

# *Monetary analysis with non-convertible currencies: Implications for fiscal policy*

Contribution to the workshop “Real analysis versus monetary analysis: Does it matter and what are its main implications for macroeconomic theory and policy?”

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## I. INTRODUCTION

The agenda for this workshop poses a fundamental and challenging question in the context of the ongoing debate about the crisis and the future of macroeconomics. Christiano (2017) has claimed that “the Great Recession struck individuals, the aggregate economy and the economics profession like an earthquake,” and this is leading economists to reconsider the relevance of “paradox-of-thrift logic and [...] shocks in aggregate demand,” while “the idea that financial markets could be ignored in macroeconomics died with the Great Recession.”

If a mainstream “Rip Van Winkle” macroeconomist had gone to sleep in 2000 and awoken today, he would hardly recognize what he sees. In 2000, popular topics in macroeconomics included the end of business cycles, the celebrated “Clinton surplus,” the coming end of public debt, and the outlandish question of how the Fed would conduct open-market operations when government debt has been fully paid off. In that context, the belief that money-printing power should be constitutionally severed from governments to prevent the buildup of inflation overhang supported the case for balanced-budget fiscal policy. This also strengthened the case for Europe moving to the single currency with a rigidly constrained fiscal stance that was supposed to suit all seasons and cycles.

Today, Rip Van Winkle would hardly have a clue as to how to decode the unfolding of events that occurred while he was asleep: the world economy close to another Great Depression; zero interest rates; public debt much bigger with central banks holding massive quantities of it; and proposals that central banks use “helicopter money” no longer being considered preposterous. The earthquake, however, has not yet changed the set of beliefs that forms the well-established consensus opinion on countercyclical policy-making that centers on a few key propositions:

a) Macroeconomic stabilization is the responsibility of a central bank maneuvering a key interest rate by means of a

publicly known reaction function, independent of government pressures (and “unconventional” monetary policy is standard policy in higher doses through new instruments).

b) Countercyclical fiscal policy should be limited to automatic fluctuations only on the condition that these do not upset the government’s capacity to pay off its debt without ever printing money.

Macroeconomists today are now split among defense of the pre-crisis “consensus,” attempts to enhance the pre-crisis approach with ad-hoc extensions, and an array of alternative views pulling macroeconomics in different directions. Nevertheless, and although the current diversity of views does not facilitate a smooth transition towards a new paradigm of macroeconomics, the Great Recession has offered a grand “natural experiment” where a number of propositions and predictions have been tested, including the belief that central banks are in the best position for steering the economy along its long-term path. While a number of myths (such as the inflationary effect of a rapidly growing monetary base, the notion of banks as intermediaries between savers and investors, or the irrelevance of the fiscal stance) seem to be crumbling, we are now facing a unique opportunity to effectively reconfigure the macroeconomic policy toolbox.

For this task, reference to real versus monetary analysis as well as “real-exchange economics” versus “monetary economics” provides an excellent starting point.

This contribution focuses on fiscal policy.

## II. MONETARY ANALYSIS AND THE COMEBACK OF REAL ANALYSIS

Do models that explain real variables (such as the level of employment and the size, distribution, and composition of output) with no reference to monetary variables improve our understanding of the economies where we live? Alternatively, should models include monetary variables as determinants of real variables? This difference is illustrated differently, depending on the narrative.

In one view, the former approach (i.e., Real Analysis) is more rigorous because it builds on a theory of choice where

decision makers care about real benefits, real costs, relative prices, and do not suffer from “money illusion.” In another view, Monetary Analysis is more realistic because it explicitly takes into account the fact that decisions in a monetary economy depend on expectations of monetary flows and financial stocks.

In drawing a distinction between Real Analysis and Monetary Analysis, Schumpeter (1954, p. 265) maintains that there are reasons to “doubt that money can ever be ‘neutral’ in any meaningful sense.” As he puts it, “Monetary Analysis introduces the element of money on the very ground floor of our analytic structure and abandons the idea that all essential features of economic life can be represented by a barter-economy model.” He then concludes “that this is almost universally recognized by modern economists, at least in principle, and that, taken in this sense, Monetary Analysis has established itself.”

