustrated the logical arbitrariness of the Maastricht debt stability criteria, which notably neglect a crucial indicator for the evolution of the public debt to GDP ratio: the difference (or ratio) between the nominal interest rate and the nominal GDP growth rate. This was identified as the key variable for public debt dynamics as early as in Domar (1944), as further discussed in section 5 below.

The critical analyses referred to above, largely ignored by the media and virtually absent from the public debate, were based on macroeconomic models essentially expressed in real terms. The insight that can be added to their conclusions from an analysis of a monetary production economy such as that proposed by the monetary circuit is the inclusion of money and public debt into a single and consistent analytical framework integrating stocks and flows<sup>4</sup>. Indeed, as noted already many years ago by Vickrey (1994), the task of the Government is to supply the desired amount of State liabilities required to satisfy the savings and liquidity preferences of the private sector in terms of both amounts and liquidity.

Alain Parguez went further in commenting upon the causes of the 2008-10 financial crisis when he observed that for too many years private debt had been growing much faster than public debt. In the disequilibrium dynamics' approach of the monetary circuit he developed<sup>5</sup>, credit finance those projects of the private and the public sector that are validated by the banking sector by a loan. Debt accumulated by the public and the private sector is the result of their plans made in the past based on their expectations that were validated by banks' loans.

<sup>&</sup>lt;sup>2</sup> European Investment Bank, Luxembourg. Opinions expressed are personal. Revised version of a paper presented at the conference: "Contemporary capitalism : Its financial circuits, its transformation and future prospects.", Ottawa - Ontario, Canada, May 31-June 1, 2011. Fourth draft, September 15, 2011. The author is grateful to Alain Parguez, Mario Seccareccia, Marc Lavoie and Randall Wray for discussions and comments and remains responsible for all errors.

<sup>&</sup>lt;sup>3</sup> Sylos Labini (2003) drew attention to the cumulated percentage difference between interest rates on banking loans and nominal GDP growth as a simple indicator of financial instability in the private sector at any point in time. The paper showed that this indicator increased markedly in the US private sector in the years 1980-2002, pointing to the accumulation of major financial imbalances in that sector. Sylos is one of the economists who "got it right", see Wray (2010), Galbraith (2009), Krugman (2009) and Roncaglia (2010). The reference here is to H.M. Queen Elisabeth's question asked during her visit to the London School of Economics on 5,11,2009: "why no one saw it coming?" See: <a href="http://www2lseacuk/intranet/news/informationForstaffistaffudentsAndAlumni/dallyHeadInes/06-11-08.aspx">http://www2lseacuk/intranet/news/informationForstaffistaffudentsAndAlumni/dallyHeadInes/06-11-08.aspx</a>. Some neoclassical economists "got it right" as well. This is the case of the Nobel prize Maurice Allais who proposed to delocalize the director of the OMC Pascal Lamy "de toute urgence" (Allais, 2009), as part of his criticisms of unregulated globalization.

<sup>&</sup>lt;sup>4</sup> See Parguez and Seccareccia (2000), Graziani (2003) and Halevi and Taouil (2002) for general references to this approach. As emphasized in particular by Graziani, the monetary circuit integrates money in sequential time retaining a Kaleckian approach for distribution. Godley (2004) and Lavoie (2003 and 2004) have given an interpretation of the monetary circuit in terms of complete stock flow models, which was further developed and extended in Godley and Lavoie (2007).

<sup>&</sup>lt;sup>5</sup> Apart from minor differences, the approach of the monetary circuit of Alain Parguez is closely linked to that developed by Graziani (2003) and has many points in common with the theory of emissions developed by Bernard Schmitt (2003).

Data from national accounts (financial accounts and flow of funds) shows that before the crisis public debt had been growing more slowly than private debt, indicating that either expectations of Governments deteriorating or bank's willingness to support them was declining relative to the "validated expectations" of the private sector. This is shown in the charts in the Annex that track the relevant private and public debt concepts<sup>6</sup> in percentage of GDP for the years where figures are available in the respective statistical sources. All data except those from US, Canada and Japan come from Eurostat's financial accounts database. For the US, Canada and Japan the closest concepts and sectors to those retained for Eurostat have been taken, based on the financial accounts published by the respective national sources.<sup>7</sup> Only non-financial sectors have been examined, as in principle the financial sector should be neutral.

The charts show that in most European countries and in the US, the crisis was preceded by a strong build-up of private debt in the face of a general stability or light trend of increasing public debt in percent of GDP. Looking at European data, it is clear that the crisis was not preceded by any particular increase in the public debt share of GDP. On the contrary, private debt has been growing faster than public debt in almost all "peripheral" EU countries, whereas it has grown in line with private debt in Germany and to a lesser extent France<sup>8</sup>. This is particularly evident for the countries that in 2011 and 2012 have been filling the first pages of all newspapers for their level of public debt, described as excessive. As noted by Alain Parguez, the increase in private debt in the "peripheral EU countries" was in part financed by the private sector of core central countries. In the US, in the face of a decline in public debt starting in the early nineties, private debt increased at an accelerated pace until the crisis, when public debt increased again. In Canada developments were quite similar, with a much stronger decline of public debt<sup>9</sup>. The peculiar situation of Japan was analyzed in detail in Koo (2009). It could be summarized by saying that in the face of a virtual bankruptcy of the private domestic sector due to the explosion of the residential and stock market bubbles, the answer of the Government to increase public debt was the right one, but was not strong enough to overcome the "balance sheet recession". One can thus conclude that in the two decades that preceded the crisis private debt grew much faster than GDP and faster than public debt. With the crisis Governments were obliged to issue public debt in exchange for private liabilities<sup>10</sup>.

#### 2. Public debt held in private portfolios before the financial crisis

As a result of these developments, before 2007-8 the share of public debt in the portfolios of the private sector was on a downward trend. For instance in the US, data from SIFMA, reproduced in the first chart on the left below, show that Municipal, Treasury and Federal Agency Securities, which topped at 56% of the total US debt market in 1985 and were still at 50% in 1994, dropped to 32% in 2007.

The second chart on the right below shows that at end 1993 the value of the total world debt market, as estimated based on the data of the Bank for International Settlements, was USD 20 trillion (thousand billions) and increased to close to USD 100 trillion at end 2010 (right axis), with international securities growing faster than domestic securities<sup>11</sup>. The share of this debt issued by Governments, which represented 47% of the total in 1993, decreased by 10% to 38% around 2001, to then increase up to 41% at end 2004 (right axis). Again from 2004 to 2007-8 there was a marked decrease down to 37% in March 2008. With the crisis, this share increased again to 44% as of end 2010. The two charts thus confirm that Government liabilities tended to reduce as a share of total debt both in the US and in the world previous to the crisis.

<sup>&</sup>lt;sup>6</sup> The concept of private debt used corresponds by and large to the public debt of the Maastricht criteria, and it is given by the aggregate of households and business enterprises, thus neglecting the financial sector, which in this respect plays only a role of intermediary.

<sup>&</sup>lt;sup>7</sup> With reference to the concepts defined in Eurostat (1996), private debt of the non-financial sector can be approximated by the gross liabilities of households (S14) and non financial corporations (S11) for the aggregates F33 ("Securities other than shares excluding financial derivatives") and F4 ("Loans"). To facilitate comparisons, the same definition can be retained for the sector of the General Government (S13). This is a concept of debt that corresponds relatively closely to the EU stability pact procedure for excessive deficits, where public debt is defined as comprising the gross liabilities of general government in the following categories: currency and deposits (F2), bills and short-term bonds, long-term bonds (F33), other short-term loans and other medium and long-term loans (F4) as defined in ESA. The Maastricht debt concept thus comprises also currency and deposit liabilities in addition to what included in the aggregate F33+F4, but this approximation seems acceptable also for the sector S13, whose liabilities do not include currency of the central bank (sector S121), which is included in the sector of financial corporations (S12).

<sup>&</sup>lt;sup>8</sup> It is a little bit provocative to define two of the largest EU economies (UK and Italy) as peripheral countries, and to apply this term to countries such as Benelux, Austria and the Scandinavian countries, but the term peripheral shall be understood with reference to the analyses of European mercantilism made by Parguez (2010-11), Bellofiore and Halevi (2010-11), and Bruner-Guichard (2011-12).

