New Consensus Macroeconomics and Keynesian Critique

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Abstract: This paper is concerned with the New Consensus Macroeconomics in the case of an open economy. It outlines and explains briefly the main elements and way of thinking about the macroeconomy from the point of view of both its theoretical and policy dimensions. There are a few problems with this particular theoretical framework. We focus in this contribution on two important aspects closely related to the New Consensus Macroeconomics. These are: the absence of banks and monetary aggregates from this theoretical framework; and the way the notion of the 'equilibrium real rate of interest' is utilised by the same framework. The analysis is critical of the New Consensus Macroeconomics from a Keynesian perspective.

Keywords: New Consensus Macroeconomics, monetary policy, banks, monetary aggregates, equilibrium real rate of interest
JEL Classification: E10, E12

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1. Introduction

A New Consensus in Macroeconomics (NCM in short) has emerged over the past decade or so, which has become highly influential in terms of current macroeconomics thinking and of macroeconomic policy, especially monetary policy. The NCM is now firmly established amongst both academia and economic policy circles. It is also true to say that it draws heavily on the so-called new Keynesian economics (see Meyer, 2001, for an introduction; Woodford, 2003, for very detailed elaboration albeit using the term neo-Wicksellian; and the Bank of England, 2005, for a model along NCM lines in the context of building a macro-economic model).[1] The birth of NCM was made possible after the collapse of the Grand Neoclassical Synthesis in the 1970s.[2] Macroeconomists never took much notice of the reconstruction of New Classical macroeconomics with rational expectations. By contrast, New Keynesian macroeconomics was transformed into what we now label as New Consensus Macroeconomics. The latter has managed to encapsulate those early developments of macroeconomics in the 1970s, including rational expectation, but with assumptions that were also acceptable to the old neoclassical synthesis proponents. Galí and Gertler (2007) suggest that the New Keynesian paradigm, which arose in the 1980s, provided sound microfoundations along with the concurrent development of the real business cycle approach that promoted the explicit optimization behaviour aspect. Those developments along with macroeconomic features that previous paradigms lacked, such as the long-run vertical Phillips curve, resulted in the NCM. Woodford (2009) argues that the new consensus has come about “because progress in macroeconomic analysis has made it possible to see that the alternative which earlier generations felt it necessary to choose were not so thoroughly incompatible when understood more deeply” (pp. 2-3).

The policy implications of the NCM paradigm are particularly important for this development aspect of macroeconomics. Price stability can be achieved through monetary policy since inflation is a monetary phenomenon; as such it can only be controlled through changes in the rate of interest. It is, thus, agreed, that monetary policy is effective as a means of inflation control. This is no longer controversial in view of “the worldwide success of disinflation policies of the 1980s and 1990s” (Woodford, 2009, pp. 12-13). Goodfriend (2007) also argues that this particular set of propositions, amongst many other, have been backed by actual monetary policy experience in the US, and other countries around the globe, following the abandonment of money supply rules in the early 1980s.[3] Academic contributions also helped the foundations of the NCM on both theoretical and empirical grounds; for example, “The Taylor Rule became the most common way to model monetary policy” (Goodfriend, op. cit., p. 59; see also, Orphanides, 2007). In fact, for Goodfriend (2007), “One reason the Federal Reserve began to talk openly about interest rate policy in 1994 was that academic economists had begun to do so. Indeed, thinking about monetary policy as interest rate policy

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[1] The NCM framework, and its implications for monetary policy, was suggested initially by Goodfriend and King (1997) and Clarida et al. (1999). For an extensive theoretical treatment see Woodford (2003).

[2] See Galí and Gertler (2007) for a summary of the reasons for the collapse of neoclassical Economics.

[3] Goodfriend (2007) refers to a number of examples: notably New Zealand and Canada were the first countries to adopt the economic policy implications of the NCM framework in the early 1990s. The UK and Canada followed similar initiatives shortly afterwards in 1992, with many other countries adopting similar policies since that period (with the developing and emerging world following suit by the end of the 1990s; indeed, the IMF in the case of Brazil in 1999 strongly recommended the adoption of NCM type of economic policies).

is one of the hallmarks of the new consensus that has made possible increasingly fruitful interaction between academics and central bankers" (p. 59).[4]

The discussion and assessment of the NCM in this contribution is in the context of an open economy (see, also, Arestis, 2007b). We begin in section 2, after this introduction, with the open economy aspect of the NCM, which enables some attention to be given to the exchange rate channel of the transmission mechanism of monetary policy in addition to the aggregate demand channel and the inflation expectations channel. In the context of this extended model of NCM its policy implications are examined in the same section. We critically appraise NCM and its policy implications in section 3, while section 4, the final section, summarises and concludes.