As documented by Schumpeter, the tension between Real and Monetary Analysis has a long history that he traces back to Quesnay’s tableau, “the outstanding example for the alliance between Monetary and Aggregative Analysis.” In the early 20th century, with the flourishing of theories of money, credit, and business cycles, Monetary Analysis had effectively regained ground and paved the way to Keynes’s General Theory. Modern macroeconomics, as a modelling technique for dealing with systemic rather than local analysis, was born as Monetary Analysis.

Soon after Schumpeter wrote these words, however, tension returned among Neoclassical Keynesian, Austrian School, and Post- Keynesian models. Aggregate analysis in Neoclassical Keynesian models replaced nominal variables with monetary variables deflated by the price level as volume-like (i.e., “real”) measures. Austrian models preferred to resist the notion of monetary aggregation. Post-Keynesian models aimed instead to revive Keynes’s original views about the difference between monetary and real-exchange economies. Schumpeter would not have been surprised by a revival of the old controversy. As Schumpeter (1954, p. 274) put it, “theories that it is an achievement to displace may return to displace those by which they had been displaced, and both the displacement and the return may benefit that strange thing, scientific knowledge.”

Paradoxical as it may seem, it was “Monetarist” models that provoked a comeback of Real Analysis. As Friedman (1968, p. 11) claims, “the monetary authority controls nominal quantities—directly, the quantity of its own liabilities.” This, however, has no permanent effects on “the real rate of interest, the rate of unemployment, the level of real national income, the real quantity of money, the rate of growth of real national income, or the rate of growth of the real quantity of money.” Unaffected by nominal quantities, real variables are the “natural” outcome of the “market process” as described by “the Walrasian system of general equilibrium equations” (p. 8), corrected by market rigidities and imperfections.

This was the sense of the dictum “money matters.” In Monetarist models, money is a convenient means of payment in an economy where individual agents’ behavior is not dissimilar from that which would prevail in a real-exchange (i.e., barter) economy. Yet, if money is mismanaged by the issuing authority (by making it too scarce or too abundant), the economy deviates from its natural, structural path. The policy implication is that the monetary authority should use its monopoly power in a way consistent with the principle that money should ultimately serve market participants, thus providing a “sound” quantity that is compatible with price stability.

The objective of an appropriate money supply also limits the scope of fiscal policy. This must be managed in a “sustainable” way so that it does not interfere with “sound money” policy. While government spending and taxing decisions retain their distributional and structural effects, governments should self-impose a “no monetization” rule so that fiscal policy does not interfere with the monetary authority goal. They should also self-impose a budget constraint to prevent an accumulation of public debt to the point where buyers of debt evaporate, thus forcing “debt monetization” or default.

This comeback of Real Analysis had a remarkable impact on policy prescriptions. If the single policy tool that the monetary authority possesses is the control of nominal quantities, and if nominal quantities are inconsequential on real variables, it follows that monetary policy and the fiscal stance cannot be effective in targeting aggregate real variables. This also influenced subsequent theoretical developments such as New Classical, Real Business Cycle, and New-Keynesian models. Not only do these all share the notion of the long-run neutrality of money, but they also have failed to address a serious analysis of how monetary and financial relations affect the real economy.

The “neutrality of money” is indeed only one aspect of Real Analysis as defined by Schumpeter, according to which: “Real Analysis proceeds from the principle that all the essential phenomena of economic life are capable of being described in terms of goods and services, of decisions about them, and of relations between them. Money enters the picture only in the modest role of a technical device that has been adopted in order to facilitate transactions.” These words effectively describe a methodological approach whereby money is a welcome and extraordinarily efficient addition to the market system that does not, however, change the essential nature of certain fundamental economic activities such as spending, saving, lending, or borrowing. This approach sustains some well-established narratives, and two of these will be the focus of the rest of this paper: savings as a source of funds for investment and the intertemporal budget constraint to governments.

### III. A MONETARY ECONOMY

We live in monetary economies where private agents sell goods, final services, and productive services through contractual obligations that include a monetary compensation to be settled in units of a national currency which is not convertible into any other asset that the central bank must obtain from third parties. The national currency is a liability in the balance sheet of the central bank that can be held as a physical object owned by the holder or as a credit balance in the holder's account at the central bank. This liability is denominated in units that are given the name that defines the currency (e.g., one unit of claim on the Fed is one dollar).

As with any other kind of liability, the currency is redeemable from its issuer: currency holders can use it to make any payment to the public sector (including the purchase of services delivered by the public sector, fines, taxes, and mandatory compensation set by a judicial court). The liability of the central bank acquires a monetary function when private agents find it convenient to denominate their contracts in that currency (that they know has value as tax credit) and thus settle payments by transferring the ownership of a claim on the central bank.