<sup>&</sup>lt;sup>9</sup> The fact that also in the case of Canada not all that glitters is gold in developed in Lavoie (2012).

<sup>&</sup>lt;sup>10</sup> Inclusions of banks in the private sectors would reinforce these conclusions, see Cingolani, 2012.

<sup>&</sup>lt;sup>11</sup> Toporoski (2010, p. 43) notes that: "at the end of of the twentieth century, the value of all financial assets in the United States was equal to more than three times the Gross National Product of the United States. In the middle of that century, the value of all financial assets in the US was around the double of that country's GDP. "



These developments are also confirmed by data from the Bank of Italy reproduced in the chart on the left below that shows that bonds issued from central and local government, which represented 15% of total financial assets of the Italian monetary financial institutions in 1997, dropped to 5.7% in 2008. More generally, data from Eurostat, reproduced in the chart on the right below, shows that for EU27, the ratio of public debt to total financial assets held in the economy, defined as per Maastricht criteria, decreased from 7-8% in 1999-2004 to less than 6% in 2007<sup>12</sup>. Thereafter there was an increase in this share up to 7% due to crisis.



The above support the views presented in Lysandrou (2011), who challenges Reinhardt and Rogoff's (2010) assertion that, "historically", public debt intolerance prevails above ratios of public debt to GDP above 90% of GDP for advanced countries that borrow in their own currency and above 60% for emerging economies. As he argues, in a logic of stocks, given the current ratios of financial wealth to income and the gigantic sums that financial asset owners have therefore to invest every year<sup>13</sup>, there can hardly be a limit or "tolerance ratio" of 90% of GDP for public debt issued by advanced industrial countries. Indeed, as noted by Pasinetti, in general in economics there is no ratio of public debt to GDP that can be considered as a normative reference<sup>14</sup>. In the next three sections, different models are discussed that help in discussing these developments.

### 3. Private and public debt in the single period of the circuit with no defaults risk

Apart from the critical differences between an exchange and a production economy, which impact on the treatment of time, equilibrium, aggregation and distribution, the distinctive feature of a monetary production economy compared to a barter exchange economy is that it distinguishes at least two sub-sectors within the private sector: banks, producing means of payment, and the rest of the economy, producing and consuming goods and services using money for payments. The "non-money producing sector" is typically broken down between households, Government and the production sector. In the production sphere, the crucial distinction emphasized by Keynes, is that between the sectors producing consumption and investment goods, a breakdown emphasized also in Marx's distinction between departments I and II (Trigg, 2006).

<sup>&</sup>lt;sup>12</sup> For lack of consolidated data total financial assets have been taken here as unconsolidated but this should not affect the trends outlined.

<sup>&</sup>lt;sup>13</sup> Recent IMF data estimates at USD 250 trillion the size of the world capital markets, or of the order of 4 times the corresponding GDP. Mc Kinsey (2011, p. 2) data, based on a sample of 79 countries, put at USD 212 trillion the global stock of debt and equity outstanding. Ippoliti and Roncaglia (2011) report that in December 2007 the GDP of the 11 countries composing the G10 was USD 33 trillion, stock exchange capitalization USD 40 trillion traded derivatives USD 79 trillion and OTC derivatives USD 585 trillions, i.e. of the order of 18 times the corresponding GDP.

<sup>&</sup>lt;sup>14</sup> "It must be said, by the way, that there is no economic theory that can establish what such a ratio should be", Pasinetti (1998, p. 104).

To illustrate a simple closed monetary economy, it is convenient to start from a balance sheet representation of its five institutional sectors: households, enterprises, commercial banks, the central bank and the Government<sup>15</sup>. In the logic of the monetary circuit, money is created as a flow by the banking sector at the request of enterprises to allow them to start production and it is partially or completely destroyed when enterprises realize their sales and repay their loans. Attention is focussed here on time t+ $\theta$ , intervening just before enterprises pay back the loan to banks<sup>16</sup>, because this "disequilibrium" microeconomic position is realistic at macro level, where profits are positive and liquid balances are held by all groups of agents present in the economy<sup>17</sup>. Retaining provisionally a zero profit condition for commercial banks to simplify the analysis, relation (3) below is a variant of what can be called Kalecki's identity for this economy. This can be derived in a straightforward manner from the definition of income in national accounts (1), as done for instance in Seccareccia (2010). Two special cases help understanding the meaning and implications of this relation. If households do not save (S<sub>h</sub>=0) and there is no Government (DEFG=0), the identity reduces to (5), which is the basis for Kalecki's (1942) theory of profits<sup>18</sup>. In the words of Joan Robinson (1969, p. 260) the latter can be expressed by saying that "the workers spend what they get and the capitalists get what they spend", i.e. capitalists generate revenues (profits) equal to the amount they decide to spend (invest).

$$Y = C + I + G (1) S_p = S_h + \Pi_e = I_h + I_e + DEFG (3)$$
  

$$Y - C = S_p = I + DEFG (2) S_{Np} = S_{Nh} + \Pi_{Ne} = DEFG (4)$$
  
From (3)  $S_h = 0$ , and  $DEFG = 0 \Rightarrow \Pi_e = I_e (5)$ 

From (3) and 
$$DEFG = 0$$
  $\rightarrow \Pi_e = +I_e - (S_h - I_h) = I_e - S_{Nh}$  (3bis)

From (4) and 
$$S_{Nh} = 0 \qquad \rightarrow \Pi_{Ne} = DEFG$$
 (6)

Where:

Y	=	Income	С	=	Consumption
Ι	=	Investment	DEFG	=	Government Deficit
$S_p$	=	Gross savings private sector	$S_h$	=	Households' savings
П	=	Gross profits of entreprises	$S_{Nn}, S_{Nh}, \Pi_{Ne}$	=	Net savings of relevant sector

If the Government deficit is positive but households still consume all their revenue during the period ( $S_h=0$ ), gross private savings are equal to gross corporate profits  $\Pi_e$  and net corporate profits  $\Pi_{Ne}$  are thus equal to the Government cash deficit DEFG<sub>t</sub> as shown in (6).<sup>19</sup> In the more general case, relation (3) can be read as a cash flow condition that must be respected in a monetary economy. It says that in order for the enterprise sector to generate a positive cash flow, which is a minimal sustainability requirement for the private sector, the Government deficit must exceed households savings'<sup>20</sup>. When generalizing further, if the economy is open to foreign trade and /or the possibility is allowed for households and enterprises

<sup>&</sup>lt;sup>15</sup> The closed economy assumption allows avoiding the complications of an open economy, such as for instance the need to distinguish between fixed and floating exchange rates. The representation thus obtained is valid for large economies if these are almost closed, like US and the EU used to be before China entered the OMC, or, with some further approximations, to a world economy with only one currency. The latter is itself a reasonable approximation of the world economy with several currencies if one currency (say USD) is taken as the world currency and prices expressed in that currency (inclusive of exchange rate effects) are taken to reflect the relative monopolistic power of each producing region or country.

<sup>&</sup>lt;sup>16</sup> In Cingolani (2011a, section 6.2) a fully worked-out example is provided where a complete circuit is broken down in its various phases in sequential time with reference to a complete stock-flow accounting model of a closed economy. This example is just an accounting illustration of the richer verbal explanations provided by Graziani (1984a, 1984b).

<sup>&</sup>lt;sup>17</sup> In other words this position is a disequilibrium both in neo-classical terms, since profits are positive and prices do not necessarily reflect marginal equivalences and in terms of the monetary circuit, because the accounting period is shorter than the period of consumption and loan repayment and the circuit therefore "is not closed". The first idea is developed in Cingolani (2011a) the second in Cingolani (2011b).

<sup>&</sup>lt;sup>18</sup> Strictly speaking, in Kalecki (1942), on the right hand side of (5), capitalist consumption expenditures appear together with investment, whereas above they are netted out already in (2) together with workers' consumption. The identity (3) and its generalization to an open economy is central in the national accounts, where it represents the link between flows and stocks. Kalecki was probably the first economist who worked out fully its implications, notably in Kalecki (1929 and 1933).

