

APPLYING THE FLOW-OF-FUNDS FRAMEWORK FOR THE ANALYSIS OF MACRO-FINANCIAL LINKAGES AND MONEY CREATION

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Abstract: In this paper we apply the flow-of-funds framework for the analysis of macro-financial linkages. We analyse the macroeconomic mechanism of the creation of purchasing power through credit, the link between credit and money creation, the partial self-financing property of bank credit, as well as similarities and differences between bank credit and other sources of financing. Bank credit flows directly support domestic demand and can at times be the single most potent, yet typically grossly underrated, demand-side driver behind the dynamics of economic activity and prices. In this paper we show that bank credit directly adds to domestic demand, which translates into some combination of stronger domestic economic activity, stronger foreign economic activity and higher prices.

Keywords: flow-of-funds, macro-financial linkages, national accounts, money creation.

1 Introduction

The recent global financial crisis caught mainstream economists by a surprise, exposing serious gaps in the collective understanding of crucial elements of the interaction between the real economy and the financial system. With only a handful of exceptions, the mainstream macroeconomic models regard bank credit as a means to redistribute existing real savings (or purchasing power), whereas in fact, by issuing loans, banks create new purchasing power. Investment spending is not actually predicated upon the consumption versus saving choice of an optimising agent but can instead be supported by bank credit and the cost of the dilution of the existing purchasing power may be borne by unsuspecting agents. There are signs of ongoing tectonic shifts in economic thinking with the world's most authoritative financial institutions voicing concerns about the current "debt-fueled growth model" and effectively calling for a theoretical and policy paradigm shift (BIS, 2016).

In this paper we get back to the basics in the pursuit to understand the fundamental linkages between financial and real sides of an economic system. Advances in national accounting frameworks and the associated analytical tools, compilation of more detailed financial accounts and constantly improving statistical compatibility between economic and financial accounts allows us to usefully apply the flow-of-funds (FOF) framework for the analysis of macro-financial linkages. We look into stylised cases of economic and financial transactions to analyse the macroeconomic mechanism of the creation of purchasing power through credit, the link between credit and money creation, the partial self-financing property of bank credit, as well as similarities and differences between bank credit and other sources of financing.

The remainder of this paper is structured as follows. In Section 2 we provide a short introduction to the analytical FOF framework and present economic and accounting principles behind it. In Section 3 we analyse macroeconomic identities and accounting constraints. Finally, in Section 4 we apply the FOF analysis tools to analyse bank credit as a means to create purchasing power.

2 General principles of the macroeconomic accounting

The system of national accounts (SNA) is an internationally compatible accounting framework providing a detailed description of national economies, their real and financial components and the economic relationships between institutional sectors. One of the main sets of tables in the SNA framework is the institutional sector accounts. In this accounting representation, a national economy is comprised of institutional sectors, namely, nonfinancial corporations, financial

corporations, general government, households and non-profit institutions serving households (NPISH). There is also "the rest of the world" (ROW) sector, which enables recording economic interactions between the national economy and non-residents.

The institutional sector accounts are organised around the sequence of accounts, which records each sector's economic and financial activities in a compatible way. More specifically, the sequence of accounts provides a comprehensive sequential description of the cycle of sector's economic activity by linking its resources (revenue), uses (expenditure), accumulation of financial and nonfinancial assets and the associated changes in the sectoral balance sheet positions. The use of similar classifications and accounting rules allows symmetrical reporting of transactions or changes in asset positions for interacting institutional sectors. The unified accounting framework also ensures the aggregation of sectoral accounts data into economy-wide aggregates, which are at the heart of the macroeconomic analysis.

Integrated economic accounts form the basis of the flow-of-funds tables and the associated sectoral balance sheet position tables. These analytical tools prove very useful for diagnosing the short-term state of an economy and are routinely applied by organisations like the International Monetary Fund in country assessment programs. They allow monitoring and assessment of economic imbalances (Be Duc and Le Breton, 2009), facilitate the analysis of macro-financial linkages (Crowe, Johnson, Ostry and Zettelmeyer, 2010), real and financial network formation (Castren and Kavonius, 2009; Castren and Rancan, 2013) and shadow-bank activity (OECD, 2016), as well as help to better understand the role of money and credit in the economy.

An analytical FOF table offers a quick and straightforward way to portray an economy as a closed system consisting of interacting institutional sectors. A FOF table shows revenue, expenditure and financing transactions of each sector and the national economy, as well as the interactions with the rest of the world. The economic variables typically are highly aggregated, there is no breakdown into uses and resources unlike in the "T-account" representation, and changes in assets and liabilities are often reported on the net change basis. Thus, to obtain more detailed information it might be necessary to refer to the tables of integrated economic accounts or other related sources of statistical information. The main advantage of the succinct FOF representation is that it makes immediately clear which sectors have deficits, why they have them, from which sectors they finance excess spending and by which financial instruments. The system is closed in the sense that in the absence of statistical errors there should be no unaccounted sources of financing, thus such accounting framework can be very helpful in ensuring internal consistency of the macroeconomic analysis.