The tax credit nature of national currencies is not only the factual reality of our monetary systems. It is likely to be wholly consistent with the historical evolution of the use of money, as documented by Goodhart (1998), and as Desan (2014) demonstrates with her narrative of money as a collectively engineered legal institution, not as a natural product of humans' propensity to barter.

In contemporary monetary systems, however, payments are almost entirely settled through banks. These are institutions licensed to issue their own liabilities for the purpose of providing a payment system alternative to banknotes as well as for providing loans based on credit analysis. When economic entities hold a deposit balance at a bank, however, they hold a claim on a commercial bank, not on the central bank, and such claim can be a substitute for the national currency only if credit risk is removed. Central banks do this by insuring banks' liabilities and by providing liquidity against banks' assets. This supports a permanent one-to-one conversion rate of banks' liabilities into the national currency.

To sum up, in our contemporary monetary economies the central bank is the monopolist issuer of non-convertible central bank money in the form of deposit balances, while banks are issuers of bank money and users of central bank money, and the non-bank private sector and the foreign sector are users of both. New deposit balances (whether at the central bank or at banks) originate only from issuers' purchases (notably, loans). Technically, any payment between users does not affect the quantity of deposit balances. This quantity changes instead with payments made by issuers (increasing) and payments made to issuers (decreasing), which primarily depend on issuers' lending activity.

Banks make lending decisions based on credit analysis. This activity is constrained by equity capital and existing regulations. It cannot be constrained by the balance of liquidity at the central bank, as the central bank will always settle payments to licensed banks at the agreed terms and conditions. These include an interest rate on central bank loans as well as a remuneration rate of balances at the central bank. With a non-convertible "tax-credit" currency, the central bank necessarily maintains, as the monopolist supplier of the currency, full control of these two interest rates that can be set at any desired level. A market for balances at the central bank develops once the central bank sets a penalty rate for end-of-business-day overdrafts.

While in principle the central bank could target the quantity of banknotes, this is wholly decided by its users. By contrast, the central bank can target the banks' net total balances at the central bank by setting a "reserve requirement" (in the absence of which net total balances fall to zero, except for a small precautionary balance) or through an asset purchase program.

The government makes payments out of its own deposit at the central bank. If a no-overdraft rule and a direct-government financing rule are self-imposed, funding of government spending can only come either from tax revenue made possible by prior government spending or by central bank lending to banks that use the funds to lend to the government. The nature of this constraint is wholly political as, technically, there is no operational difference between indirect and direct financing of the government.

### IV. FINANCIAL SAVINGS AND THE SAVINGS-DEBT CONSTRAINT

Modelling a monetary economy as being equivalent to a real-exchange economy where money exists as a means to facilitate exchange is an approach that, by missing a number of essential elements that exist only in a monetary economy, ends up being fundamentally flawed. The widespread narrative about saving being a source of funds for investment suits only a non-monetary, or real-exchange, economy where saving is a real asset, i.e., a product not yet consumed.

Saving a real asset means storing it for future use. The owner of a real asset has the liberty of consuming it, wasting it, or storing it, without this affecting other people's consumption or investment. Storing one asset can make it possible for the owner to produce a different asset. Robinson Crusoe can save food today so that tomorrow he can substitute the production of food for the production of, say, a new utensil. Only if the owner decides to lend the asset is a relationship with others established. If Robinson decides to lend the real asset to Man Friday, the funding of the production of a new utensil is made available to the borrower.

Likewise, economic entities in a monetary economy own or lend real assets. In national income and product accounts, the flow of productive real assets produced in a year is "net investment." In a monetary economy, however, economic entities can also save by storing financial assets. Unlike the

ownership of a real asset, these exist as a financial relationship, a claim of one economic unit upon another. Financial savings can be stored only in the form of claims on others, and every private financial claim comes into existence only as the counterpart of someone's liabilities. They may be banknotes, bank deposits, Treasury securities, or other financial assets issued by the private, the public, or the foreign sector.

In our economies, a portion of the stock of private financial savings is typically stored in pension funds or private portfolios. Another portion is effectively "in circulation," i.e., it is frequently transferred as producers (i.e., workers and firms) compete for financial assets by selling their labor and their output, and as economic agents swap different financial assets when modifying their portfolio composition.