<sup>&</sup>lt;sup>19</sup> In this simplified form the relation makes intuitive the stringency of the assumptions necessary to justify austerity policies. If a reduction in the Government deficit improves growth prospects given constant households' savings, external account balance and banking profits, it must do so despite the mechanical and one for one reduction in corporate profits that inevitably accompanies a reduction in the Government deficit in this simplified economy, which in turn should normally be expected to depresses current investment. In an open economy with private savings and banking profits, the above effect must be interpreted as a "partial difference" rather than a "total difference" and could thus be offset by these other factors.

<sup>&</sup>lt;sup>20</sup> A variant of (3) is (3bis), obtained when there is no Government (DEFG=0), saying that in a close economy with no Government enterprises must invest more than what households save in order to generate profits. This formulation is closer to the original one of Kalecki and is in line with the influential interpretation of the Kalecki identity given by Steindl (xxxx). The author is grateful to Jan Toporowski for this remark, see also Toporowski (2008).

to borrow, the same private sector cash flow sustainability condition implies that the Government deficit must exceed the net cash flow absorbed outside of the enterprise sector, i.e. the sum of households savings, the net external balance and the cash effect of net borrowings (see Trezza, 2004).

In the T accounts below, the end of period balance sheets of the enterprises, commercial banks and households are shown for a closed economy. Assuming that enterprises are indebted only to banks, the amount of loans they receive covers all profitable projects and can be assumed to be proportional to their expected net worth (DEBT<sub>B</sub> = LOANS<sub>E</sub> =  $\kappa_E * [NW_E + \Pi^*_e]$ ). The cumulated assets of enterprises K<sub>E</sub> are the sum of their net worth and their debt.

Enterprises (E)		Commen (E	Commercial Banks (B)		Households (H)		Government	
NKe	NWe	LOANSe	DEPH	DEBTGH	NWH	NKg	NWg	
	DEBTB	DEBTGB	DEP <sub>GB</sub>	DEPH		DEP <sub>GB</sub>	DEBTGH	
		RES <sub>CB</sub>	DEBT <sub>CB</sub>	CIRC		DEP <sub>GCB</sub>	DEBTGB	

Households hold public debt (DEBTG<sub>H</sub>), deposits (DEP<sub>H</sub>), a liability issued by commercial banks, and currency (CIRC), a liability issued by the central bank. These correspond to the portion of revenues created by enterprises for production purposes they accumulate as liquid savings, whether these are the balances remaining from payment of wages paid for producing goods sold to households or to the Government. Any portion of households deposits that exceeds the amount that banks have decided to lend to enterprises for all the projects they think are profitable and solvable, stems from the Government deficit and is invested by banks in the acquisition of Government debt (DEBTG<sub>B</sub>), better remunerated than reserves, which are kept to the regulatory minimum (RES<sub>CB</sub>). Since it is assumed that households allocate their savings only between cash, bank deposits and government debt (DEBTG<sub>H</sub>), the rest of Government debt is held by banks.

The end of period balance sheets of the Central Bank, the consolidated banking sector, the consolidated State and the consolidated economy are respectively:

Central Bank (CB)		Consolidated banking sector (CBS)		Consolidated Government (CG)		Consolidated Economy (CE)	
DEBTG <sub>CB</sub>	CIRC	LOANSe	CIRC	NKG	RES/DEP <sub>CB</sub>	NKe	NWe
LOANSb	RES/DEP <sub>CB</sub>	DEBTGB	DEPH	LOANSb	DEBTGH	NKg	NWH
	DEPG	DEBTGCB	DEPg	DEPg	DEBTGB		NWg

The Central Bank net holdings of Government debt ( $DEBTG_{CB}$ ) correspond to the money circulating hold by households. The Central Bank advances to commercial banks the money ( $LOANS_B$ ) necessary to constitute the regulatory reserves ( $RES/DEP_{CB}$ ) if any, see for instance Rochon and Rossi (2011). The consolidated balance sheet of the banking sector, the State and the whole economy do not call for particular comments, except that internal transactions can be simplified, so that in the end the consolidated assets of this simplified economy correspond to the net worth of the Government, households and enterprises.

If one looks into the liabilities of the consolidated State sector, one sees that the consolidated public debt is given by the sum of reserves plus debt held by banks and households (RES/DEP<sub>CB</sub> + DEBTG<sub>H</sub> + DEBTG<sub>B</sub>). On the liability side of the enterprises sector debt is equal DEBT<sub>B</sub>.

Taking into account that the increase in public debt is given by the Government deficit, whereas net savings represent the increase in the net worth of the respective sectors, relation (4) implies that if at time t banks grant loans to the private sector in proportion to its net worth accumulated in the past  $\sum_{k} (\Pi_{Nt,k}+SH_{Nt,k})$  plus the expected increase in net worth for the current period  $\Pi_{t}^{*}+SH_{t}^{*}$ , we have:  $L_{t}=\kappa_{t}^{E}[\sum_{k} (\Pi_{Nt,k}+SH_{Nt,k}) + \Pi_{t}^{*}+SH_{t}^{*}]$ , where  $\kappa_{t}^{E}$  is a leverage ratio considered as a norm by banks in a certain place and for a certain period. There is a connection of  $\kappa_{0}^{E}$  with the Keynesian multiplier, which, retaining the circuit's assumption that aggregate loans coincide with revenue created, would be  $L_{0}/(SH_{0}+\Pi_{0}+I_{0})^{21}$  in the starting period when no previous capital is accumulated yet.

It follows that at time t loans granted to the private sector are proportional to the sum of cumulated Government deficit plus the Government deficit expected for the current period, plus autonomous decisions of investment expenditure by the private sector:  $LE_t = \kappa_t^E [(\Sigma_k \text{ DEFG}_{t,k}) + \text{ DEFG}_t^* + I_t^*] = \kappa_t^E (DG_{t-1} + \text{ DEFG}_t^* + I_t^*)$ , where  $DG_{t-1}$  is public debt,  $DEFG_t^*$  is the currently expected Government deficit and  $I_t^*$  is the private investment plan of the private sector for the current period (capitalists' "animal spirits").

In the balance sheet of banks on the asset side, at any time there are thus has two components: the loans to the private sector, proportional to past and current Government deficits and expected investment, and the loans to the Government, equal to a fraction  $\alpha_t$  of the expected Government deficit plus a fraction  $\beta_{t-1}$  of past Government debt placed with the private sector.

$$DEBTG_{Bt} = \boldsymbol{\alpha}_{t} DEFG_{t}^{*} + \boldsymbol{\beta}_{t-1} DG_{t-1}$$
(7)

As noted by Parguez, one could ask why  $\alpha_t$  or  $\beta_{t-1}$  should be different from 0, which could be due to Government's concerns for bank's profitability as discussed in the next section. The fraction  $I - \alpha_t$  of the budget deficit not placed with banks is bought by the Central Bank. If there is a Central Bank, there can also be some reserves in the assets of commercial banks RES<sub>t</sub>, which are proportional to the total of loans granted, with a coefficient of reserves equal to  $\rho$ . The asset side of the commercial bank balance sheet thus respects the following identities:

$$TA_{B} = LOANS_{E} + DEBTG_{B} + RES_{CB}, \quad where:$$

$$LOANS_{E} = \kappa_{t}^{E} \left( DG_{t-1} + DEFG_{t}^{*} + I_{t}^{*} \right), \qquad k_{t}^{E} \ge 0 \tag{8}$$

$$DEBTG_{B} = \alpha_{t} DEFG_{t}^{*} + \beta_{t-1} DG_{t-1}, \qquad 0 \le \alpha_{t}, \ \beta_{t-1} \le 1$$

$$RES_{CB} = \rho^{*} \left( LOANS_{E} + DEBTG_{B} + I_{t}^{*} \right) = \rho^{*} \left[ \kappa_{t}^{E} \left( DG_{t-1} + DEFG_{t}^{*} + I_{t}^{*} \right) + \alpha_{t} DEFG_{t}^{*} + \beta_{t-1} DG_{t-1} \right], \quad 0 \le \rho \le 1$$

$$TA_{B} = (1+\rho)^{*} \left[ \kappa_{t}^{E} \left( DG_{t-1} + DEFG_{t}^{*} + I_{t}^{*} \right) + \alpha_{t} DEFG_{t}^{*} + \beta_{t-1} DG_{t-1} \right]$$