3 Macroeconomic identities and accounting constraints

Constraints in the FOF framework stem from some principal macroeconomic accounting identities. First, private institutional sector's disposable income equals the primary income net of taxes plus net social benefits and other current transfers. In contrast to the private sector, the major part of general government's disposable income comes from taxes. In national disposable income calculations, the income that constitutes other domestic institutional sectors' expenditure (for example, taxes, rents, etc.) is netted out. Thus, gross national disposable income (GNDI) is the sum of gross domestic product (GDP), external primary income (PI) and external secondary income (SI).

$$\text{GNDI} = \text{GDP} + \text{PI} + \text{SI} \quad (1)$$

National saving is defined as the difference between GNDI and final consumption expenditure (C; and again, national saving is the sum of government and private sector saving (S)):

$$S = \text{GNDI} - C \quad (2)$$

By substituting equation (1) into (2), using the GDP decomposition by expenditure approach and applying the balance-of-payments (BOP) definition of the current account balance, one gets another well-known macroeconomic identity, which states that the saving-investment (I) balance of the national economy must equal the external current account (CA) balance:

$$S - I = CA \quad (3)$$

By adding capital transfers to both sides of equation (3) and abstracting from statistical errors, we can immediately see why net lending (NL) of the aggregate economy should equal net borrowing of the ROW sector in the FOF:

$$\text{GNDI} - C - I + KA = NL = FA = CA + KA \quad (4)$$

where, FA = financial account balance and KA = capital account balance.

The recent global financial crisis, which was characterised, among other things, by disrupted capital flows among key economic sectors, highlighted the need to understand the financial interconnectedness between sectors but such analysis was hampered by the lack of adequate data (Shrestha and Mink, 2011; Shrestha, Mink, and Fassler, 2012). Therefore, in recent years more and more countries are starting to compile and publish financial accounts data on the so-called who-to-whom basis. This representation contains large amounts of data and is difficult to compile for economies with advanced financial markets, thus the progress in this field is rather slow. However, the economic importance of such data is immense because it ensures internal consistency of integrated economic accounts framework.

When financial accounts data are available in both instrument and who-to-whom decomposition, the FOF can be easily tailored to specific analytical needs. We can combine elements of both decompositions and break sectoral net financing (NF) into two broad sources of funding, namely, foreign (FF) and domestic financing (DF). For example, in the case of the nonfinancial corporations sector (subscript C) this gives:

$$\text{NFC} = -\text{NLC} = \text{FFC} + \text{DFC} \quad (5)$$

If nonfinancial corporations sector has a negative net lending (NLC < 0), this implies that the sector has a positive net financing need (NFC = -NLC > 0) and it funds its excess spending by acquiring financing either from abroad or from other domestic sectors (FFC + DFC > 0). It is also noteworthy that at the aggregate economy level the flows of financing among domestic sectors are netted out (DF = 0) making net financing of the total economy equal net foreign financing:

$$\text{NF} = -\text{NL} = \text{FF} \quad (6)$$

Comparing equations (5) and (6) we see that while excess spending of an institutional sector can be funded by attracting financial resources from other sectors or from abroad, a rise in the national excess spending can only be associated with financing from abroad. It is tempting to assert that domestic financing, for example in the form of bank credit, cannot stimulate spending. But it would be mistaken because, under certain circumstances domestic financing – and bank credit in particular – can stimulate both national spending and income resulting in a small or even no financing gap for the national economy.

4 Bank credit as a mean to create purchasing power

Bank credit is crucial in the process of creating money and new purchasing power. The view that bank credit technically creates deposits and not vice versa is also known in the financial literature as “financing through money creation” (FMC) and it

strongly contrasts with the “old” and technically flawed “intermediation of loanable funds” (ILF) view (see Jakob and Kumhof, 2015, for a comparative analysis). Incidentally, the fact that bank credit technically creates deposits is indisputable and is widely acknowledged in the central banking and financial community (McLeay, Radia and Thomas, 2014) and even in introductory textbooks on money and banking but the modern mainstream models almost universally embrace the old ILF view of banks.

Though the FMC view is undoubtedly correct from financial accounting standpoint, one cannot accept it unconditionally from the macroeconomic perspective. Even though banks can issue new credit at will, they still need to be sure that they will have enough liquidity (e.g. reserves with the central bank) in the case of withdrawals or transfers of newly created and old deposits. Thus banks’ willingness to grant new loans depends not only on profitability considerations but also on their liquidity situation and, by extension, on their deposit base (because deposits create liquidity in the form of bank reserves at the central bank). Nowadays, ample and cheap liquidity available from central banks downplays the importance of liquidity considerations and diminishes the importance of deposits in determining banks’ willingness to extend new credit.

The FMC paradigm has very important and nontrivial macroeconomic implications. It suggests that bank credit can provide a powerful boost to domestic purchasing power even in the absence of the access to foreign funding (see equation 6). Banks’ inherent ability to create purchasing power at will, with only relatively mild limitations, implies that nominal levels of investment and consumption expenditure are much less dependent on individual saving decisions than is conventionally maintained in the standard macroeconomic theory. Simply put, saving may lead to investment in the absence of banks (e.g. through peer-to-peer lending) but credit-financed investment leads to rises in nonfinancial surpluses and deposits, which can even be loosely interpreted as newly created “savings”.