Because financial assets exist only as the counterpart of some other entity's liabilities, additional savings are only made possible by additional liabilities. This means that financial savings exist only as the other side of debt, and when we discuss financial savings we are also discussing debt. It also means that an act of financial saving by one economic unit requires funding and must be associated with and validated by an act of another unit issuing debt. In sum, every penny saved is someone else's liability, and savings in a monetary economy do not fund, they need to be funded.

This breaks the narrative of financial savings as a source of funds available for investment. In a real-exchange economy, a stored amount of output for consumption can fund the production of a real asset. In a monetary economy, financial savings do not fund production: one penny less of spending that is loaned to business just provides business with enough cash to resolve a problem of lack of funds that was caused by the fall in spending in the first place (Terzi, 1986).

When producers need funds on top of what they get through sales and income, they still do not depend on the saving willingness of others. In fact, if saving willingness increases, producers need more, not less, funds. It is in the producers' interest to increase financial assets via sale receipts rather than via borrowing. Hence, producers who need funds can either borrow from banks or sell a debt obligation, in which case they compete for existing financial claims in circulation.

In sum, financial savings need to be validated by debt. Because every new private financial claim that comes into existence must be the counterpart of another liability (private, public, or foreign), the total existing stock of financial assets held by the domestic private sector is validated by the willingness of private entities, or the government, or non-resident entities to stay in debt with the domestic private sector. The stock is augmented when new liabilities are issued and reduced when liabilities are paid off and not renewed.

Notice that the net stock of financial savings of the private sector (i.e., the private sector financial balance) equals the total claims against the other two sectors (public and foreign). This means that an inflow of financial savings to the private sector equals the sum of net government spending (aka the

government deficit) and net foreign spending on the private domestic sector (aka the trade surplus).

As a result, studying the conditions under which saving and investment are equal seems inconsequential: Real savings are that portion of the output that we define as not being "consumed," thus always identical to "investment," and financial savings equal debt, not investment.

In this modified framework, the actual stock as well as the desired stock of financial savings are likely to influence overall spending. As I have developed more extensively elsewhere (Terzi, 2016), use of a simple equation can explain how aggregate demand changes. This is the savings-debt identity:

$$FA = D_P + D_G + D_F \quad (1)$$

where FA is the actual stock of financial assets of the domestic private sector, and  $D_P$ ,  $D_G$ , and  $D_F$  are the outstanding liabilities of, respectively, the private sector, the government, and the foreign sector. Assuming that private spending depends on the difference between actual and desired private financial savings and that issuers of liabilities have a target for their own indebtedness, private spending will stabilize when:

$$FA^d = D_P^d + D_G^d + D_F^d \quad (2)$$

This is what I call, drawing from Steindl (1982) and Godley and Cripps (1983), the savings-debt constraint to spending. A fall in desired savings and/or an increased willingness of economic entities in the various sectors to incur more debt will boost spending. Equivalently, a rising target for savings and/or a falling target for private, public, and foreign debt (combined) lowers spending. This is because saving (i.e., refraining from spending) will reduce spending, but when higher savings are funded by entities that are willing and able to stay in greater debt, then any saving-driven reduction in spending is offset by the equivalent debt-driven increase in spending.

The powerful mechanism through which the private sector expands the stock of financial assets by simultaneously increasing its indebtedness is bank credit. As long as private entities are willing and able to borrow from banks, FA will increase, triggering a further increase in demand as long as desired debt exceeds saving targets (i.e., an income multiplier will be operative until equation [2] is restored). Alternatively, FA can increase with net selling output abroad, corresponding to a higher  $D_F^d$ .

To adequately validate the demand for financial savings, however, debt must be sustainable, and this is where the difference between private and public debt matters. While the notion of sustainable public debt will be addressed in the next section, private debt is only as good as the borrower's ability to pay off debt, and this ultimately depends on the borrower's income. So private debt may become unsustainable when incomes fall enough to threaten debtors' capacity to pay off liabilities.

When private debt becomes unsustainable, private entities begin deleveraging – that is, not spending the financial assets they earn through income so they can pay off debt. When this occurs, it is because some economic entities become unable or unwilling to issue liabilities and instead of being suppliers of assets that others can store as savings, they begin to compete for financial assets as their desired savings get higher. Unless there is another offsetting source of financial claims (i.e., either government debt or foreigners' debt), the impact on spending of a rising disparity between desired savings and desired indebtedness can be violent: with deleveraging, an increasing number of entities compete for existing financial assets and, at the same time, fewer entities are willing to go into debt.