If one takes the balance sheet of the commercial banks, the ratio of loans to corporates to loans to Government is given by:

$$\frac{LOANS_E}{DEBTG_B} = \frac{\kappa_t^E \left( DG_{t-1} + DEFG_t^* + I_t^* \right)}{\alpha_t DEFG_t^* + \beta_{t-1} DG_{t-1}} \quad if \quad \alpha_t = \beta_{t-1}, \quad \frac{LOANS_E}{DEBTG_B} = \frac{\kappa_t^E}{\alpha_t} + \frac{I_t^*}{\alpha_t \left( DEFG_t^* + DG_{t-1} \right)} \tag{9}$$

and if  $\boldsymbol{\alpha}_{t} = \boldsymbol{\beta}_{t-1}$  reduces to  $\boldsymbol{\kappa}^{E}_{t} (\boldsymbol{\alpha}_{t})$  plus a term that should be approximately constant in a steady state, being the ratio of current investment to accumulated wealth. Assuming that the economy reproduces itself every year identically, private debt must be essentially proportional to and therefore grow at the same speed as public debt. But of course the problem is to understand what determines the ratios of public debt placed with commercial banks  $\boldsymbol{\alpha}_{t}$  and  $\boldsymbol{\beta}_{t-1}$ . This requires introducing the possibility of a loan default, which illustrates one of the key links between money and uncertainty (Goodhart, 2008).

### 4. Introducing the possibility of loan default in the single period of the circuit

To fix ideas, let's us examine the case where enterprises at time t have a project of maturity  $\theta$  which has an expected monetary cost of L<sub>t</sub> = W<sub>t</sub> +  $\Pi_{t_t}^*$  where W<sub>t</sub> is expenditure on labour employed to produce wage goods, which is reasonably

 $<sup>^{21}</sup>$  If money is created by banks at the request of enterprises to finance all production costs at the start of the circuit, assuming no row materials and intermediate output, money creation is equal to revenue creation, i.e. the sum of consumption and investment. The definition of the multiplier M<sub>k</sub> given by Keynes in the General Theory is equal to the ratio of total revenue divided by investment: M<sub>k</sub>=Y/I. Under the simplified assumptions retained, in a "stationary state", where the economy reproduces itself identically each year, the "leverage ratio" is exactly equal to the Keynesian multiplier.

certain, and  $\Pi_t^*$  expected expenditure on the production of non-wage goods, which is more uncertain. One can distinguish two components in expenditure on non-wage goods:  $\Pi_t^* = \Pi_{At} + \Pi_{Bt}$ , where  $\Pi_{At}$  comprises those expenditures creating income beyond the current period ("real value") and  $\Pi_{Bt}^*$  represents an element of pure quasi-rent. Let's define the ratio of expected "surplus" on wage costs as  $\pi_t^* = \Pi_t^* / W_t$ , the expected cost of the project at time t is then  $L_t = W_t (I + \pi_t^*)$ , where the surplus is expected to cover also any interest rate  $r_t$  to be paid to the banks on loans taken over the period. Enterprises take a loan of maturity  $\theta$  to finance the full expected cost of the project  $L_t$ . Let us assume that they expect that a certain proportion of expenditure is saved in monetary form made of a fraction saved on wages and another saved on nonwage revenues. The weighted average proportional ratio of savings retained in monetary form from both types of income is  $\sigma_t^*$ . Enterprises expect to recover from sales at time t+ $\theta$  an amount equal to revenues distributed less the part that is expected to be kept in the form of liquid savings:  $(I-\sigma_t^*) W_t (I + \pi_t^*)$ . Enterprises use sales to repay the loan during the period, thus remaining indebted towards the banking sector for the amount that households have saved.

Enterprises' expectations can be wrong for two reasons. If they are wrong on the saving behavior of households, sales realized in the current period will be different from expected sales. If the actual average saving rate is  $\sigma_t \leq \sigma^*_t$ , sales in the current period will be lower than expected and enterprises will have to finance by a new loan of a higher amount the cash short fall for the current period. Enterprises' expectations can also be wrong if they do not take into account that part of the capital expenditure that is not "productive", i.e. enterprises can only recover from sales the proceeds from "productive" capital expenditure, which is by assumption equal to:  $(I - \sigma_t) W_t (I + \pi_{At})$ , as only this part on non-wage costs is productive of future revenues.

Let's introduce a parameter  $\delta_{t}$ , which takes into account all the risks attached to the project (production, demand etc), not only those due to rent seeking investments captured in  $\pi_{Bt}$ . We assume for simplicity  $\delta_{t} \ge 0$ . Realized sales will be:

$$S_{t+\theta} = (I - \sigma_t) W_t (I + \pi_{At}) = \delta_t W_t (I + \pi^*_t) = \delta_t L_t$$
(10)

Obviously for enterprises to be able to repay the loan, one must have:

 $\delta_{t} \geq |$ 

(||)

whereas for enterprises to pay interest and realize a positive monetary profit one must have:

$$\delta_{t} \geq (1 + r_{t}).$$

If  $\delta_t < (1+r_t)$ , a part of the loan and/or the interest, will not be paid back to the banks. It is reasonable to assume that in this case the enterprises will repay to the banks the full amount of the realized sales  $\delta_t L_t$  (the reflux). When condition (11) is satisfied, enterprises repay the full loan  $(1+r_t)L_t$ . Realized profits of enterprises will be  $\Pi_{Et+\theta} = S_{t+\theta}-L_t = \delta_t L_t - (1+r_t)L_t = (\delta_t - 1 - r_t)L_t$ . For banks we have instead that, if condition (11) is fulfilled, their cash flow on corporate loans will be given by the interests  $r_t L_t$ , while if (11) is not satisfied:

$$\Pi_{\text{BEt}+\theta} = \mathbf{\delta}_{t} L_{t} - L_{t} = [\mathbf{\delta}_{t} - 1] L_{t} (12)$$

and the condition for bank profitability on corporate loans is  $\delta_t \ge 1$ .

As in the previous section, attention is focused again on time t+ $\theta$ , intervening just before enterprises pay back the loan to banks, because this "disequilibrium" microeconomic position is representative of a broad range of real life macroeconomic situations where profits are positive and liquid balances are held by all group of agents present in the economy. At that time, enterprises assets are equal to the cost of production incurred plus the net worth coming from profits realized in the past. The banks having granted a loan, they must increase their reserves at the Central Bank, who is the sole supplier of central money. Increased loans cause domestic commercial banks to build supplementary reserves RES<sub>1</sub> at the central bank. The case of an overdraft system is retained (Lavoie, 2003, p. 519). The Government, which is supposed to be sovereign, also finances its expenditures from the banking sector that buys the securities it issues for an amount L<sub>Gt</sub> of the same maturity  $\theta$ . The loan taken by the Government is spent and generates wages and profits: L<sub>Gt</sub>=W<sub>Gt</sub> (1+  $\pi_{Gt}$ ) that correspond to the deficit of the Government, it is thus net of taxes recovered. The difference with the loan to enterprises is that in this case the banks are sure that they will recover fully the loan and the interest, as the Government cannot default in its own currency if it is sovereign. For loans to the Government the cash flow of banks is:

$$\Pi B_{Gt+\theta} = (1+r_t)L_{Gt}-L_{Gt} = r_t L_{Gt} \quad (13)$$

One can also consolidate the balance sheets of the Government and of the Central Bank as indicated in the T accounts below, where MS stands for Monetary Savings, DEP for Deposits, A for advances of the Central Bank to the Government.