2. An Open Economy New Consensus Macroeconomics and Policy Implications

We discuss an open economy NCM model first, followed by its policy implications. It is worth noting at the outset that the NCM is a framework in which there is no role for 'money and banking', and there is only a single rate of interest.[5] Two of the key assumptions made are worth emphasising: the first is that price stability is the primary objective of monetary policy; and the second is that inflation is a monetary phenomenon and as such it can only be controlled by monetary policy means, this being the rate of interest under the control of the central bank. This should be undertaken through interest rate manipulation. Monetary policy is thereby upgraded but at the same time fiscal policy is downgraded. This raises the issue of whether deflation is maniputable through changes in interest rates since the latter cannot fall below zero. These and many other aspects of the NCM framework are further highlighted and discussed in what follows in this section.

2.1 The Open Economy NCM model

Drawing on Arestis (2007b; see also Angeriz and Arestis, 2007), we utilise the following six-equation model for this purpose.

(1) $Y^g{}_t = a_0 + a_1Y^g{}_{t-1} + a_2E_t(Y^g{}_{t+1}) + a_3[R_t - E_t(p_{t+1})] + a_4(rer)_t + s_1$

(2) $p_t = b_1Y^g{}_t + b_2p_{t-1} + b_3E_t(p_{t+1}) + b_4[E_t(p_{wt+1}) - E_t\Delta(er)_t] + s_2$

(3) $R_t = (1- c_3)[RR^* + E_t(p_{t+1}) + c_1Y^g{}_{t-1} + c_2(p_{t-1} - p^T)] + c_3R_{t-1} + s_3$

(4) $(rer_t) = d_0 + d_1[[(R_t - E_t(p_{t+1})] - [(R_{wt}) - E(p_{wt+1})]] + d_2(CA)_t + d_3E(rer)_{t+1} + s_4$

(5) $(CA)_t = e_0 + e_1(rer)_t + e_2Y^g{}_t + e_3 Y^g{}_{wt} + s_5$

(6) $er_t = rer_t + P_{wt} - P_t$

The symbols have the following meaning. a_0 is a constant that could reflect, inter alia, the fiscal policy stance, Y^g is the domestic output gap and $Y^g{}_w$ is world output gap, R is nominal

[4] We would caution the reader in terms of the claims of the NCM supporters in view of more recent assessment of the NCM and its policy implications (see, for example, Angeriz and Arestis, 2007, 2008, 2009; Arestis and Sawyer, 2003, 2004a, 2004b).

[5] There is of course the role of money as a unit of account. However, in view of real money balances being a negligible component of total wealth there are no wealth effects of money on spending. Although monetary policy is central in NCM, money plays no role other than being a unit of account (Galí and Gertler, 2007, pp. 28-29).

rate of interest (and R_w is the world nominal interest rate), p is rate of inflation (and p^w is the world inflation rate), p^T is inflation rate target, RR* is the 'equilibrium' real rate of interest, that is the rate of interest consistent with zero output gap, which implies from equation (2) a constant rate of inflation; (rer) stands for the real exchange rate, and (er) for the nominal exchange rate, defined as in equation (6) and expressed as foreign currency units per domestic currency unit, P_w and P (both in logarithms) are world and domestic price levels respectively, CA is the current account of the balance of payments, and s_i (with i = 1, 2, 3, 4, 5) represents stochastic shocks, and E_t refers to expectations held at time t. The change in the nominal exchange rate, as it appears in equation (2), can be derived from equation (6) as in $\Delta er = \Delta rer + p_{wt} - p_t$.

Equation (1) is the aggregate demand equation with the current output gap determined by past and expected future output gap, the real rate of interest and the real exchange rate (through effects of demand for exports and imports). It is important to also note that what monetary policy is thought to influence via this relationship, therefore, is the output gap, namely the difference between actual output from trend output. The latter is the output that prevails when prices are perfectly flexible without any cyclical distortions in place; it is, thus, a long-run variable, determined by the supply side of the economy. Equation (1) emanates from intertemporal optimisation of expected lifetime utility that reflects optimal consumption smoothing subject to a budget constraint (see, for example, Blanchard and Fischer, 1989, Chapter 2).[6] It is, thus, a forward-looking expectational relationship, which implies that the marginal rate of substitution between current and future consumption, ignoring uncertainty and adjusted for the subjective rate of time discount, is equal to the gross real rate of interest. There are both lagged adjustment and forward-looking elements. The intertemporal utility optimization is based on the assumption that all debts are ultimately paid in full, thereby removing all credit risk and default. This follows from the assumption of what is known technically as the transversality condition, which means in effect that all economic agents are perfectly credit worthy. All IOUs in the economy can, and would, be accepted in exchange. There is, thus, no need for a specific monetary asset. All fixed-interest financial assets are identical so that there is a single rate of interest in any period. Over time the single rate of interest may change as borrowing and savings propensities change. Under such circumstance no individual economic agent or firm is liquidity constrained at all. There is, thus, no need for financial intermediaries (commercial banks or other non-bank financial intermediaries) and even money (see, also, Goodhart, 2007, 2008; Buiter, 2008). Clearly, then, by basing the NCM model on the transversality condition, the supporters have turned the model into an essentially non-monetary model. So it is no surprise that private banking institutions or monetary variables are not essential in the NCM framework.[7]