Two considerations close this section:

First, low demand stems from savings, but not from an excess of saving over investment, or a "global saving glut," reflecting funds that savers have no incentive to use to fund investments. Within the savings-debt constraint to spending framework, low demand stems from the desired stock of savings exceeding the actual stock of financial assets as determined by the existing stock of debt in the currency, i.e., when debt is short of private desired savings. It also stems from the existing stock of debt exceeding desired indebtedness. Notice that at the (consolidated) global level there is no foreign sector's debt providing a net source of funds, and only private and public debt offer support to desired savings.

Second, if demand is ultimately funded by bank lending, by government net spending, and by net exports, sectoral financial balances are the ordinary condition of a monetary economy. Any policy aimed at real goals (output and jobs) should be focused on understanding how such differences best work towards policy goals, not on forcing a reduction of such differences by treating all differences as "imbalances."

#### V. COUNTER-CYCLICAL POLICIES AND PUBLIC DEBT

Following the logic of the savings-debt constraint, policies that aim at restoring private spending can either pull private saving desires lower or support the creation of financial savings by fostering more debt. The latter is what monetary and fiscal policies attempt to accomplish. Monetary policy does it by lowering interest rates on the assumption that lower borrowing costs will boost private debt. Fiscal policy does it by actively increasing public debt via deficit spending. An alternative (deficit neutral and more structural than counter-cyclical) form of fiscal policy attempts to lower desired savings on the assumption that wage and salary recipients have lower savings targets than profit and rent recipients. This is accomplished via reallocation of government spending, redistribution of the tax burden, or other policies that support wage growth. When none of these policies is successfully adopted, counter-cyclical feedback effects (aka "automatic stabilizers") do the job, and a passive fall in tax revenue generates as much public debt as is needed to restore, at least partially, private desired savings.

Deficit and interest-rate policies, however, as well as automatic fiscal adjustments, normally encounter limits. For monetary policy, a limit is set by the risk of a buildup of inflation above a desired target, a risk typically measured by the "non-accelerating inflation rate of unemployment." For fiscal policy, a limit is set by the size of public debt (DG). When it is believed that a debt limit has been reached and there is no "fiscal space" left, reducing government debt down to a lower level becomes the overriding goal of fiscal policy.

Preventing both active and passive fiscal responses from operating may have potentially significant costs. Monetary policy can take over, assuming that low rates have a healthy expansionary effect on private debt (DP) and as long as policy makers do not foresee inflationary pressure. But if the private sector does not respond positively (because the private sector is unwilling to increase its leverage or because income effects offset borrowing cost effects), the private sector runs out of options for validating the desired savings of the private sector other than that of turning to foreign sources of savings.

A rising current account surplus (i.e., a higher DF) may offer a temporary remedy and a source of debt to validate private savings at a time when desired savings exceed domestically desired debts. Funding domestic private savings with foreign sources means relying, ultimately, on private and public debt generated abroad. This entails a higher risk to residents (who accumulate claims on foreigners), a lower disposable real output per capita (the real consequence of net exports), and a condition of dependence on the strength of foreign demand and the external value of the currency. Making the economy vulnerable to the dynamics of savings and debt in the rest of the world is hardly a desirable solution and is clearly not one that all countries can adopt, given that there must be a current account deficit for any current account surplus.

Overall, there exist only imperfect alternatives to fiscal policy as a means of offering a fresh supply of financial assets, when these are most needed, to the private sector. For this reason, assessing the theoretical foundation of the notion of "sustainable public debt" that typically restrains fiscal policy space is of special interest in this context. Except for concerns regarding policy makers' inability to effectively calibrate counter-cyclical fiscal actions (which is not the subject of this analysis), prescriptions that set limits to counter-cyclical fiscal policy originate out of concern that government indebtedness may reach a level that entails future debt servicing requirements that the government may be unwilling to pay. Such unwillingness to pay is clearly different from a genuine inability to pay, which would apply only to a monetary economy with a convertible national currency. As long as the national currency is not convertible into a third party's asset, the central bank in its capacity as the monopoly issuer of the national currency can always settle a payment on behalf of the government (technically this may entail a government account overdraft). Accordingly, a government's "inability" to pay can stem only from a self-imposed political constraint.