If we look at the Consolidated State in the last T account, on the liability side there are the monetary and quasimonetary liabilities issued to satisfy the liquidity and savings desires of the public. The debt of the Government enters in the salaries and profits of the households and in the balance sheet of the commercial banks, both on the asset side as a claim on the Government and in the net worth as a part of profits that is not at risk. Commercial banks have on their liabilities the deposits corresponding to the loan they granted, plus the gains or losses from interest, given the risk of non-repayment on the loans they granted to enterprises.

Enterpr	rises (E)	Commerci	al Banks (B)	Househ	Households (H)		
$\pmb{\delta}_t \; L_t$	$ \begin{aligned} & NW_{Et+\boldsymbol{\theta}} = \\ & \boldsymbol{\delta}_{t} \; L_{t} & [\boldsymbol{\delta}_{t} \; - (I + r_{t})]L_{t} + \\ & \boldsymbol{\pi}_{Gt} W_{Gt} \end{aligned} $		$NW_{Bt+\theta} = \\ \begin{bmatrix} \mathbf{\delta}_{t} & -1 \end{bmatrix} Lt \\ + r_{t} L_{Gt}$	$\begin{array}{l} DEP_{Ht} = MS_{Ht} = \\ \boldsymbol{\sigma}_{t}(W_{t} + W_{Gt}) \end{array}$	$NW_{Ht}$		
$\begin{array}{l} MS_{Et}{=}\sigma_{t}[(\delta_{t}{}{^{-1}})Lt\\ {}_{t}{+}\pi_{Gt}W_{Gt})] \end{array}$	$L_t = W_t \left( I + \pi_t^* \right)$	$\begin{array}{c} \boldsymbol{\gamma}_t \boldsymbol{L}_t = \boldsymbol{\gamma}_t ( +r_t)^* \boldsymbol{W}_t \\ ( +\boldsymbol{\pi}_t^*) \end{array}$	$\begin{array}{c} DEP_t = DEP_{ft} \\ + DEP_{Ht} + DEP_{Gt} \\ = L_t + L_{Gt} = \\ W_t \ (I + \pi_t^*) + \\ W_{Gt} \ (I + \pi_{Gt}) \end{array}$				
		$L_{\text{Gt}} = W_{\text{Gt}} \left( I + \pi_{\text{Gt}} \right)$	$D_{CBt} = RES_1 + RES_{II}$				
Governr	nent (G)	Central E	Bank (CB)	Consolidated Sta	Consolidated State (CG=G+CB)		
$MS_{Gt} = \boldsymbol{\sigma}_{t} (L_{Gt} + DEP_{G})$	$L_{Gt}=W_{Gt}\left(I+\pi_{Gt}\right)$	LB <sub>t</sub>	DEP <sub>B</sub> =RES <sub>I</sub> +RES <sub>I</sub> I	LBt	DEP <sub>B</sub> =RES <sub>I</sub> +RES <sub>I</sub> I		
	A <sub>Gt</sub>	A <sub>Gt</sub>	DEP <sub>G</sub>	$MS_{Gt} = \boldsymbol{\sigma}_{t}  L_{Gt}$	$L_{Gt}=W_{Gt}\left(I+\pi_{Gt}\right)$		

Let us now assume that enterprises enter in rent seeking investment in a large proportion, so that condition (11) is not respected. Then the commercial banks will not recover entirely the loans they granted to the private sector and will incur a loss. From the point of view of the stability of the commercial banking sector, the deficit of the Government must be such that it generates enough banking profits so as to compensate for the capital loss due to investment in unproductive activities of the private sector:

$$r_{t}L_{Gt} \geq (1-\boldsymbol{\delta}_{t}) L_{t} \qquad -> \qquad L_{Gt} \geq (1-\boldsymbol{\delta}_{t}) L_{t}/r_{t} \qquad (14).$$

According to (14), keeping in mind that obviously  $r_t$ ,  $\delta_t \ge 0$ , the condition for banks to hold positive amount of public debt is  $\delta_t < 1$ , whereas whenever  $\delta_t < (1-r_t)$  loans to the Government must exceed loans to the private sector ((1- $\delta_t$ )/ $r_t > 1$ ). In addition the central bank must issue enough currency to satisfy the liquidity preference of the economy so that:

$$\mathsf{DEP}_{\mathsf{B}} \ge \mathsf{MS}_{\mathsf{Et}} + \mathsf{MS}_{\mathsf{Ht}} + \mathsf{MS}_{\mathsf{Gt}} \tag{15}.$$

#### 5. Extensions into the subsequent periods (continuation analysis)

The analysis above refers essentially to a single period. To make it fully dynamic, one should complete it with a continuation analysis in the following periods. This would be more complicated, but essentially the same cash-flow conditions on public debt, suitably generalized, would hold. This is best seen if the single period of the paragraphs 4 and 5 is seen as a steady state replicating every year, in which case relations (9), (11) and (14) would remain exactly the same.

In a regime of steady uniform growth one can examine the main issues with reference to Domar (1944), who examined the long-term sustainability of public debt under the following interesting set of assumptions:

i) the increase in national income is a multiple  $1/\kappa$  of investment expenditures (public and private). Different assumptions are examined in his paper concerning the future evolution of investment and income, but the central one results in income growing at a constant rate, say g<sup>22</sup>.

ii) the Government borrows each year a constant fraction of GDP, say  $\boldsymbol{\epsilon}_{G}$ .

iii) the saving rate of the Government, which corresponds to public investment, is the same as that of the private sector  $(\epsilon_{G} = \epsilon_{P})$ .

iv) the interest rate paid on public debt is constant at, say, r.

v) interests represent the only tax burden of new debt and they are taxed<sup>23</sup>.

<sup>&</sup>lt;sup>22</sup> Domar derives this result from the fact that the average and marginal propensity to save are equal, which is appropriate in the long-term. In his paper he retains the value of 12% for the US share of net investment in GDP based on Kuznet's data. for the period 1919-28. Domar assumes that this 12% divides equally between the private and the public sector.

Under these assumptions Domar shows that the ratio of public debt to GDP will converge towards  $\mathbf{\epsilon}_G/g$ , whereas the tax rate will converge towards  $r/[(g/\mathbf{\epsilon}_G)+r]$ , which can be approximated by  $r(\mathbf{\epsilon}_G/g)$ . In other words, in order to pay for the increased interests due to additional debt, the tax rate must be increased by a factor that represents the debt burden. Given a target public investment ratio of GDP, this burden depends from the ratio of the interest rate to the growth rate, hence Domar's conclusion that "The problem of the debt burden is a problem of expanding national income" (pp. 816-817). The point can be illustrated with the help of the chart below.



Given an exogenous interest rate r, the growth rate of income depends linearly on the share of net investment to GDP through the mechanism of the accelerator of investment. Net investment is divided equally between the Government and the private sector. The Government finances its part of total net investment by borrowing a constant fraction of GDP every year. Given this, to attain the target GDP growth rate shown in the abscissa of the chart, the necessary annual rate of Government borrowing/net investment is that given by the green column. The burden of the associated public debt is given instead by the ratio of taxes necessary to cover interest on public debt and GDP which varies as a function of the target growth rate as shown by the three lines in the chart, which correspond to different levels of the interest rate.

This burden depends in fact upon the ratio of the interest rate and the growth rate. For instance, to obtain a GDP growth of 2.5%, net investment must reach 5% of GDP, of which, assuming a 50% share, public investment represents 2.5% of GDP. Depending on the level of the interest rate, the burden of this debt is either 0.6%, 1.2% or 2.4% of GDP, while the public debt ratio to GDP is 100% in the three cases. Domar's assumptions imply that all money borrowed by the Government is used for additional net public investment. The tax rate must be increased in order to cover for interest to be paid on debt, the latter is shown to depend on the difference between the interest rate and the growth rate<sup>24</sup>. Pasinetti (1998a pp. 105-106) made Domar's point even clearer by defining debt sustainability as a situation where the debt to GDP ratio is either constant or decreasing<sup>25</sup>. A derived condition is then that the primary public debt budget surplus (S<sub>P</sub>), which is the public deficit before interest payments, exceeds (does not exceed) the product of the positive (negative) difference between the interest rate r and growth rate g (r-g) multiplied by the debt GDP ratio (D/Y):

$$S_{p} = (r-g)\frac{D}{Y}, \quad \underline{sustainability\ condition}: \qquad \begin{cases} r \ge g \quad \Rightarrow \quad S_{p} \ge (r-g)\frac{D}{Y} \\ r < g \quad \Rightarrow \quad S_{p} < -(r-g)\frac{D}{Y} \end{cases}$$

<sup>25</sup> See also Graziani (1988), Sylos Labini (1998) and Pasinetti (1998b and 2003).