Furthermore, there is the question of the role for investment. The basic analysis (Woodford, 2003, Chapter 4) is undertaken for households optimising their utility function in terms of the time path of consumption. Investment can then be introduced in terms of the expansion of the capital stock, which is required to underpin the growth of income. In effect the future path of the economy is mapped out, and consequently the time path of the capital stock. Investment ensures the adjustment of the capital stock to the predetermined time path. There is then by assumption no impact of the path of the economy on the capital stock. There is not what we

[6] Woodford (2009) suggests that the 'intertemporal general-equilibrium foundations', which used to be a contentious issue among macroeconomists, is now so widely accepted that it has become an important element of current macroeconomic analysis.

[7] The explicit non-appearance of nominal money in the model is justified on the assumption that the central bank allows the money stock to be what is necessary to achieve the desired real rate of interest. Money is thereby a residual (see Woodford, 2008, for a recent contribution).

may term an independent investment function in the sense of arising from firms' decisions taken in the light of profit and growth opportunities, separated from savings decisions of households. Woodford (op. cit.) summarizes the argument rather well when he suggests that "One of the more obvious omissions in the basic neo-Wicksellian model ..... is the absence of any effect of variations in private spending upon the economy's productive capacity and hence upon supply costs in subsequent periods" (Woodford, 2003, p. 352).

Equation (2) is a Phillips curve with inflation based on current output gap, past and future inflation, expected changes in the nominal exchange rate, and expected world prices (and the latter pointing towards imported inflation). The model allows for sticky prices, the lagged price level in this relationship, and full price flexibility in the long run. It is assumed that $b_2 + b_3 + b_4 = 1$ in equation (2), thereby implying a vertical Phillips curve.[8] The real exchange rate affects the demand for imports and exports, and thereby the level of demand and economic activity. The term $E_t (p_{t+1})$ in equation (2) captures the forward-looking property of inflation. It actually implies that the success of a Central Bank to contain inflation depends not only on its current policy stance but also on what economic agents perceive that stance to be in the future. The assumption of rational expectations is important in this respect. Agents are in a position to know how the economy works and the consequences of their actions that take place today for the future. This implies that economic agents know how monetary authorities would react to macroeconomic developments, which influence their actions today. In this sense the practice of modern central banking can be described as the management of private expectations. Consequently, the term $E_t(p_{t+1})$ can be seen to reflect central bank credibility. If a central bank can credibly signal its intention to achieve and maintain low inflation, then expectations of inflation will be lowered and this term indicates that it may be possible to reduce current inflation at a significantly lower cost in terms of output than otherwise. In this way monetary policy operates through the expectations channel.[9]

Equation (3) is a monetary-policy rule, where the nominal interest rate is based on expected inflation, output gap, deviation of inflation from target (or 'inflation gap'), and the 'equilibrium' real rate of interest. The lagged interest rate (often ignored in the literature) represents interest rate 'smoothing' undertaken by the monetary authorities. Equation (3), the operating rule, implies that 'policy' becomes a systematic adjustment to economic developments in a predictable manner. Inflation above the target leads to higher interest rates to contain inflation, whereas inflation below the target requires lower interest rates to stimulate the economy and increase inflation. In the tradition of Taylor rules (Taylor, 1993, 1999, 2001), the exchange rate is assumed to play no role in the setting of interest rates (except in so far as changes in the exchange rate have an effect on the rate of inflation which clearly would feed into the interest rate rule). The monetary policy rule in equation 3 embodies the notion of an equilibrium rate of interest, labelled as RR*. Equation (3) indicates that when inflation is on target and output gap is zero, the actual real rate set by monetary policy rule is equal to this equilibrium rate. This implies that provided the Central Bank has an accurate estimate of RR* then the economy can be guided to an equilibrium of the form of a zero output gap and constant inflation (at an interest rate equal to the pre set target). In this case, equation (1) indicates that aggregate demand is at a level that is consistent with a zero output gap. In a private sector economy, this would imply that the real interest rate RR*

[8] The assumption of a vertical long-run Phillips curve implies no voluntary unemployment. This is clearly not acceptable, as some contributors have pointed out (see, for example, Blanchard, 2008). The way to introduce unemployment into the NCM model is still to be undertaken.

