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Bofinger and Ries *versus* Borio and Disyatat: macroeconomics
after endogenous money. A brief note

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Abstract

A paper by Peter Bofinger and Mathias Ries (2017a/b) strays from the recent rethinking in monetary analysis to criticise Summers' "saving glut" explanation of the prevalence of low real interest rates. A similar critical perspective is held by Borio and Disyatat (e.g. 2011a/b, 2015), who are criticised, however, by Bofinger and Reis for their Wicksellian background. In this note, we compare and assess these two different views. Both Bofinger and Reis (B&R) and Borio and Disyatat (B&D) reject traditional "loanable fund theory" in favour of an endogenous money view of credit, but while B&R regard conventional marginalist (real) theory as inconsistent with the endogenous money view, B&D, following Wicksell, regard it as consistent. We sympathize with B&R's criticism of conventional theory, especially their Keynesian view of the interest rate as a purely monetary phenomenon. Interestingly, B&R refer to the problems of marginalist capital theory as undermining the natural interest rate concept.

Keywords Bofinger, Borio, Dysiatat, monetary theory, capital theory, Wicksell, natural interest rate

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1. Bofinger and Ries *versus* Borio and Disyatat

Standard monetary theory has been rethought over the past few years. It is becoming increasingly clear that concepts like the exogeneity of (high powered) money supply, the deposit multiplier, the role of banks as intermediating saving - the time-honoured Robertsonian “loanable fund theory” (LFT) - are misleading, although they persist in popular textbooks and among the more conservative economic circles. Economists at central banks (e.g. Bindseil and König 2013) and “heterodox” economists have long since cultivated the notion of endogenous money (see Lavoie 2014, Chapter 4 for a review), which has ancient roots in economic analysis. The idea that banks create loans “on demand” and that central banks accommodate demand for reserves at the policy interest rate (Disyatat 2008) are becoming common knowledge among economists.

A paper by Peter Bofinger and Mathias Ries (2017a/b) strays from the recent rethinking in monetary analysis to criticise Summers’ “saving glut” explanation of the prevalence of low real interest rates. A similar critical perspective is held by Borio and Disyatat (e.g. 2011a/b, 2015), who are criticised, however, by Bofinger and Reis for their Wicksellian background. In this note, we compare and assess these two different views. In short, while both Bofinger and Reis (B&R) and Borio and Disyatat (B&D) reject the LFT in favour of an endogenous money view, B&R regard traditional marginalist (real) theory as inconsistent with the endogenous money view, following Wicksell, and B&D regard it as consistent. While we sympathize with B&R’s criticism of traditional theory, especially their Keynesian view of the interest rate as a purely monetary phenomenon, the arguments that they advance do not sufficiently undermine the Wicksellian foundations of B&D. Interestingly, B&R refer to the problems of marginalist capital theory as undermining the natural interest rate concept. We shall elaborate on this suggestion.

2. Convergences and divergences

2.1. B&R (2017a, pp. 1 and 4) argue that the LFT is based on a naïve one-commodity economy, for example corn, in which banks intermediate saving by collecting saved-corn which is lent to investors at a natural interest rate determined by standard saving supply and demand functions for “capital”, where the demand function reflects the marginal productivity of capital.¹ The

¹For an analogous criticism, see Jakab and Kumhof (2015), who also note that if banks can only lend after receiving deposits, banks that have lost deposits should simultaneously reduce lending. See also Werner (2014, 2015) for a good review of this issue. As previously mentioned, heterodox

association of traditional “real” marginal theory with LFT and, therefore, with the one-commodity world hypothesis, is enough for B&R to reject the traditional theory - based on the supply and demand of “production factors”.