If the self-imposed constraint is credible, public debt becomes credit-sensitive. With a rising public debt, private agents require a credit risk premium, and there may occur a situation wherein the private sector is no longer willing to roll over maturing public debt and, hence, buyers of government securities evaporate. Then the government faces two options: to pay off debt by lifting the political constraint or to refuse to pay.

In a well-established, conventional approach to public debt, both options are considered to be cases of default, because it is assumed that paying off the accumulated debt is inflationary. Under this assumption, a dual rule protects monetary policy from the need to “monetize” government debt: a monetary financing prohibition forbidding the government from drawing funds on demand from the central bank, and a policy regime where the debt outstanding today must be offset by primary budget surpluses in the future. This is the principle of an intertemporal budget constraint (aka present-value borrowing constraint) that the government should not violate in order to avoid future inflation.

This approach to fiscal constraints was not the conventional position in the 1960s. When President Eisenhower, in his 1960 State of the Union address, referred to public debt as a mortgage “on our children,” he was running counter to the conventional wisdom of the time and notably to the views of the economics profession. The most firmly established beliefs in the economics profession were different.

Paul Samuelson’s then popular economics textbook can be taken as a benchmark of conventional wisdom of the time (1950s-1970s). It includes a specific appendix where the author considers the “false and genuine burdens of the public debt.” In that section, and elsewhere in the book, Samuelson (1976) explains that the limits to deficit spending are not financial: “the barrier would have to be political and self-imposed, and the effects [...] would depend crucially upon whether it impinges on an economy that is already inflationary or deflationary” (p.371). Also, he points out that people feeling uncomfortable at the prospect of public debt growing forever are displaying a psychological attitude, not a real concern (p.371). The “principal way one generation puts a burden on itself later or on a later generation is by bequeathing it less real capital than would otherwise have been the case” (p.377). But, “it would be a tragedy if people, in giving up their irrational fears of deficit spending, were thereby led to call the sky the limit. Unlimited spending can produce inflation, chaos, and waste” (p.378).

A change in conventional, widely held beliefs occurred in the 1980s in the context of a quantity theoretical view of the “money supply.” The proposition that substitution of central bank money for public debt causes inflation requires that a link exist between the act of the central bank buying government securities and rising prices. This depends on two hypotheses. The first is that the expansion of bank liquidity (aka bank reserves) provides more means to banks for supplying credit to

the non-bank private sector (households and firms). A second hypothesis is that a condition of an excess supply of money, i.e., excess cash balances in the hands of the public, drives prices higher as the public attempts to reduce excess cash holdings, until equilibrium is restored at a higher price level.

Public debt thus becomes a potential threat to price stability. As Stanley Fischer (1989) puts it by paraphrasing Friedman, “governments do not print money at a rapid rate out of a clear blue sky. They generally print money to cover their budget deficit. Rapid money growth is conceivable without an underlying fiscal imbalance, but it is unlikely. Thus rapid inflation is almost always a fiscal phenomenon.”

Within this framework, an intertemporal budget constraint to the government is not the outcome of a binding financial constraint analogous to the one faced by private entities. It is an institutionally designed constraint aimed at preventing public debt from becoming an inflation overhang. When this principle is included in rational expectations models, where rational agents behave in their best interests in a view of the world that coincides with that of the model, agents behave as if the budget constraint were a state of nature. Agents genuinely view government borrowing as the anticipation of future taxes, and, unsurprisingly, fiscal policy is ineffective in those models.

#### VI. THE INFLATIONARY THREAT OF MONETIZATION DOES NOT APPLY TO NON-CONVERTIBLE CURRENCIES

When analyzed in the context of the savings-debt constraint model of spending, government net spending (aka deficit spending) is a means for offering a fresh supply of financial assets to the private sector when needed. Constraining the scope of counter-cyclical fiscal policy on the assumption that monetization is inflationary entails economic, social, and political costs that are justified only by even greater costs from letting public debt grow unchecked.

The reality of such costs, however, has been dramatically disproved, both theoretically and empirically. On the latter front, the “grand natural experiment” of Quantitative Easing in the aftermath of the Great Recession has largely discredited the notion that monetization is inflationary. Central banks’ massive purchases did not create inflation. While central banks, notably in the U.S. and in the Euro Area, have “flooded” the economy with central bank money in substitution for private and public debt securities, central banks have been missing their inflation targets consistently, as the inflation rate has undershot the policy target for most of the period ever since QE began.