[9] The view that credibly anchoring inflation expectations, which produces a more favourable trade-off between inflation and economic activity has been criticised as failing to explain persuasively why it is so important. It fails to demonstrate whether price setters change their decisions on the basis of what their expectations of inflation would be in the future (Blanchard, 2008, p. 21).

brings equality between (*ex ante*) savings and investment. This equilibrium rate of interest corresponds to the Wicksellian 'natural rate' of interest, which equates savings and investment at a supply-side equilibrium level of income.[10]

Equation (4) determines the exchange rate as a function of the real interest rate differentials, current account position, and expectations of future exchange rates (through domestic factors such as risk premiums, domestic public debt, the degree of credibility of the inflation target, etc.). Equation (5) determines the current account position as a function of the real exchange rate, domestic and world output gaps; and equation (6), which expresses the nominal exchange rate in terms of the real exchange rate. There are six equations and six unknowns: output, interest rate, inflation, real exchange rate, current account, and nominal exchange rate defined as in (6). Exchange rate considerations are postulated (as in equation 3) not to play any direct role in the setting of interest rates by the Central Bank.[11]

2.2 NCM Policy Implications

The major economic policy implication of the NCM is that monetary policy has been upgraded in the form of interest rate policy, where a major objective of policy is "maintaining price stability" (King, 2005, p. 2).[12] This policy is undertaken through Inflation Targeting (IT). Fiscal policy, by contrast, should only be concerned with possibly broadly balancing government expenditure and taxation, effectively downgrading its importance as an active instrument of economic policy. This is an assumption based on the usual arguments of crowding out of government deficits and thus the ineffectiveness of fiscal policy (see, however, Arestis and Sawyer, 2003, for a critique and a different view).

An important assumption that permits monetary policy to have the effect that it is assigned by the NCM, is the existence of temporary nominal rigidities in the form of sticky wages, prices and information, or some combination of these frictions. So that, the Central bank by manipulating the nominal rate of interest is able to influence real interest rates and hence real spending in the short run.[13] A further important aspect of IT is the role of 'expected inflation' embedded in equation (3). The inflation target itself and the forecasts of the central bank are thought of as providing a strong steer to the perception of expected inflation. Given the lags in the transmission mechanism of the rate of interest to inflation, and the imperfect control of inflation, inflation forecasts become the intermediate target of monetary policy in this framework where the ultimate target is the actual inflation rate (Svensson, 1997, 1999). Under these circumstances, "The central bank's forecast becomes an explicit intermediate target. Inflation targeting can then be viewed as a monetary policy framework under which policy decisions are guided by expected future inflation relative to an announced target" (Agénor, 2002, p. 151). Furthermore, the target and forecasts add an element of transparency seen as a paramount ingredient of IT. Consequently, inflation forecasting is a key element of IT. It is, indeed, argued that it represents a synthesis of simple monetary rules and discretionary monetary policy, and as such it constitutes an improvement over targeting monetary aggregates and weaker versions of IT (Woodford, 2007). This inflation-forecast IT,

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[10] Woodford (2003) defines RR* as the "equilibrium real rate of return when prices are fully flexible" (p. 248).
[11] This treatment of the exchange rate has been criticised; see for example Angeriz and Arestis (2007).
[12] King (2005) also argues that "Far from being ineffective, a monetary policy aimed at price stability has proved to be the key to successful management of aggregate demand" (p. 2). However, the experience since the credit crunch of August 2007 does not seem to validate this claim.
[13] It should be noted that although a great deal of work has been undertaken on monetary policy in the presence of nominal rigidities, the same could not be said for fiscal policy. No satisfactory theory of fiscal policy has emerged so far under the assumption of nominal rigidities (see, also, Blanchard, 2008).

however, entails a serious problem, which is due to the large margins of error in forecasting inflation; this can damage the reputation and credibility of central banks.