For B&D (2011, 2015), on the other hand, the adoption of an endogenous money point of view is consistent with the preservation of the traditional real (marginalist) theory in a multi-commodity, monetary economy.² In this regard, they follow the teachings of Knut Wicksell, the great Swedish economist to whom conventional economists often turn as a source of inspiration (neglecting, as will be noted below, the most tormented aspects of his analysis). As is well known, in Wicksell money is endogenous (banks create loans on demand), while the banking policy (or the central bank policy) is required to maintain the actually prevailing monetary interest rate in line with the natural rate in order to stabilise the economy at a full employment, non-inflationary equilibrium. The natural interest rate is the bond between the monetary and real sections of the economy.³ As an alternative to Wicksell’s theory, B&R (2017a, pp. 20-21), propose the IS-LM (and AS-AD) model as a better framework for monetary analysis. They acknowledge (ibid, p. 22), however, that this mechanism is open to different interest rate determinations (from the Wicksellian natural rate, to a purely monetary determination). In this sense, they do not forget that the IS-LM mechanism was born, in the minds of Hicks and Modigliani, as a way to lead Keynes back into a traditional framework. In this sense, Keynes’ liquidity preference theory (and related LM function) complement Wicksellian monetary theory, and cannot be taken as a radical criticism of the same.

2.2. B&R and B&D both relate the endogenous money view to the Keynesian Copernican revolution that regarded saving as determined by investment, where investment is financed by credit-money creation by banks. B&R (2017a, p. 11) recall the “flow of funds” analysis to explain “that in a monetary economy household saving is not a source for additional funds for the corporate sector”. In my opinion, looking at accounting relations does not help to check causal relations. More consistently, B&R (ibid, p. 18) later refer to the Keynesian multiplier in order to show that: “It is the willingness of banks to finance investments which makes realization of the

economics has been ahead in this field for decades, including Kaldor, J. Robinson, Kalecki, Minsky and Sraffa. It is therefore unfair to mention only Vickrey as one of the “few prominent economists” who sustained the endogeneity of money (B&R, 2017a, p. 12).

² More detailed aspects of B&D’s views are considered in Cesaratto (2017b, pp. 12-15) and Cesaratto (2017c, *passim*).

³ The natural rate is unknown, of course, to the monetary authorities; however, price inflation or deflation will signal the discrepancy between the actual monetary rate and the natural one.

surplus and the deficit possible. If the investor buys a new real asset aggregate income increases according to the investment multiplier. Private households can consume and save more and the profits of the business sector increase. Thus, investment causes higher saving and the funds flow from investors to savers.” B&D (2011, 2015) regard the Keynesian multiplier as consistent with the traditional (and Wicksellian) view that, in the long run, investment is adequate for full-employment saving. In this respect, it is enough that the monetary (short-term) interest rate (i_m), which is influenced by the monetary authorities, guides the long-term rate prevailing on the financial markets towards its natural rate (i_n). At i_n , investment decisions precisely generate full employment saving.

2.3. Both B&R and B&D agree that central banks have major influence over short and long term interest rates. In this regard, they all agree that the financial crisis and global imbalances have resulted from loose monetary policies, and not from a saving glut. B&R (ibid, pp. 36-37) talk about a “financing glut”, and B&D (2011, 2015) talk about “excess finance”. However, while both B&D and B&R regard the crisis as a result of inappropriate monetary policies, B&D see disequilibrium as a result of a Wicksellian discrepancy between the monetary interest rate and the natural one, whereas B&R reject the notion of natural interest rate, although the concept somehow reappears as the “optimum (full-employment) interest rate” (2017, pp.22-23). All things considered, it can be inferred that, in line with Keynes, B&R want to emphasize the purely *monetary* nature of the interest rate by eliminating any reference to the natural rate. This dismissal appears to be associated to the rejection of the real (marginalist) traditional theory. While this is interesting, we must determine whether B&R’s thesis is solid enough. More specifically, the traditional marginal theory can be completed both by LFT (which implies a corn-economy) or by the Wicksellian monetary theory (which does not imply it). In this regard, the dismissal of the traditional theory cannot rely upon its association with LFT, since a second more reliable option is available, and is taken, for instance, by B&D.

2.4. Both B&R and B&D use some of the above ideas (endogeneity of money, saving generated by investment) to criticise Bernanke’s saving-glut hypothesis. Both B&R and B&D reverse Summer’s causal relation that excess Chinese saving caused a financial bubble in the U.S., and regard the American monetary policy’s support for domestic aggregate demand (AD) and imports as the ultimate cause of the financial bubble and the U.S.-China financial imbalances. Unless we were to be in an LFT corn-world, in which the Chinese lend corn to American households, how would it be

possible for China lend to the U.S. without first obtaining dollars? This simple question is convincingly asked by B&R (2017, p. 37):

Although a discussion of the different narratives in terms of 'the chicken and the egg' might be justified, financing is only possible in the monetary narrative. For the financing of borrowers in the United States foreign investors must already be in the possession of US-Dollar deposits. Bernanke's idea that the Chinese central bank has been 'mobilizing domestic saving, and then using the proceeds to buy U.S. Treasury securities and other assets' is only possible in a commodity world, where the standard commodity can be globally used. In a monetary world, the Chinese central bank would be unable to finance borrowers in the United States by providing them with Renminbi deposits.