Inaccurate predictions of inflation as a product of QE were formulated without taking into account the non-convertible character of the national currency. John Taylor (2012), for example, argued that “this large expansion of reserve balances creates risks. If it is not undone, then the bank reserves will eventually pour out into the economy, causing inflation. If it is undone too quickly, banks may find it hard to adjust and pull

back on loans.” This is a view that applies to a long-gone convertible-currency world.

In a monetary economy with a non-convertible currency, the quantity of reserves is irrelevant to a bank’s lending capacity. In the banks’ balance sheets, deposits at the central bank and government securities are very close substitutes with different maturities and interest rates. Unlike the gold standard, the currency is not a gold certificate and public debt does not remove gold certificates from circulation. Both are liabilities of the public sector, with government securities offering a higher return in exchange for the inconvenience of not being deemed acceptable as settlement assets in the books of the central bank.

In a monetary economy with a non-convertible currency as described in Section III, there is no fundamental difference between government net spending directly financed by the central bank (“monetization”) and government net spending financed by the private sector (i.e., by selling securities in the primary market). If we compare two identical government expenditures, one funded by the central bank and the other funded by the private sector, the source of money is the same: the central bank. In addition, the private sector acquires in both cases the identical amount of bank deposits from selling output to the government sector.

The only difference is the type of asset that banks acquire: a deposit at the central bank in the case of “monetization” and otherwise a term deposit with the Treasury (i.e., the government securities purchased). However, through open-market operations, the central bank has the power to turn each portfolio position into the other: the “excess reserve” balance (in the monetization scenario) may change into a “securities balance,” and the “securities balance” (in the sale of securities in the market scenario) may change into an “excess reserve” balance. Irrespective of how banks’ claims are distributed between bank liquidity and government securities, the net financial position of the private sector and the net liabilities of the consolidated public sector do not change.

This means that a monetary financing prohibition does not change the substance of monetary policy, with one important caveat. If, in addition, credit risk on government securities is created by political design, one fundamental instrument of financial stabilization is removed. As Bindseil and Winkler (2012, p.4) explain, “a central bank that operates under a paper standard with a flexible exchange rate and without a monetary financing prohibition and other limits of borrowings placed on the banking sector is most flexible in containing a dual liquidity crisis.” They also argue that such prohibitions (and their consequent draconian austerity measures) intensified the German crisis of 1931 as well as the Eurozone crisis in 2010-12.

## VII. CONCLUDING REMARKS AND FUTURE RESEARCH

Real analysis and monetary analysis are different methods for different scopes, and real analysis can be highly misleading when modelling contemporary monetary economies. Adam

Smith and John Maynard Keynes offer sound advice on the matter. Smith explains that the goal of a nation and the purpose of its political economy is access to the product of labor, obtained domestically or from others in exchange for its own exports. Smith tells us that real output capacity is what matters, but he is also aware that money is “the great wheel of circulation”: it is not our wealth, but it makes the production of real wealth possible. On the other hand, Keynes explains that agents’ spending decisions in an economy of money contracts and uncertainty depend on financial stocks and expected monetary flows. For Keynes, monetary values shape real economic outcomes, and effective monetary management thus becomes an essential condition for avoiding financial mishaps that ultimately affect real prosperity. Keynes tells us that monetary and financial variables influence our choices, but he is also aware that real prosperity should be the ultimate public purpose of nations. Smith explains what the policy goal should be. Keynes explains what the policy instruments to achieve that goal should be.

Monetary analysis is not about assuming “money illusion” nor about admitting that the “quantity of money” has real effects. Monetary analysis is about starting out the modelling of monetary economies with a definition of money as a legal institution that today has the character of a non-convertible “tax credit” currency. This is an especially overlooked theoretical element in contemporary macroeconomics and should be the defining character of new macroeconomics.

In this contribution to the workshop, I have considered how the analysis of a monetary economy with a non-convertible currency can improve our understanding in two directions. One is the savings-debt constraint and the essential function of fiscal policy as the ultimate source of financial savings to the private sector. The other is a critique of the theory behind the notion of the intertemporal budget constraint to governments. Intended to protect monetary policy from the need to “monetize” government debt, it is inapplicable to a monetary economy with a non-convertible currency and has been discredited by the recent QE experience.