<sup>&</sup>lt;sup>23</sup> This implies that in the model interest paid on public debt represent the difference between the tax base and income.

<sup>&</sup>lt;sup>24</sup> It is immediately apparent from the chart that, under the parameters retained, constraining the borrowing of the Government to 0.5% of GDP as it has now been decided in the Euro area to fight the crisis and reassure the markets, also limits GDP growth rate to 0.5%. Hence, either another exogenous source of demand such as exports and/or a federal budgetary stimulus substitute for the falling demand from the national budgets, or a scenario of permanent slow growth can easily be anticipated by the markets, feeding their non-flattering expectations on the future of the Euro area.

If the interest rate exceeds the growth rate, in order for the debt GDP ratio to fall or remain constant, a fraction of D/Y that depends on the difference r-g must be saved every year by the Government. This means that in this case taxes must exceed total Government expenditures other than interest. This leaves room only for that amount of public investment that can be undertaken at the price of a reduction in current expenditures other than interest, i.e. at the price of taking purchasing power out of the hands of the private sector. On the contrary if r<g, Government expenditures can exceed taxes by (g-r)\*D/Y. Assuming that the Government plays only a redistribution role in terms of current public expenditures other than interest, the primary current budget is balanced and current expenses are equal to taxes collected. In this case, public investment can be financed up to (g-r)\*D/Y, thus generating a growth effect though the multiplier and the accelerator process, while the debt to GDP ratio would remain constant or decrease<sup>26</sup>.

In the analysis of Domar (1944) presented above it was made use of a linear accelerator relation between the investment rate and the growth rate. In fact as argued in Domar (1946), this is a condition for full employment that implies that investment and income must grow at a compound rate of growth equal to the product of the average propensity to save times the "potential social average productivity of investment", given by the product of the investment rate and the proportionality factor I/| used above:

$$\frac{dY}{Y} = \frac{dI}{I} = g = \lambda \mu = \frac{\mu}{\kappa}$$

 $\lambda = \frac{dP/dt}{I} = \frac{1}{\kappa} =$  Increase in potential capacity derived from investment of I  $\mu = \frac{dI/dt}{dY/dt} =$  Marginal propensity to save (= average propensity to save = ratio of net capital increase to national income)

An implicit assumption in Domar (1944) is that both public and private investment have the same average social productivity ( $\lambda_G = \lambda_P$ )<sup>27</sup>, a parameter that he considered to be of the order of 30% for the US at the time. By definition:

$$Y_{t+1} = Y_t (1 + \lambda \mu)$$

Coming back to the points developed in the previous sections, at the beginning of time t banks can, at the request of enterprises, create liquidity in excess or in defect of  $Y^*_{t+1}$ . Say that the parameter  $(1+\pi_{Bt})$  introduced before accounts for the difference. We have:

$$L_t = L_{Et} + L_{Gt} = (|+\pi_{Bt})(|+\lambda\mu)Y_t$$

From (14), adding a suffix E to loan to enterprises, we can write  $L_{Et} \leq r_t L_{Gt}/(1-\delta_t)$ . Assume this condition is respected with an equality, we have:  $r_t L_{Gt}/(1-\delta_t)+L_{Gt}=(1+\pi_{Bt})(1+\lambda\mu)Y_t$  so that:  $L_{Gt}[r_t/(1-\delta_t)+1]=[(r_t+1-\delta_t)/(1-\delta_t)]=(1+\pi_{Bt})(1+\lambda\mu)Y_t$  and:

$$L_{Gt} = [(|-\delta_t)/(|-\delta_t+r_t)](|+\pi_{Bt})(|+\lambda\mu) Y_t \quad (|6)$$

From the perspective of this model, (16) shows that the more banks lend in excess of full employment income ( $\pi_{Bt}$ >0), the lower the proportional reflux for enterprises as given by  $\delta_{t}$ , the higher the potential associated loss for banks and thus the higher the public debt that they should keep in their balance sheets. In particular if banks lend in excess of the social productivity of investment, it will be more likely that  $\delta_t < 1$ , which, as before, is the condition for them to hold positive amounts of public debt. If, in addition,  $\delta_t < (1-r_t)$ , banks will hold a proportion of debt as a percentage of full employment income in excess of 1/2. The same conditions hold if banks do not lend in excess of full employment income. In this case the risk parameter  $\delta_t$ , can be below 1 or below (1- $r_t$ ) even if  $\pi_{Bt} = 0$  because  $\sigma_t \leq \sigma_t^*$ , which could be the case if enterprise do not anticipate correctly the shift of households from consumption to savings in reaction to the increased uncertainty associated for instance with austerity (see also Graziani, 1990 and Parguez, 1996).

#### 6. Summary, conclusions and policy implications

Alain Parguez debt stability condition requires that public debt should grow in line with private debt to ensure stability of the banking sector. The principle naturally leads to the question of whether a possible cause of the 2008-10 financial crisis could have been an unbalanced development of public debt with respect to the evolution of private debt. Evidence reported in the first two sections of this contribution shows that before the financial crisis private debt has been growing faster than

<sup>&</sup>lt;sup>26</sup> The possibility of coordinating EU policies around an r<g objective is discussed in Cingolani (2011-2012).

<sup>&</sup>lt;sup>27</sup> Sardoni (2011) provided a simple macroeconomic model integrating the dynamic growth effects of public expenditure in a context where some of the public expenditures create revenues in future period and showing that the reduction of public expenditures can indeed have long-term harmful effects.

public debt. This caused a reduction in the share of public debt held in the portfolios of the banking and the non-financial private sectors, which may have contributed to the overall increase in the "risk and volatility" of the financial sector.

In order to understand the rationale for the Parguez' principle, simple macro-monetary models are developed in sections 3 to 5.

In the simple model of the circuit presented in section 3, in order for the economy to reproduce itself identically in time, the ratio of private to public debt must remain constant. A limit of the model is that it is a "single period" model. Its results are observed in time before the circuit closes<sup>28</sup>, but at the same time the model is supposed to "reproduce itself identically" in subsequent periods. This is acceptable as a description of a steady state because in an aggregate macro-economy at any point in time profits and loan balances are positive, implying that that the aggregate of all agents are in disequilibrium. Therefore if a steady state exists and is relevant for an actual economy, this model is useful<sup>29</sup>. Another limit of the model presented in section 3 is that it doesn't explain why the Government would have to place part of its debt liabilities with the private sector, as it could in principle monetize all its liabilities. In particular the model doesn't explain why banks would hold Government liabilities.

In order to discuss this point, section 4 introduces uncertainty on loan repayment (possibility of default) in a variant of the model of section 3. In a framework where banks realize profits and households save only in liquid form, uncertainty affects both the enterprises' revenue of the current period, which depends from the actual saving rate of households, and revenue of future periods, which depends on that part of the non-wage expenditures of the current period that produce future revenues. In both cases enterprises may recover from sales less than what they were expecting initially and in this case they will not be in a position to repay their loans fully to the banks. On the contrary a sovereign Government cannot default in its own currency<sup>30</sup>. Therefore banks have an interest in keeping a positive amount of Government debt in their books in order to smooth out the fluctuations in the capacity of repayment of private borrowers.

