Critically discuss the key limitations of the New Consensus 3-equation model.

The New Consensus 3-equation (NCM) model depicts a stylized framework in which a central bank operates to combat its low unemployment and stable inflation objectives. In its most basic form, the model connects an IS curve, a Phillips curve (PC) and some form of interest rate rule adopted by a central bank. Naturally, any oversimplified picture of the macroeconomy is guaranteed to attract criticisms. Through a review of the literature, this essay seeks to present the key limitations of the NCM. A study of NCM derivatives offered by the Keynesian school of thought yields three main areas of intense criticism:(i) The modelling of inflation as depicted by the PC specification. (ii) The interest rate and output relationship in the IS curve. (iii) the model's empirical failings, notably its failure to explain asset bubbles and financial crises. Proposed alterations of the NCM by (Romer, 2000; Taylor, 2000; Walsh, 2002; Bofinger et al.,2006) and other New and Post Keynesians collectively identify many overlapping limitations. Given this essay's scope, we will only discuss key limitations central to the three areas of criticism outlined in (I)-(III).

(I) Phillips curve

Central to the NCM is the position of the PC as a 'final link in the chain' (Arestis & Sawyer, 2008). It provides a relation between economic activity and inflation, therefore, justifying the sole use of monetary policy as a policy tool to control inflation. The importance of the PC in dictating MP outcomes makes its accurate specification critical and hence a contentious topic. Popular PC specifications, namely, the backwards-looking PC (BLPC), New-Keynesian PC (NKPC), and the Sticky Information PC (SIPC) seek to address the key persistency and expectations considerations limiting the NCM.

$$\pi_t = \pi_{t-1} + \alpha(y_t - y_e)$$

Equation 1: Phillips Curve

The standard BLPC in Eq. 1 is a function of last periods inflation rate and changes in the output gap. The appeal in a BLPC lies in its ability to capture the persistence of inflation; crucial in dictating the "policy space" in which the CB operates (Roache, 2014). However, it rests on 'ad hoc assumptions' about the role of expectations in the inflation process (Carlin & Soskice, 2005). The NKPC & SIPC seek to address these limitations by incorporating more realistic price setting and expectation hypotheses both of which are highly impactful on the effectiveness of MP.

In the case of NKPC the introduction of the “Calvo coefficient” δ seeks to address forward-looking expectations (Calvo, 1983). It still maintains the relationship between output gaps, and the effect of past inflation via sticky prices but realizes a role for rational expectation inherent on behalf of price setters. Ultimately, it overcomes the criticism that the credibility of MP is neglected in NCM.

$$\pi_t = \frac{\alpha\delta}{1-\delta} x_t + \theta E_t \pi_{t+1}$$

Equation 2: The NKPC

(Mankiw & Reis, 2002) and their SIPC also attempt to capture these forward expectations but align them empirically with inflation inertia. They incorporate sticky information terms π_t^{FI} and π_t^{LI} denoting full and limited information. The result is a step closer to more accurate representation of the inflation process in the NCM. Figure 1 summarises the limitations of the respective PC specifications in their attempt to model the inflation process. As discussed in (I) correctly modelling the inflationary process requires careful consideration of the interplay between inertia and expectations, both of which have direct influences on how a central bank's reaction function.

$$\pi_t = \delta\pi_t^{FI} + (1-\delta)\pi_t^{LI}$$

Equation 3: The SIPC

Model is consistent with:	$BLPC$	$NKPC$	$SIPC$
The empirical evidence of inflation inertia	1	3	1
Costly disinflation after inflation shock	1	2	1
Costly disinflation after reduction in inflation target	1	3	1
Rational price-setters	3	1	1
Credibility effect of monetary policy	3	1	1

Figure 1. Summary of the characteristics of the three models of the Phillips curve represented in this article. A score of 1 is awarded if the model satisfies a criterion; 2 for partial fulfilment and 3 for failure to fulfil a criterion (Carlin & Soskice, 2005).

(II) IS Curve

The most significant limitations of the NCM present themselves through the derivation of the IS curve. The purported long-term interest rate and output relationship is subject to the 'Classical dichotomy' debates, casting initial doubt over active MP's long and short-term effectiveness. Furthermore, its simplified presentation in the NCM is also at odds with how many Keynesians actually view the complex relationship between the interest rates and output. Additionally, the microeconomic foundations on which the NCM IS curve is based are heavily criticized in the literature.

$$y_t = A - \gamma r_{t-1}$$

Equation 4: IS curve

Putting the bulk of 'Classical dichotomy' debates to one side and assuming real effects following a change in the interest rate, the NCM IS curve still presents at best limited accuracy. Eq 4 shows how a linear function with a one period time lag determines output .The lack of nuance over how output determination in the short and long run are subject to massaging of animal spirits expressed through the nominal interest rate prevent it from being used as a serious framework for monetary policy analysis.

Keynesians in particular critique the one-to-one relationship between short-term interest rates and output presupposed by the NCM IS curve; a criticism most aptly described by the Keynesian quip 'there may be several slips between the cup and the lip' (Keynes, 1936 p173). While the IS curve might accurately depict how contractionary monetary policy has immediate real effects on output (Wolfson,1996), (Taylor, 1999) shows emperically that the interest elasticity of investment is non-linear and asymmetric, thus limiting its application to cases concerning loose monetry policy e.g Japan in the 1990's.

The NCM includes no analysis of the role of banks within the transmission mechanism. The banking sector and its decisions to extend credit is one of the main drivers of output determination in the economy. (Arestis & Sawyer,2008) note that the perfect capital market assumption in the form of a single interest rate also limits the NCM's ability to explain monetary effects.

(III) Homogeneity assumptions & financial frictions

Rigid homogeneity assumptions in the NCM, while helpful to understand aggregate fluctuations and macroeconomic policy, have limited the model's ability to detect financial crises. The NCM assumes the economy is inhabited by an 'infinitely-lived representative household' which (Gali,2018) suggests in equilibrium results in no savers or borrowers. In order to asses whether financial imbalances have 'nontrivial' implications not represented in NCM outcomes, the unrealistic assumptions limiting NCM must be questioned.

(Gali,2007) proposes incorporating heterogeneous agent New Keynesian (HANK) models to overcome the current NCM limitations. Key features of HANK models include idiosyncratic stochastic shocks to households, only a small number of asset trading allowed and time-varying borrowing constraints. All of which seek to ensure the severity of macroeconomic shocks are tied to distribution of income and wealth across households. Further work by (Auclert,2017) on how heterogeneity dictates the effects of monetary policy on individuals and the broader economy also promotes the evolution of NCM assumptions.

Conclusion

In summary, this essay has critically discussed key limitations of the NCM by highlighting the central issues, referencing critiques in the literature and outlining proposed alterations to the framework. In (I) the central issues of incorporating expectations and inflation persistence motivated a discussion on inflation modelling and monetary policy's subsequent efficacy. (II) investigates the limitations of a linear IS curve in capturing the complexity of the transmission mechanism and the clear non-linear realities found in empirical evidence. Finally, (III) discusses the lack of financial friction modelling and limiting homogeneity assumptions causing the NCM and its DSGE extensions to miss financial crises. Despite outspoken critics painting the model as 'spectacularly useless at best, and positively harmful at worst' (Krugman, 2009), disagreement based on the underlying utility of the framework in facilitating a broader understanding of monetary policy means it remains, for now, a good bridge for deeper understanding of the intricacies of monetary policy.

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