On a similar note, B&D (2011, 2015) highlight the distinction between saving and financing in an open economy: while, *ex post*, foreign saving from current account surplus countries *funds* deficit countries, these imbalances originate from complex international gross capital flows fuelled by endogenous money generation by banks located in the deficit, surplus or even in third countries.⁴ B&D, however, regard financial bubbles and imbalances as the result of a global Wicksellian discrepancy between monetary and natural interest rates (which revealed itself through inflation in asset prices rather than goods and services). B&R would presumably reject this Wicksellian perspective.

3. Assessment

3.1. While there is a large degree of *practical* convergence between B&R and B&D in their critiques of the saving glut, their *analytical* divergence can be summed up as follows: while both B&R and B&D dismiss the LFT in favour of an endogenous money view, B&R maintain that the traditional real (marginalist) theory (with the key notion of the natural interest rate) should be dismissed along with the LFT, while, following Wicksell, B&D believe that the marginal theory and endogenous-money theory complement each other perfectly.

3.2. B&R do not offer a direct critique of B&D's argument concerning the Wicksellian consistency between the real (marginalist) theory and endogenous money. This seems like an implicit admission that the abandonment of the LFT does not entail an abandonment of the real traditional theory as well. Since the monetary side of the Wicksellian perspective (endogenous

⁴ Moving from B&D's insights, Cesaratto (2017c) explores these relations from a heterodox perspective.

money) is basically shared by B&R, all that remains is for them to critically turn to the real side of that same perspective. And, indeed, B&R (2017, p. 42) appear to turn to a second, more direct, criticism of the traditional marginal theory (and to B&R's Wicksellian perspective). They do so by quoting a rather cryptic paragraph from an old paper written by a Swedish economist:

Wicksell's confusion between two incompatible paradigms [banks as intermediaries of saving in equilibrium on the real side, and banks as creators of credit money in disequilibrium on the monetary side] was already criticized by Palander (1941, p. 22): 'A concept which is used for a monetary economy cannot be given a definition which makes it necessary to disregard the existence of money. Neither can the 'real' rate be thought of as a simple expression for the current physical marginal productivity in a certain position. This can be determined only in the special case where there is a single factor of production and a single product of the same sort as the factor of production.'

Let us focus upon the second criticism.⁵ Palander's paper mainly refers to Myrdal. It could be said that Wicksell and the post-Wicksellian generation were aware of the problems with marginalist capital theory, openly faced by Wicksell in the *Lectures* (1934 (1911)). Wicksell was fully aware of the vicious circle associated with the measurement of capital as a value given before the determination of prices and distribution; a measurement that was adopted, for instance, by von Thünen and J.B.Clark (e.g. *ibid*, p. 149). The Swedish economist tried hard to measure aggregate capital in "dated quantities of labour", but failed (interestingly for reasons similar to the failure of the labour theory of value), and eventually attributed an arbitrary value to the aggregate capital stock in his general equilibrium equations (Garegnani 1960, 1990). With this Wicksellian background, therefore, the "Stockholm school" was aware of these problems, especially Erik

⁵ If I have interpreted it correctly, the first criticism ("A concept which is used for a monetary economy cannot be given a definition which makes it necessary to disregard the existence of money") is unfounded. The interest rate is a ratio that does not depend upon a meter of measurement. The concept of the natural interest rate determined in the real part of the theory is a ration between the marginal product of capital in absolute terms, and the capital stock. As long as the two magnitudes are consistently measured in homogenous terms, say in value – which does not require the "existence of money" but only the knowledge of relative prices, one of which is taken as *numeraire* -, the natural interest rate is consistently determined and can be correctly compared to the monetary rate sets by the banks or the monetary authorities. The question is whether the capital stock (and the marginal product) can be consistently measured in value, which implies that the relative prices are known in advance. Since the prices naturally cannot be known before the natural rate is determined, we find ourselves in the notorious vicious circle evoked by the second criticism.