Whereas the arguments presented in sections 3 and 4 are essentially confined within the single period of the circuit, some indications of possible extensions of the proposed framework to the subsequent period (continuation analysis) are given in section 5 based on Domar's analyses of the burden of debt. In line with Domar's balanced growth approach, the ratio of public debt to GDP depends on the relation between the growth rate and of the interest rate, the contribution given by the Government's investment to the increase in production capacity at national level and on whether commercial banks create liquidity in excess of the equilibrium growth rate of nominal GDP or not. Domar's contributions point to the need to distinguish dynamic demand and supply effects. On the demand side, it is clear that the natural tendency of a capitalistic economy is to create insufficient demand to guarantee full capacity utilization and more importantly full employment, which calls for a stabilizing role of the Government deficit based on the functional finance approach. As noted by Wray (2008), the model of Domar can be used as in Vatter and Walker (1989) to argue that historically the US economy has grown below potential due to insufficient government expenditures "net of taxes". Indeed, combining the results of sections 5 with the assumptions and parameters retained in section 4, if uncertainty is such as to curtail enterprises revenue below 100% of the face value of the loans they take, banks will have to hold positive amounts of public debt. Loans to the Government will exceed loans to enterprises whenever uncertainty is such that enterprises recover from sales less than the percentage difference between the face loan amount and the interest rate, as in this case on every Euro of loan given to enterprises, banks loose more than the percent equivalent of the interest rate. This loss can be recuperated if a Euro of loan if given to the Government, assuming of course that enterprises and to Government pay the same interest rate to banks. Whether these figures are more or less realistic in more general models, the logic of the argument is that the proportion of loans going to the Government should be higher if banks validate loans in excess of the growth of income that can be expected on a full employment path.

What are the policy conclusions to be drawn from the above analysis? If excess leverage by the private sector is one of the main causes of the crisis, either it reflects correct private decisions taken on a rational expectations' dynamic equilibrium path, in which case the Government failure was not to accompany this private sector debt development with the creation of a sufficient amount of low risk public debt liabilities, or one can not escape the conclusion that this "rational expectations path" was in fact irrational. By preventing public debt to grow in line with private debt, the Governments did not validate the loans granted to the private sector with a corresponding creation of central money, a situation that should have been

<sup>&</sup>lt;sup>28</sup> In other terms the accounting period is shorter than the period of money creation and destruction, see discussion in Vallageas (2011 forthcoming).

<sup>&</sup>lt;sup>29</sup> This interpretation would not be acceptable on neoclassical grounds, as in this case it would be assumed that any "disequilibrium" position is transitory and cannot be maintained. In fact true neoclassical equilibria should be stationary, i.e. with no profits and zero debt (Pigou, 1943). On the contrary, in other approaches, such as for instance that of Sraffa (1960), general equilibrium can be compatible with the existence of positive profits.

<sup>&</sup>lt;sup>30</sup> The fact that some EU Governments face increasing costs when refinancing their debt is not indicative that a sovereign can default but that some sovereigns have accepted to become sub-sovereigns and loose their room for independent monetary and fiscal policies. This is justified if the autonomy lost at national level, which was in any case limited, is compensated by a larger room of manoeuvre gained at supra-national level, which is not the case at the moment. Incidentally, it is not sure that the present market pricing of the sub-sovereign risk of EU member states discounts correctly this possibility.

expected to become unsustainable sooner or later. This choice was somewhat surprising as it was done in a climate of general trust in the clear-sightedness of the private sector, where the role of a "minimal Government" was to create the right policy environment for private decisions to exert their beneficial effects.

During and after the crisis a lot of the private debt accumulated in previous years was transferred to the Governments in exchange for public debt. The debate started soon after in the media and in the "informed circles" on the unsustainable character of public debt. The usual standard austerity arguments were raised, suggesting notably "painful but necessary" cuts in socially productive Government expenditure, despite the fact that, as it is well known, arguments invoked in favor of austerity cease to be valid when rational expectations do not hold. On the contrary what really counts in a disequilibrium world is the effect of the Government's autonomous spending decisions on private sector expectations, together with their greater or lower socially productive character. Following a dynamic monetary disequilibrium interpretation of the circuit inspired by the work of Alain Parguez, the balanced growth results discussed in this paper can be translated in a policy prescription valid for an unbalanced growth world. This is that given the current expectations of the private sector, the Government must create that amount of "good debt", i.e. financing for productive and socially useful expenditure, that is sufficient to bring back the economy to full employment.

Like quantitative easing, the swap of private for public financial assets has no positive effects on the real economy, except that of improving temporarily the situation of the distressed financial sector. However this positive effect is counterbalanced by the negative effect of austerity on the profitability of the enterprises sector and of the banks. On the contrary any Government expenditure that fulfills a socio-economic need should not be restricted on normative grounds as it can be made compatible with a sustainable profile for public debt. At world level, private sector net profits over the next five years will be exactly equal to the cumulated Government deficits of all countries during the same period. Therefore the lower the expectations for the latter, the worse expectations of future profits are going to be. It follows that the only way to relaunch the economic machine today is through a coordinated program of public current and capital expenditures large enough to reverse the current negative expectations of the private sector. If the political will is there, it is in principle possible to devise such a program by a suitable coordination of fiscal and monetary policies, first at EU level, then at world level, an idea that could be developed in forthcoming contributions.

13

## REFERENCES

Allais Maurice. (2009). "Lettre aux Français. Le cri d'alarme du seul prix Nobel d'économie français contre les tabous indiscutés", Marianne, n°659, 5 décembre.

Bellofiore Riccardo and Halevi Joseph. 2010-2011. "Could Be Raining'. The European Crisis After the Great Recession", International Journal of Political Economy, pp. 5–30, vol. 39, no. 4, Winter 2010–11.

Brunet, Antoine and Jean-Paul Guichard. 2011-12. "Mercantilist roots of the crisis", International Journal of Political Economy 40, no. 4 (Winter): 83–97.

Cingolani Massimo. 2010. "PPP Financing in the Road Sector: A Disequilibrium Analysis Based on the Monetary Circuit", *Transition Studies Review*, 17, pp. 513–550.

Cingolani Massimo. 2011a. "Public investment under disequilibrium: a post Keynesian viewpoint", in Florio Massimo (ed.), Public Investment, Growth and Fiscal Constraints Challenges for the EU New Member States, Cheltenham, Edward Elgar.

Cingolani Massimo. 2011b. "Economic policy coordination in a regionally integrated area", draft prepared for the SIE - Italian Economic Association 52nd Annual Conference, Rome - 14, 15 October 2011.

Cingolani, Massimo. 2011-12. "Interest, Growth, and Income Distribution: What Ought to Be the Objectives of EU Macroeconomic Policy Coordination?", International Journal of Political Economy 40, no. 4 (Winter): 31–61.

Cingolani, Massimo. 2012. "Finance Capitalism: A Look at the European Financial Accounts", Revised draft presented at the 9th International Conference: Developments in Economic Theory and Policy - Bilbao, 28-29 June 2012 and at the Joint Conference AHE, IIPPE, FA, PE: Political Economy and the Outlook for Capitalism - Paris, July 5-7, 2012.

Domar Evsey D. 1944. "The Burden of Debt and National Income". American Economic Review, Dec, Vol. 34 Issue 4, p798-827.

Domar Evsey D. 1946. "Capital Expansion, Rate of Growth and Employment", Econometrica, Vol 14, n. 2, (apr.), pp. 137-147:

EUROSTAT. 1996. European System of Accounts ESA 1995, Luxembourg, ECSC-EC-EAEC.

Galbraith James. 2009. "Who Are These Economists, Anyway?", Thought and Action, The NEA Higher Education Journal, Fall 2009.

Goodhart, Charles A.E. 2008. "Money and Default." In Keynes for the Twenty-First Century. The Continuing Relevance of The General Theory, ed. Mathew Forstater and L. Randall Wray, 213–23. New York: Palgrave Macmillan.

Graziani Augusto. 1984a. "Moneta senza crisi, in Studi economici, n. 24, pp. 3-37.

Graziani Augusto. 1984b. "The Debate on Keynes's Finance Motive." Economic Notes 1, no. 1; 15-33.

Graziani Augusto. 1985. "Monnaie, intérêt et dépenses publiques". Economies et Sociétés, Série Monnaie et Production - (Août), n. MP 2.

Graziani Augusto (ed). 1985. La spirale del debito pubblico, Bologna, Il Mulino.

Graziani, Augusto. 1990. "The Theory of the Monetary Circuit ", Economies et Sociétés, Monnaie et Production n° 7/1990, pp. 7-36.