Without a proper analysis of the financial side of the economic system, one would still observe the saving and spending processes that balance each other but nevertheless it is very likely that the drivers behind these decisions would be misinterpreted. Let take an example of household taking a mortgage to buy a new house from a developer (corporation). The household sector is the net borrower and the nonfinancial corporate sector has a nonfinancial surplus of exactly the same magnitude that is needed to finance the housing acquisition. So looking at the snapshot of the economy after the transactions have taken place and concentrating on the nonfinancial part of the economy, one could conclude something along this line: strong income growth of the nonfinancial corporations sector and withheld corporate investments led to a rise in corporate savings which were channeled to the household sector and bolstered its housing acquisition. But in fact this would be a completely incorrect interpretation of what actually happened. We know that this simple case was devised in such a way that households were willing to acquire housing, while the bank took the decision to grant credit and was arguably the most important economic actor in this regard. Banks’ ability to issue credit was not predicated upon any of the sectors’ willingness to save.

This example clearly shows that the loanable funds paradigm portraying banks as functionally passive financial intermediaries between savers and borrowers is incorrect: banks have a much larger role than merely facilitating the process of reallocation of existing real resources. Also, the ILF view incorrectly regards depositors as savers and “attributes to them an influence on the “supply of credit” which they do not have” (Schumpeter, 2016). The reallocation of resources eventually happens as a consequence of bank lending but by issuing loans the banking sector first and foremost enables systemic balance sheet expansion or, in other words, an increase in the financial leverage at the aggregate economy level. By issuing loans, banks create new nominal purchasing power, which leads to a demand-driven rise in economic activity (domestically or abroad) and

changes in various price levels (in particular, consumer and producer prices, financial asset and property prices, wages, and exchange rates), which in turn dilute the real purchasing power to a certain degree.

To further clarify economic implications of credit creation and to distinguish it from other forms of expenditure financing, it is useful to reconsider the above-discussed financing case in terms of the equation of exchange.

$$M \cdot V = P \cdot Q \quad (7)$$

where, M = broad money; V = velocity of money; P = prices level; Q = real output.

In the case of sectoral spending funded by current savings there are no immediate changes in any of the components of the equation of exchange (7). When a sector draws down its financial assets or borrows from other domestic nonfinancial sectors, nominal output (P·Q) rises but M in the economy remains unchanged leading to an increase in V. Even though we do not explicitly examine the dynamic implications of the initial expenditure and financing transactions, it is reasonable to think that such an increase in V would quickly subside as, figuratively, economic agents, or a sector as a whole, would quickly find limits to tapping into their bank accounts.

In contrast, bank credit helps to overcome these limitations because, as was mentioned above, it expands nominal purchasing power rather than redistributes it. Bank credit induces an increase in M and a commensurate rise in P·Q, leaving V roughly stable. After the initial increase in M it is likely to decline only gradually as bank loans are repaid, thus the demand-side stimulus related to bank credit (and, more generally, to money creation) is likely more persistent than a stimulus related to an increase in the V associated with drawing down sectoral assets. Notably, the impact of bank credit on the equation of exchange is not unique – borrowing from abroad creates qualitatively similar effects. Domestic bank credit differs from borrowing from abroad in that the latter leads to the accumulation of foreign debt and a flow of cross-border interest payments.

5 Conclusions

In this paper we applied the FOF framework for the analysis of macro-financial linkages. The FOF framework represents the economy as a closed system of economic and financial flows among institutional sectors, which is ideally suited for tracking the origination and macroeconomic impact of credit and money flows. The FOF framework helps identify bank credit as one of the means of expenditure financing, i.e. by running down net financial assets, as opposed to restraining other spending.

Money and purchasing power creation is an indispensable corollary of bank credit issuance, which implies that the “financing through money creation” paradigm does a much better job in explaining the actual mechanics of bank credit creation than the “loanable funds” model. Credit is not predicated upon existing savings but rather creates new savings and is therefore to some extent self-financing. However, credit is not necessarily fully self-financing because, in simple terms, money can flow out of the banking system leaving banks exposed to financing gaps. Financing through money creation has huge macroeconomic implications: bank credit directly adds to domestic demand, which translates into some combination of stronger domestic economic activity, stronger foreign economic activity and higher prices – with particular configuration depending on the structural features of the economy.

Moreover there are macroprudential implications of credit-driven growth as it may result in a systemic over-reliance on continuous debt accumulation. Beside the partial self-financing feature of credit, one of the most remarkable aspects of credit expansion is the large capacity of economies to absorb new credit. The self-propelling and overextended credit booms may

result in a situation where economic agents are unwilling or unable to take up additional credit and further expand their balance sheets, which naturally leads to a reversal of credit flows and invokes the “aggregate debt repayment phase” and the associated balance sheet recession. The policy makers’ standard response seems to have been to resort to debt (or asset price) reflation strategies by trying to reignite private sector credit growth or replacing it with growing public debt. The long-term implications of these strategies applied in response to the recent global financial crisis are still largely unclear.

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