The problem just alluded to, though, is contained to some extent by utilizing a probabilistic approach to present inflation forecasts under these circumstances, the so-called 'fan chart' of the Bank of England in the UK. This can alleviate potentially the reputation and credibility problems of the Central Bank. The latter by signalling the uncertainty inherent in economic forecasts can contain the potential damage to its reputation and credibility. But there is still the problem of how interest-rate projections are undertaken. The two types already used by Central Banks, constant-interest-rate projections or projections based on market expectations, are problematic as Woodford (2007) highlights. The main problem common to both approaches to projections is that the nominal interest rate will remain fixed in the future regardless of how inflation evolves in the first case, or that it is exogenously fixed again unaffected by inflation in the second case. Either projection cannot be sustained. Woodford (2007) suggests that a way forward would be the adoption of a forecast-IT approach, which would also be concerned with output stabilization. But even in this approach the problems just alluded to would still be there. Still, there can be a self-justifying element though to inflation forecasting in so far as inflation expectations build on forecasts, which then influence actual inflation. It is also true that such forecasts are not always available (Goodhart, 2005). Central banks decide on changes in interest rates in view of forecasts of future inflation as it deviates from its target along with output as it deviates from potential output. But such forecasts are not easily available or when they are published this is undertaken on an *ex post* basis; that is after the decision on interest rate change has been undertaken. The centrality of inflation forecasts in the conduct of this type of monetary policy represents a major challenge to countries that pursue IT.

There is still the question of the extent to which NCM is useful for policy analysis. Chari et al. (2008) argue that the NCM models are not useful for policy analysis. From the point of view of this contribution the relevant criticism applies to the use of equation (3), and the manipulation of the short-term rate of interest for monetary policy purposes. The assumption is that the short-term rate of interest is stationary and ergodic. This assumption implies of course that the long-term rate of interest is smoother than what the data reveal. This implies that NCM models do not identify the source of inflation persistence and expectations accurately and as such conclusions on the costs of disinflation are not accurate. The NCM policy advice is thereby erroneous.

3. Assessing the NCM from a Keynesian Perspective

A number of arguments have emerged from previous assessment exercises of the NCM framework and of the IT policy as implemented in a number of countries. It is worth summarizing the arguments that relate to this contribution. Low inflation and price stability do not always lead to macroeconomic stability (Angeriz and Arestis, 2007, 2008). Insufficient attention is paid to the exchange rate (Angeriz and Arestis, 2007). There is insufficient evidence for a long-run vertical Phillips curve (Juselius, 2008). There is insufficient evidence that NAIRU is unaffected by aggregate demand and economic policy (Arestis et al., 2007) and by flexible labour markets (Arestis and Sawyer, 2007). Countries that do not pursue IT policies have done as well as the IT countries in terms of the impact of IT on inflation and locking-in inflation expectations at low levels of inflation (Angeriz and Arestis, 2007, 2008). Insufficient evidence to downgrade fiscal policy (Angeriz and Arestis, 2009). Insufficient evidence that the NCM theoretical propositions are validated by the available empirical evidence (Arestis and Sawyer, 2004b, 2008). The IT policy framework can only pretend to tackle demand-pull inflation but not cost-push inflation (Arestis and Sawyer, 2009). The recent August 2007 credit crunch episode has vividly testified to this problem of the NCM economic policy aspect. [14]

In what follows we deal with two further criticisms: the absence of banks and monetary aggregates in the NCM theoretical framework; and with the use of the equilibrium real rate of interest as in equation (3) above. We begin with the case of no banks and no money in the NCM model.

3.1 No Banks, No Money

As explained above, the NCM model is characterised by an interest-rate rule, where the money market and financial institutions are typically not mentioned let alone modelled. The downgrading of monetary aggregates in NCM models has gone too far even for non-monetarists (see, for example, Goodhart, 2007). It is also the case that in the NCM model there is no mention of banks in the analysis. It has been noted that in the major text of Woodford (2003) banks make no appearance in the index (Goodhart, 2004). But, then, banks and their decisions play a considerably significant role in the transmission mechanism of monetary policy. Furthermore, decisions by banks as to whether or not to grant credit plays a major role in the expansion of the economy, in the sense that failure of banks to supply credit would imply that expansion of expenditure cannot occur. It is also the case that in the real world many economic agents are liquidity constrained. They do not have sufficient assets to sell or the ability to borrow. Their expenditures are limited to their current income and few assets, if any. Consequently, this perfect capital market assumption, which implies the absence of credit rationing (meaning that some individuals are credit constrained), means that the only effect of monetary policy would be a ‘price effect’ as the rate of interest is changed. The parts of the transmission mechanism of monetary policy, which involve credit rationing and changes in the non-price terms on which credit is supplied, are excluded by assumption.