In a monetary economy with a non-convertible currency, the quantity of “money in circulation” that matters for aggregate demand is not set by the central bank. The chief aim of central bank policy, when not constrained by a fixed-rate regime, is to set an interest-rate floor to markets. Fiscal policy provides the net financial savings that the private sector is willing to hold in the form of currency, government debt, or bank liquidity. Correspondingly, banks offer additional financial assets via leverage. This entails that the monetary quantity that matters is set by fiscal policy and by banks via leverage, not by the central bank.

Because setting limits to public deficits and debt curbs the ammunition needed to prevent a downturn, and because current public-debt guidelines are ill-founded, our next challenge should be to devise new rules consistent with the savings-debt constraint and target full employment and price

stability differently. The option of doing away with any fiscal rule and leaving the decision entirely in the hands of governments is one that most people would reject. At a minimum, the determination of the fiscal stance needed for stable, sustainable, and inclusive prosperity should be the prerogative of an independent institution subject to public monitoring. A new framework for government action, as described by Tcherneva (2014), including specific direct employment and investment initiatives, different from contemporary hydraulic fine-tuning measures, is an especially promising direction.

Though at odds with the current well-established, orthodox view, this contribution is consistent with the changing views in monetary policy operations (i.e., the irrelevance of the money multiplier in a floating currency system, the inconsequential monetary base, the relevance of fiscal policy for financial stability, etc.). By contrast, the current consensus, although still apparently theoretically solid, is becoming increasingly fragile. If the profession does not want to be caught by surprise again, it should invest more research efforts in this direction.

#### REFERENCES

- Bindseil, U., & Winkler, A. (2013). Dual liquidity crises—a financial accounts framework. *Review of International Economics*, 21(1), 151-163.
- Christiano, L. J. (2017). The Great Recession: A Macroeconomic Earthquake (No. 17-1). Federal Reserve Bank of Minneapolis.
- Desan, C. (2014). *Making money: coin, currency, and the coming of capitalism*. Oxford University Press, USA.
- Friedman, M. (1968), The Role of Monetary Policy, *American Economic Review* 58.
- Godley, W., & Cripps, F. (1983). *Macroeconomics* (London: Fontana). Google Scholar.
- Goodhart, C. A. (1998). The two concepts of money: implications for the analysis of optimal currency areas. *European Journal of Political Economy*, 14(3), 407-432.
- Keynes, J. M. (1973). A Monetary Theory of Production, in Moggridge, D. (ed.) *The Collected Writings of John Maynard Keynes*, vol. XIII, London: Macmillan, pp. 408-11.
- Samuelson, P. (1976). *Economics*, McGraw-Hill, New York.
- Sargent, T. J., & Wallace, N. (1984). Some unpleasant monetarist arithmetic. In *Monetarism in the United Kingdom* (pp. 15-41). Palgrave Macmillan, London.
- Schumpeter, J. A. (1954). *History of economic analysis*. Psychology Press.
- Smith, A. (1976). *An Inquiry into the Nature and Causes of the Wealth of Nations* (London: W. Strahan and T. Cadell in the Strand, 1776); E. Cannan, ed. (New York: Modern Library, [1937]; The Glasgow Ed.
- Steindl, J. (1982). The Role of Household Saving in the Modern Economy, *Banca Nazionale del Lavoro Quarterly Review*, 1982, pp. 69-88. In *Economic Papers 1941–88* (pp. 183-207). Palgrave Macmillan, London.
- Taylor John B. (2012). Improving the Federal Reserve System: Examining Legislation to Reform the Fed and Other Alternatives”, Testimony before the Subcommittee on Domestic Monetary Policy and Technology of the Committee on Financial Services U.S. House of Representatives.
- Tcherneva, P. R. (2014). Reorienting fiscal policy: A bottom-up approach. *Journal of Post Keynesian Economics*, 37(1), 43-66.
- Terzi, A. (1986). The independence of finance from saving: a flow-of-funds interpretation. *Journal of Post Keynesian Economics*, 9(2), 188-197.
- Terzi, A. (2016). A T-shirt model of savings, debt, and private spending: lessons for the euro area, *European Journal of Economics and Economic Policies: Intervention*, Vol. 13, No. 1, 2016, 39–56.