

# Picking Up the Pieces of Macro Theory

The 2007 Crisis and Where to Go From Here?

*Matthew Aaron Looney*

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## **Abstract**

It has been estimated that the global financial (GFC) crisis has cost the world somewhere between \$5-30 trillion USD. By any comparison this is a staggering loss and represents the most serious failure of economic systems since the 1920's. There were many reasons for the crisis, and analysis is ongoing, but what seems to be emerging as the leading cause of the crisis was the lack of macroeconomic models to account for major sections of the economy, mainly the housing sector and financial asset pricing. Just as important, but perhaps more theoretically challenging to address, are the lack of heterogeneity of economic agents, the lack of (or inappropriate) microfoundation underpinnings, and relaxing the requirement of rational expectations. The singular focus of macroeconomists and central bankers, pre-crisis, was on the Dynamic Stochastic General Equilibrium model (DSGE). None of the DSGE models were capable of alerting economists to the impending crisis. In this paper I examine the modeling paradigm pre-crisis and review the literature that has dawned as a result of the GFC. Much of this literature has been written by well-regarded macroeconomists and is highly critical of the field. The criticism cuts deep and results in a range of suggestions that include; adding elements to the DSGE framework to account for missing variables, to starting over with a completely new way to model complicated and emergent systems, ie. Agent Based Modeling.

# 1 Introduction

Our ability to understand how the global financial crisis (GFC) occurred is predicated on our ability to understand past financial crisis, which in turn shaped the current environment that allowed the most recent financial crisis. In some regard, financial crisis are cyclical. A financial crisis starts, regulators respond to the crisis by implementing policies to avoid future crisis. Economists develop new models to deal with the failing of the old models in the hopes of better predicting future crisis. Complacency sets in and regulations are picked apart which amplify the negative affects of the (more often than not) unintended consequences of well intended regulators. After sufficient time, a new crisis forms and the cycle starts anew.

Financial crisis are not a new phenomena. Since the 1920's the United States has endured a large depression a large recession, and everything in between. With each occurrence regulators and economists spring into action to, understand, model and impose regulation to address failings in the economic system. Less than one hundred years ago the U.S. was in the throws of the Great Depression. By the time the depression was over John Maynard Keynes had reformulated Alfred Marshalls partial equilibrium model with the inclusion of nominal rigidities. The reformulation required Keynes to invent liquidity preferences, the consumption function and the multiplier. These components were necessary if Keynes was going to explain the Great depression with these new ideas. However, Keynes conceptual reformulation could only go so far. A methodological reformulations was also needed if the ideas Keynes proposed were going to take hold in any meaningful way. John Hicks provided the necessary methods in his IS-LM model and the foundations for general equilibrium analysis we layed.

## 2 Appendix

### 2.0.1 The New Keynesian Dynamic Stochastic General Equilibrium Benchmark Model (DSGE)

A simplified version of the New Keynesian DSGE Benchmark Model (hereafter NK-DSGE) is given by the following eight equations<sup>1</sup>:

$$\frac{1}{C_t} = \beta R_t E_t \left( \frac{1}{C_{t+1}} \right) \quad (1)$$

$$w_t = X C_t L_t^\varphi \quad (2)$$

$$Y_t = Y_t K_t^\alpha L_t^{1-\alpha} \quad (3)$$

$$w_t = (1 - \alpha) \frac{Y_t}{L_t} \quad (4)$$

$$R_t = E_t \left[ \frac{\alpha \frac{Y_{t+1}}{K_{t+1}} + 1 - \delta + (Q_{t+1} - 1) + \frac{1}{2\xi} (Q_{t+1} - 1)^2}{Q_t} \right] \quad (5)$$

$$I_t = K_{t+1} - (1 - \delta)K_t + \frac{\xi}{2} \frac{(K_{t+1} - K_t)^2}{K_t} \quad (6)$$

$$Q_t = 1 - \xi + \xi \frac{K_{t+1}}{K_t} \quad (7)$$

$$Y_t = C_t + I_t \quad (8)$$

where,  $C$ ,  $I$ ,  $Y$ ,  $L$ ,  $K$ ,  $w$ ,  $R$ , and  $Q$  are consumption, investment, output, labor supply, capital stock, real wage, real interest rate (gross), and Tobin's  $Q$ , respectively.

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<sup>1</sup>A more detailed exposition of the benchmark model can be found in Schmitt-Grohe' and Uribe (2007)

For simplicity, the individual consumers utility maximization problem is not explicitly shown. For the same reason, the representative firms profit maximization problem is not detailed. Equations 1-8 assume the first order conditions have been satisfied and equilibrium conditions exist. Another simplifying assumption is a constant labor force and the level of technology remains unchanged.

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### 3 Refernces

Schmitt-Grohé, S., & Uribe, M. (2007). Optimal simple and implementable monetary and fiscal rules. *Journal of monetary Economics*, 54(6), 1702–1725.

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