There is also the question of risk and uncertainty and the assumption of a single interest rate (Goodhart, 2007). The perceived riskiness of borrowers and uncertainty clearly implies that a single interest rate cannot capture reality. A whole schedule of interest rates is more appropriate and realistic. In the downswing of the cycle official interest rates decline but risk premia rise. It thereby becomes ambiguous as to the way interest rates move. In the upswing of the cycle, official interest rates rise on the whole, but risk premia fall. It would be wise to cross-check for the combined effects of official changes in the rate of interest and risk aversion. This, it is argued, can be undertaken by studying the time path of money and credit aggregates (Goodhart, 2007). These observations clearly suggest that there is a disjuncture between the NCM analysis and the role of monetary policy. The NCM model is thereby incomplete and unsuitable for monetary-policy analysis. Indeed, it “leaves open the underlying question of how the central bank manages to fix the chosen interest rate in the first place” (Friedman, 2003, p. 6).

More specifically, the prominent reasons for such uneasiness normally referred to are the absence of any role for financial intermediation and monetary aggregates, and, also, distinctions among short-term interest rates that play different roles in the transmission mechanism of monetary policy (Canzoneri et al., 2008; Goodfriend and McCallum, 2006). The interesting question is what would happen if banks and money markets were to be incorporated in the NCM framework. Two issues become very relevant: the first is the extent

[14] Interestingly enough, Buiter (2008) laments that over the last 30 years we have had “too little Minsky (1982) in our thinking about the roles of money and finance in the business cycle” (footnote 9, p. 31).

to which the NCM model would then give a more accurate account of macroeconomic behaviour; and the second would be the role of monetary aggregates in such an extended model. Canzoneri et al. (2008) have undertaken such an exercise.[15] The 'standard' NCM model, with no banks and monetary aggregates, essentially Ricardian so that fiscal and debt management policies play no important role, is compared with a similar 'enlarged' model, which is endowed by including banks that create deposits and make loans along with a non-Ricardian element that gives fiscal policy some role. The enlarged NCM model introduces real money balances (essentially cash and bank deposits, the M2 definition of money, which is used for transaction purposes), and real government bond holdings (on the assumption that economic agents use government bonds to manage their liquidity) in the representative household's utility function. In this sense, the enlarged NCM model is a more complete modelling of the economy than the standard NCM model. The enlarged NCM provides for bank deposits and loans, where bank loans may affect aggregate demand and supply, it brings a role for government bonds in household and bank liquidity, and provides an endogenous spread between the money market rate in the central bank's interest-rate rule and the rate of return in the representative agent utility function. Clearly, the standard NCM model is a less complete modelling of the economy but it has the virtue of simplicity and gives in this view an adequate account of macroeconomic behaviour.

Canzoneri et al. (2008) calibrate the two models in an attempt to ascertain the extent of the their differences. The unconditional moments generated by the models are compared and contrasted. Impulse response functions are utilized to study how various shocks infiltrate through the model economies. As one might expect, differences do prevail but two are the most relevant for the purposes of our contribution. A bond-financed change in government spending has a bigger and more persistent effect on inflation in the enlarged model than in the standard model. Monetary indicators are useful in forecasting inflation in the enlarged NCM model; not so in the standard NCM model. Still, the authors do not recommend M2-targeting monetary policy. This is so since a broader measure of liquidity that is shown to be a more reliable indicator of inflation than simply M2. But it is readily admitted that this is a controversial proposition that deserves more careful scrutiny. In this sense, Goodhart (2007) is right to suggest that "the rate of growth of bank lending to the private sector is a more important monetary aggregate than broad money itself" (p. 12).

The next compelling question is how real money balances should enter equation (1). This can be undertaken through the assumption that marginal utility of consumption depends on real money balances. The standard way is to resort to the money-in-the-utility function models, whereby real money balances are supposed to affect the marginal utility of consumption and, therefore, as such enter equation (1) in the above six-equation model. This is the non-separability principle. A utility function is additively separable between consumption and real money balances if it can be separated into two functions, one containing only consumption and the other only money. If the utility function is not additively separable then real balances will enter equation (1). Early evidence produced by Kremer et al. (2003) in the case of Germany, supports the non-separability assumption. Subsequent studies, however, reach the opposite conclusion. The empirical work undertaken by Ireland (2004), Andres et al. (2006) and Jones and Stracca (2008) suggests that there is little evidence that supports the inclusion of real money balances in equation (1) in the cases of the US, the euro area and the UK. Friedman (2003) appears to be correct when he argues that without "integrating the credit

[15] Another paper that has put forward a model with banks and money is Goodfriend and McCallum (2006). While there are differences with the Canzoneri et al. (2008) paper, the two studies are complementary to each other.

markets into both the theoretical and the practical analysis of monetary policy is going to be harder" (p. 6).