Lindahl - as pointed out by Christian Gehrke (2003); see also Kurz and Salvadori (1995), pp. 456-58; Petri (2016); Petri 2004, Sect. 5.3 and 5.4).⁶ This awareness is confirmed by the verdict on marginal productivity theory expressed by Palander, and attributed to Myrdal, that “the current physical marginal productivity ... can be determined only in the special case where there is a single factor of production and a single product of the same sort as the factor of production”.

Incidentally, it is interesting to note that, as a result of these difficulties, the Swedish economist pointed in the direction of temporary equilibria; a direction also contemporarily undertaken by John Hicks (1939). This approach, however, is also unable to sustain the notion of a natural interest rate.

In the 1930s, Hicks and the Swedish economists abandoned the traditional determination of long-period equilibria - with a uniform rate of return on “capital” often defined as the natural interest rate - in favour of short-period equilibria. Although, on the one hand, these neo-Walrasian equilibria (or those with complete future markets) bypass the problem of the measurement of capital in value – “capital” appears as a vector of physical capital goods – on the other hand, it is doubtful that this neo-Walrasian theory can sustain standard macroeconomic analysis. In fact, standard macroeconomics is still based on the (invalid) marginalist long period theory (Dvoskin 2016). For instance, given the absence of a uniform rate of return on the heterogeneous capital goods over the short-period general equilibrium, it is impossible to identify a unique natural interest rate, a cornerstone of conventional macroeconomics. As Sraffa (1932 quoted by Heinz Kurz 2000, p. 294) put it, Wicksell’s “maxim of policy now requires that the money rate should be equal to all these divergent natural rates”, each natural rate being equal to the temporary own rate of return for each specific capital good. This naturally entails a collapse of Wicksellian monetary analysis. The seminal paper on the change in the notion of equilibrium in neoclassical theory and its consequences for the practical relevance of economic analysis is Garegnani (1976). See also Petri (2003) and Lazzarini (2011).

Although the vicious circle relating to the measurement of the “capital endowment”, on the “supply-of-capital side”, is enough to abandon the standard price theory and the notion of the natural interest rate, the publication of Sraffa (1960) opened up a new front of criticism for capital

⁶ I would like to thank Ariel Dvoskin, Saverio Fratini, Andres Lazzarini, Fabio Petri and Fabio Ravagnani for their advice on this topic.

theory on the “demand-of-capital side”, revealing phenomena like the reswitching of techniques and reverse capital deepening. The ensuing controversy “between the two Cambridges” culminated in the “Symposium” in the *Quarterly Journal of Economics*, which Paul Samuelson (1966, pp. 582-583) summed up - albeit with some ambiguity (Petri 2003, p. 20) - with a well-known admission:

Pasinetti, Morishima, Bruno-Burmeister-Sheshinski, Garegnani merit our gratitude for demonstrating that reswitching is a logical possibility in any technology, indecomposable or decomposable. Reswitching, whatever its empirical likelihood, does alert us to several vital possibilities: Lower interest rates may bring lower steady-state consumption and lower capital/output ratios, and the transition to such lower interest rate can involve denial of diminishing returns and entail reverse capital deepening in which current consumption is augmented rather than sacrificed. There often turns out to be no unambiguous way of characterizing different processes as more "capital-intensive," more "mechanized," more "roundabout," except in the *ex post* tautological sense of being adopted at a lower interest rate and involving a higher real wage. Such a tautological labeling is shown, in the case of reswitching, to lead to inconsistent ranking between pairs of unchanged technologies, depending upon which interest rate happens to prevail in the market. If all this causes headaches for those nostalgic for the old time parables of neoclassical writing, we must remind ourselves that scholars are not born to live an easy existence. We must respect, and appraise, the facts of life.⁷

3.3. Once these developments are fully taken into consideration, B&R appear more than justified in rejecting the notion of a natural interest rate and confining the validity of the standard neoclassical “parable” to a one-commodity world. This highly limited legitimacy, however, is not due to the adoption of the LFT by standard marginal theory – given that Wicksellians like B&D (or possibly Woodford) do without it and endorse an endogenous money view –, but is rather due to the problems that this approach encounters in capital theory. Thus, although Wicksellians *pretend* to show that real marginal analysis is also consistent with the alternative endogenous-money view, the capital critique seems to undermine the very foundations of their attempt, since the real fundamentals of their monetary analysis are irreparably flawed. Once the notion of a natural interest rate is rejected, we are left with a “pure” monetary interest rate, influenced by the