Graziani Augusto. 2003. The Monetary Theory of Production, Cambridge, Cambridge University Press.

Halevi Joseph and Taouil Rédouane. 2002. "On a Post-Keynesian Stream From France and Italy: The Circuit approach", in *Money, Macroeconomics and Keynes: Essays in Honour of Victoria Chick*, Volume One, Arestis Philip, Desai Meghnad and Dow Sheila ed., pp. 91-102, New York, Routledge.

Kalecki Michal. 1929. "On Activating the Balance of Trade", originally published as "W sprawie aktiwizacji bilansu handlowego", *Przemyls i Handel*, 10/30, pp. 1295-7. Republished in *Collected Works of Michal Kalecki Vol I*, pp. 15-20, Osiatynisky Jerzy ed., Oxford, Oxford University Press.

Kalecki Michal. 1933. "On Foreign Trade and Domestic Exports", originally published as "O handlu zagranicznym i "eskporcie wewnetrznym", *Ekonomista*, 3, pp. 27-35. Republished in *Collected Works of Michal Kalecki Vol I*, pp. 165-173, Osiatynisky Jerzy ed., Oxford, Oxford University Press.

Kalecki Michal. 1942. "A Theory of Profits", The Economic Journal, Vol. 52, No. 206/207 (Jun. - Sep.), pp. 258-267.

Koo Richard C. 2009. The Holy Grail of Macroeconomics. Lessons From Japan's Great Recession, Singapore, John Wiley and Sons.

Krugman, Paul. 2009. "How Did Economists Get it So Wrong?", New York Times Sunday Magazine, September 6, 2009.

Lysandrou Photis. 2011. "Debt Intolerance and the 90%Debt Threshold: Two Impossibility Theorems", London Metropolitan University. Paper presented at the conference From crisis to growth? The challenge of imbalances, debt, and limited resources, 28 – 29 October 2011, Berlin.

Parguez Alain, Seccareccia Mario. 2000. "The credit theory of money: the monetary circuit approach". In: Smithin J (ed.), What is money?, pp. 101–123, Routledge, New York.

Parguez, Alain. 1996. "Financial Markets, Unemployment and Inflation Within a Circuitist Framework". *Economies et Sociétés*, Tome XXX, n. 2-3 (février-mars), Série Monnaie et production. n.10: 163-192.

Parguez Alain 2010. "Lies and Truth About the Financial Crisis in the Eurozone From a Banking Crisis to a Currency Crisis The Veil of a Dramatic Structural Crisis", International Journal of Political Economy, vol. 39, no. 4, pp. 31–55, Winter 2010–11.

Pasinetti Luigi L. 1998a. "The myth (or folly) of the 3% deficit/GDP Maastricht 'parameter'", Cambridge Journal of Economics, vol. 22, pp. 103-16.

Pasinetti Luigi L. 1998b, "L'anomalia del debito pubblico italiano: due modi per affrontarla", in Rendiconti dell'Accademia Nazionale dei Lincei, Roma, Classe di Scienze Morali, serie IX, vol. 9, n. 4, pp. 509-25.

Pasinetti Luigi. 2003. "Public Debt in the European Union Countries: Two Ways of Facing the Problem" in Krishnakumar J. and Ronchetti E. (ed.) *Panel Data Econometrics: Future Directions. Essays in Honor of Pietro Balestra*, pp. 317-28, Amsterdam, Elsevier B.V.

A. C. Pigou. 1943. "The Classical Stationary State", The Economic Journal, Vol. 53, No. 212 (Dec.), pp. 343-351.

Reinhart Carmen M. and Kenneth S. Rogoff 2010. "Growth in a time of debt", NBER Working Paper Series, n. 15639, January, available at: <u>http://www.nber.org/papers/w15639</u>.

Robinson Joan. (1969). "A Further Note", The Review of Economic Studies, Vol. 36, No. 2 (Apr.), pp. 260-262

Rochon Louis-Philippe, Rossi Sergio. (2011). "Monetary policy without reserve requirements: central bank money as a means of final payment on the interbank market.", in Gnos Claude and Rochon Louis-Philippe, <u>Credit Money and Macroeconomic Policy. A Post-Keynesian Approach</u>, Cheltenham, Edward Elgar.

Roncaglia Alessandro. 2010. Economisti che sbagliano. Le radici culturali della crisi, Bari, Laterza.

Roxburg Charles, Lund Susan and Piotrowsky John (2011), *Mapping global capital markets* 2011, McKinsey & Company Global Institute Updated Research, August 2011.

Sardoni Claudio. 2011. "An Alternative approach to the problem of the public debt", in Niechoj, Onaran, Stockhammer, Truger and van Treeck (eds.), <u>Stabilising an Unequal Economy? Public debt, Financial Regulation and Income Distribution</u>, pp. 97-116, Marburg, Metropolis Berlag.

Schmitt Bernard. 2003. "Circuit économique et pensée néoclassique", in Piégay Pierre and Rochon Louis-Philippe, <u>Théories Monétaires</u> <u>Post Keynésiennes</u>, Paris, Economica.

Seccareccia Mario. 2010. "The Role of Public Investment in a Coordinated Exit Strategy to Promote Long-Term Growth: The Keynes Legacy", International Journal of Political Economy, vol. 40, no. 4, Winter 2011–12, pp. 62–82.

Sraffa Piero. 1960. Production of Commodities by Means of Commodities: Prelude to a Critique of Economic Theory, Cambridge University Press, 1960.

Steindl, Joseph. 1982. "The Role of Households Savings in the Modern Economy", Banca Nazionale del Lavoro Quarterly Review, Vol XXXV, n. 140, pp. 69-88.

Sylos Labini Paolo. 1948. "Saggio dell'interesse e reddito sociale", Lincei - Rendiconti morali - Ser. VIII, Vol. III, fasc. 11-12. pp. 426-453.

Sylos Labini Paolo. 1998. "Sviluppo economico, interesse e debito pubblico", Rendiconti dell'Accademia Nazionale dei Lincei, Classe di Scienze Morali, serie IX, vol. 9, fasc. 3, aprile, pp. 533-44.

Sylos Labini Paolo. 2003. "Prospects for the World Economy", BNL Quarterly Review, n. 226, September. Available on the PSL Archive at: http://dspace.unitus.it/bitstream/2067/594/1/BNL%20Quarterly%20Review%202003.pdf

Toporowski, Jan. 2008. "The Kalecki–Steindl Theory of Financial Fragility", Paper presented to the "Crisis in Financialisation" conference at the School of Oriental and African Studies, University of London on 30 May.

Toporowski, Jan. 2010. "Inflation in financial markets", in Why the World Economy Needs a Financial Crash and Other Critical Essays on Finance and Financial Economics, London: Anthem Press.

Trezza Bruno. 2004. "Effective Demand and Cash Flow Requirements in a Monetary Economy", in Arena Richard and Salvadori Neri, Money Credit and the Role of the State Essays in honour of Augusto Graziani, Ashgate.

Vaciago Giacomo. 1993. "Public versus Private Debt", BNL Quarterly Review, n. 186, September.

Vallageas Bernard. 2012, forthcoming. Monnaie, profit et valeur. Un essai sur le circuit et l'économie monétaire de production, ch 6 and 7.

Vickrey William. 1994. "Necessary and Optimum Government Debt", Chapter 23 in <u>Public Economics</u>, pp. 421-431, Arnott R., Arrow K., Atkinson A.B. and Drèze J. ed., Cambridge , Cambridge University Press.

Walker John F. and Vatter Harold G. 1989. "Why has the United States operated below potential since World War II?", *Journal of Post Keynesian Economics*, Spring 89, Vol. 11, Issue 3, pp. 327-346.

Wray Randall L. 2008. "Demand Constraints and Big Government", Journal of Economic Issues, Vol. 42, Issue I, March, pp. 153-173.

Wray Randall L. 2011. "Godley Got It Right", Paper presented at the Conference: "The Wynne Godley Memorial Conference: Contributions in Stock-flow Modeling", Levy Economics Institute of Bard College, Blithewood, Annandale-on-Hudson, NY, May 25–26, 2011.

### Annex I: Charts on the share of public and private debt