3.2 The Equilibrium Real Rate of Interest

The equilibrium real rate of interest plays a crucial role in the NCM. The discrepancy between actual and the equilibrium rate of interest has been termed the real interest rate gap and can be used to evaluate the stance of monetary policy. It is thereby a useful theoretical concept in the analysis of the relationship between the independence of monetary policy and economic fluctuations (Weber et al., 2008). In terms of the six equations above, and equation (3) in particular, it is clear that the equilibrium real rate of interest secures output at the supply equilibrium level (zero output gap) consistent with constant inflation. Another way of explaining this result is to say that when the real rate of interest is reached, then there is no problem of deficient (or indeed excessive) aggregate demand. The real interest rate is at an equilibrium level of RR*. This equilibrium rate is often seen to correspond to what is called the Wicksellian 'natural rate' of interest. Wicksell (1898) distinguished between the money rate of interest (as observed) and the 'natural rate' of interest, which was the interest rate that was neutral to prices in the real market, and the interest rate at which supply and demand in the real market was at equilibrium. Although it is not self-evident from the model outlined above, this 'natural rate' of interest equates savings and investment and does so at a zero output gap. This is implicitly assumed to be consistent with the full employment of labour in that flexible real wages would permit the labour market to clear with full employment compatible with the zero output gap.

It is also the case that the use of RR* in NCM models with the emphasis on price stability provides an important benchmark for monetary policy analysis in the context of models with a single rate of interest, with no banks and no monetary aggregates. Under these assumptions, the reaction of the interest rate policy instrument to movements in RR* can ensure price stability. Wicksell's (1898) natural rate of interest thesis, however, recognises the existence of different interest rates that can determine aggregate demand. For example, loan rates are important when bank credit is the main source of financing for firms. Under such circumstances where the rate of interest on bank loans differs from the policy rate of interest, RR* may not be a useful indicator for monetary policy. De Fiore and Tristani (2008) show that under such circumstances, and on the assumption of asymmetric information and of credit treated in nominal terms in an otherwise NCM model, RR* is heavily model dependent. It reacts differently to aggregate shocks depending on the underlying model assumptions. The crucial distinguishing assumption in this context is whether markets are frictionless or not. Indeed, in markets characterised by friction, a further implication is that monetary policy exerts real effects even in the long run. Consequently, "it might be difficult for a central bank that is uncertain about the true model of the economy to identify its movements and to use it as regular indicator for the conduct of monetary policy" (p. 33).

In his *Treatise on Money*, Keynes (1930) accepted the notion of the 'natural rate of interest'. He argued there: "Following Wicksell, it will be convenient to call the rate of interest which would cause the second term of our fundamental equation to be zero the *natural rate* of interest, and the rate which actually prevails the *market rate* of interest. Thus the natural rate of interest is the rate at which saving and the value of investment are exactly balanced, so that the price level of output as a whole ... exactly corresponds to the money rate of the efficiency earnings of the factors of production. Every departure of the market rate from the natural rate tends, on the other hand, to set up a disturbance of the price level ..... We have, therefore, something with which the ordinary quantity equation does not furnish us, namely, a simple and direct explanation why a rise in the bank rate tends, in so far as it modifies the effective rates of interest, to depress price levels" (p. 139).

However, in *The General Theory of Employment, Interest and Money* (GT in short), Keynes (1936) explicitly rejects the idea of a unique natural rate of interest, and in effect argues that there is a natural rate of interest corresponding to each level of effective demand, which would bring savings and investment into balance. "In my *Treatise on Money* I defined what purported to be a unique rate of interest, which I called the natural rate of interest - namely, the rate of interest which, in the terminology of my *Treatise*, preserved equality between the rate of saving (as there defined) and the rate of investment ….. I had, however, overlooked the fact that in any given society there is, on this definition, a *different* natural rate of interest for each hypothetical level of employment. And, similarly, for every rate of interest there is a level of employment for which the rate is the 'natural' rate, in the sense that the system will be in equilibrium with that rate of interest and that level of employment. Thus it was a mistake to speak of the natural rate of interest or to suggest that the above definition would yield a unique value for the rate of interest irrespective of the level of employment. I had not then understood that, in certain conditions, the system could be in equilibrium with less than full employment" (Keynes, 1936, pp. 242-243). Keynes (op. cit.) went on to argue that "If there is any such rate of interest, which is unique and significant, it must be the rate which we might term the *neutral* rate of interest, namely, the natural rate in the above sense which is consistent with full employment, given the other parameters of the system; though this rate might be better described, perhaps, as the *optimum* rate ….. The above gives us, once again, the answer to the question as to what tacit assumption is required to make sense of the classical theory of the rate of interest. This theory assumes either that the actual rate of interest is always equal to the neutral rate of interest in the sense in which we have just defined the latter, or alternatively that the actual rate of interest is always equal to the rate of interest which will maintain employment at some specified constant level. If the traditional theory is thus interpreted, there is little or nothing in its practical conclusions to which we need take exception. The classical theory assumes that the banking authority or natural forces cause the market-rate of interest to satisfy one or other of the above conditions" (pp. 243-244).