⁷ The discussion between Garegnani and Samuelson on Sraffa and capital theory continued until they both passed away (see Kurz 2012).

monetary authorities and by the policy circumstances that affect their decisions, a result that B&R seem to aim for.⁸

4. Conclusions

4.1. Many years ago, Pierangelo Garegnani (1978-79) suggested that, while the main novelty of the *General Theory* was in the Copernican revolution of the saving-investment relation, the marginalist legacies, and in particular the acceptance of a decreasing demand function for investment, exposed it to be reabsorbed by the traditional theory. Unable to reject the real core of marginalism, Keynes took refuge in monetary theory advancing a monetary determination of the interest rate (the liquidity preference theory), as opposed to the traditional real determination by the saving demand and supply functions. As shown by the neoclassical synthesis, however, the Keynesian case of an unemployment equilibrium could easily be confined to periods of particular investment depression, in which the monetary authorities find it difficult to reduce the interest rate to its full employment (natural) level. The Keynesian case is thus reduced to a Wicksellian deflationary equilibrium, in which the monetary interest rate is higher than the natural rate, while the monetary policy (perhaps with the help of fiscal policy to prop up investors' confidence) will generally be able to restore a full employment equilibrium in the long run.

4.2. B&R partially follow Keynes' unsuccessful strategy in maintaining that advancements in monetary analysis are enough to reject traditional macroeconomics. In fact, B&D (2011, 2015) show that one can believe in endogenous money and in a monetary determination of the actual interest rate, and even in the Keynesian multipliers, while at the same time being a consistent

⁸ Interestingly, the relevance of the capital controversy for the evaluation of the notion of the natural interest rate has recently been recalled by Vítor Constâncio (2016), deputy President of the ECB: "The connection with the productivity of capital in production in physical terms was kept in the loanable funds theory of the interest rate when it refers the forces of 'productivity and thrift'. Keynes, in his 1930 *Treatise on Money*, uses the concept of the natural rate but abandons it in the 'General Theory' as he introduces the concept of equilibrium at different levels of employment rejecting the idea of real self-equilibrating forces and underlining the importance of monetary factors (the liquidity preference theory) in determining the interest rates even in the long term. As a result, some Keynesians and especially all post-Keynesians reject the notion of the *natural* real equilibrium interest rate. The link with the real productivity of capital also contributed to that rejection after the famous controversy between the two Cambridge Universities (U.K. and U.S.) in the 1960s and 70s about the possibility of aggregating different capital goods in a capital variable with prices that need an interest rate to be calculated, when, at the same time, the interest rate was supposed to depend on the real productivity of capital."

Wicksellian. In this regard, it is sufficient that the monetary authority guides the monetary interest rate to its natural level. However, B&R also suggest turning the criticism towards the *real* part of the dominant theory and, more specifically, towards the concept of the natural interest rate. The results of the capital controversy come in support of B&R's insight that the foundations of this concept in marginal productivity theory are flawed. In particular, these results suggest that the traditional theory is not only confined to a one-commodity world because of its association with the LFT - marginal theory can well do without the LFT, as B&D show -, but because its "real" foundations rely upon this assumption. Knut Wicksell was fully aware of the troubles of measuring "capital" independently of distribution. It is unfortunate that the younger generations of economists are not taught about these problems, which have been deliberately expelled from the economic debate, thus revealing the intellectual damage that the lack of pluralism can generate within our science.⁹

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⁹ To give one among many examples, in a textbook on international economics (Salvatore 2016), currently adopted by the present writer, one reads that capital can be measured in physical terms, a statement which has the same scientific value of telling students that apples and peaches can be summed up. In my view, it is not a justification that these textbooks are intended for undergraduate students, as this educational strategy would likely not be approved in the fields of engineering or the hard-sciences. Whatever the case, advanced textbooks and the conventional scientific literature also make the same mistake - or avoid it by eliminating "capital" from among the production factors, as Pareto earlier did in his *Cours d'Economie Politique*.

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