The NCM model portrays an economy in which the interest rate can be adjusted to secure equilibrium in terms of a zero output gap and a balance between aggregate demand and aggregate supply (alternatively between planned savings and planned investment). The rate at which this materialises is, to repeat, the real equilibrium rate of interest. This is an 'anchor' or benchmark for monetary policy and corresponds to the intercept in equation (3). But it is the case that a shift in the state of confidence and expectations leading to a shift in the investment schedule would lead to a shift in the real equilibrium rate of interest. Arestis and Sawyer (2008), show that any real equilibrium rate of interest would be defined for a specific fiscal stance, specific world demand and specific set of 'animal spirits' influencing investment, in addition to preferences and technology. Another example is the study by Laubach and Williams (2001), where it is demonstrated through the use of the Kalman filter technique that RR* estimates vary 'one-to-one' with changes in the trend growth rate of potential output. As the factors suggested in these studies vary so will the real rate of interest. It is, thus, the case that equation (3) requires the policymaker to take a view and formulate policy on the basis of implicit assumptions regarding the real rate of interest (Orphanides and Williams, 2002). Consequently, there is the real difficulty and uncertainty that relate to establishing robust estimates of the monetary rules of the type summarised in equation (3).

Furthermore, the real equilibrium rate of interest should be readily computable from actual economic data. Such data should be available with sufficient precision and whenever the need is there. Weber et al. (2008) demonstrate persuasively that although the real rate of interest could play an important role in the conduct of current monetary policy there are serious problems with it. There is the problem with the interest rate gap that "is not a sufficient *summary variable reflecting the overall pressure on inflation* in the sense that it captures all possible determinants of price changes" (p. 13). Cost-push shocks is a significant source to inflation and an important element of inflation information to monetary policymakers; but it "is not mirrored by the natural rate of interest" (p. 13). Furthermore, the empirical estimates for RR* are extremely imprecise, so that the real equilibrium rate of interest "is not readily computable from observable economic data" (p. 13). This problem is prevalent however method might be used for estimating the real equilibrium rate of interest.[16] In Arestis and Chortareas (2008) a more theory-oriented approach is pursued, which attempts to quantify the US RR* as it emerges from a Dynamic Stochastic General Equilibrium (DSGE) framework. Here again a time-varying measure of the equilibrium real interest rate is arrived at; this rate responds to preferences and technology shocks and as such it is time varying. In view of the difficulties that relate to the real rate of interest as just discussed, two serious propositions emerge. The first is what follows from the Weber et al. (2008) analysis, namely "the natural rate cannot be a surrogate for a detailed analysis of the real and monetary forces relevant to the identification of risks to price stability" (p. 13). The second problem is that in view of the problems identified in this section, a great deal of discretion should be applied in the conduct of monetary policy. But, then, the degree of discretion required might not be compatible with the IT theoretical principles.

4. Summary and Conclusions

This contribution has attempted to highlight the main characteristics of what has come to be known as the New Consensus in Macroeconomics. The acronym Consensus is very interesting for it pinpoints that a rare level of agreement among economists of the traditional persuasion on macro issues has been achieved. Such a consensus has not been witnessed since the late 1960s/early 1970s when the first consensus was in place, the neoclassical synthesis with its focus on the IS/LM model.

NCM has been generally analysed under the assumption of a closed economy. This paper has dealt with the open economy NCM where the role of the exchange rate provides an additional channel of monetary policy. Not only has this paper attempted to clarify the main features of the NCM but it has also focused on its main policy implications.

In doing so the paper has also critically raised a number of issues with both the NCM's theoretical foundations, as well as with its monetary policy, which is of course the IT framework. On both accounts, we find that a number of problems and weaknesses are present. Two such weaknesses have been stressed. Both emanate from the absence of money and banks in the NCM model, and from the way the equilibrium real rate of interest is utilised in the same model. It is the case, then, that NCM is based on inconsistencies and a great deal of *ad hocery*. This suggests that a great deal more research is necessary to tackle the issues raised in this contribution.

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[16] As Weber et al. (2008) note, the various approaches utilized to estimate RR* may be categorized as follows: "(i) (univariate) filtering approaches, (ii) structural econometric models ….., and (ii) fully-fledged equilibrium models with microeconomic foundations" (p. 9).

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