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MACROECONOMICS AFTER THE GREAT RECESSION: CONSENSUS OR
CONFLICT?

A Thesis

Presented to

the Faculty of Social Sciences

University of Denver

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts

by

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ABSTRACT

Unlike microeconomics where there are relatively few disagreements, the field of macroeconomics has always been the arena of several competing theories. Despite that history of conflict, in the late 1980s during the Great Moderation, the New Classicals and the New Keynesians reached an agreement, known as the New Consensus during the Great Moderation. For decades, the New Consensus has dominated macroeconomic theory and policymaking not only in the U.S., but also throughout the world. After many years of calm, however, the 2007-2008 subprime mortgage crisis and its consequent Great Recession demonstrated that how fragile that consensus was.

While the debate regarding the collapse of the consensus still continues, this thesis aims to understand the implications of the collapse in terms of the future of macroeconomic theory and of policy-making from a critical and historical perspective. To achieve this goal, this thesis will explore the rise and the fall of the New Consensus Theory by first showing, the process that successfully incorporated the once opposing ideologies into one system; second, this paper will study the collapse of the consensus soon after the arrival of the Great Recession. This is followed by a section that aims to draw some lessons learned from the failure of the New Consensus Theory. Finally, the thesis examines the problems associated with policy-making, deficiencies in economic theory and modeling, and the appropriateness of the methodology in the foundations of the New Consensus. Based on these critical and historical evaluations, the thesis

concludes with some remarks concerning the future of macroeconomic theory and policy-making.

Keywords: Macroeconomics, Monetary Policy, the Subprime Crisis, the Great Recession, Economics Methodology, History of Economic Thought.

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MACROECONOMICS AFTER THE GREAT RECESSION: CONSENSUS OR CONFLICT?

Chapter 1: Introduction

“If we don’t do this,” Mr. Bernanke said, “We may not have an economy on Monday.” It was in the evening of Thursday, Sep 18, 2008, the scariest night since the subprime mortgage crisis crashed into the economy. Federal Reserve Chairman Bernanke and Treasury Secretary Paulson were presenting the outline of a \$700 billion emergency bailout plan to the Congressional leaders. Several days earlier, the Dow Jones Industrial Average plummeted within a few hours, spreading panic among everyone on Wall Street. Soon, there would be only one investment strategy: sell everything!

It did not take too long for the same panic to reach to the corridors of economic departments. Just like the stock market, the field of economics was hit totally unprepared. This was especially true for adherents of the New Consensus theory, a hybrid theory that mixes long-term and short-term theoretical foundations and perspectives of the New Classical approach and the New Keynesian theory. Economists of the New Consensus theory that has dominated macroeconomic theory and policies for decades in the U.S. as well as the rest of the world began blaming each other as if there had never been a consensus before.

It all sounds too dramatic to relate to the fact that not too long before, the field of economics was still in a state of complacency. Economists were celebrating their success

in drawing consensus on the topic of monetary policy between the long-rivaling New Keynesian and the New Classical approaches. Oliver Blanchard (2008) concluded that “the state of macroeconomics is good ¹.” Bernanke (2004), a member of the consensus in academia then and the chairman of the Federal Reserve now, ascribed the Great Moderation, the longest economic peace after WWII, largely to this improved monetary policy referred to as the “New Consensus” monetary policy. However, the compliments towards this new theory suddenly turned hostile with the hit of U.S. subprime mortgage crisis in our economy and its consequent recession since 2008. Finally, sentiment in macro policy was replaced by confusion and anger. “Blame *laissez-faire!*” “Blame inflation targeting!” “Blame Keynesianism!” The desperate voices all suddenly sounded like the dawn before apocalypse.

Soon after, Galbraith (2008) declared the collapse of the old economic paradigm (i.e., the New Consensus) and asked for the rise of a new one. Krugman (2009) criticized that for decades economists had taken the beauty of mathematical models used in economics for truth. Some economists started to hold a skeptical view of the last few decades’ improvements in monetary economics (e.g., Skott, 2010; Galbraith, 2008; Leijonhufvud, 2009). With this skepticism came increased critical assessments of the foundations of the New Consensus. For instance, the Journal of Economic Methodology started to re-examine the methodologies associated with macroeconomic research, calling for improvements. Economists at large began raising questions about the way economics is taught and the theoretical models and explanations employed in the textbooks. The

¹ Blanchard (2008) said “The new tools developed by the new-classicals came to dominate. The facts emphasized by the new-Keynesians forced imperfections back in the benchmark model. A largely common vision has emerged.”

complex Dynamic Stochastic General Equilibrium (DSGE) model, the Philips curve, those elaborate graphs and delicate equations suddenly seemed suspicious.

All these dramatic changes in macroeconomics led to several important questions: First, why was the dominant macroeconomic theory (i.e., the New Consensus) and its policies not effective in predicting and responding to the crisis? Second, economists wondered whether the theory's macroeconomic policies caused the recession in the very place. Next, they asked, if so, shall we blame policy makers, or economists, or both? Finally, they were left with the question of shaken faith: Can we ever believe in these theories again?

This thesis is based on the belief that understanding the current state of macroeconomics cannot be accomplished without knowing the field's past. The answers to the preceding questions depend on a study of the origins and evaluations of the ideas and methodologies that underlie the New Consensus theory. This is necessary because both the convergence and the divergence of the New Classical and the New Keynesian ideas are the result of the constant evolution of theories and policies through the ebb and flow between different versions of Keynesian ideas and their counterparts since the Great Depression, and not to mention the historical origins of both camps that dates back to the times of Adam Smith. Further, the problems revealed by the subprime mortgage crisis and its consequent Great Recession are both scattered and numerous. Discovering these problems is like "peeling an onion, underneath each explanation there is another question" (Stiglitz, 2010, p. 324). Thus, when economists of different background raise different opinions, evaluating their opinions and summarizing their implications for the future of macroeconomics can be difficult without carefully understanding their opinions'

theoretical backgrounds and comparing them with historical facts. Unfortunately, the necessity for such a study has been generally ignored, especially in the last several decades. In most economic departments, history of economic thought has been neglected, if not completely eliminated, leaving a hole in students' education ².

This thesis is established on these foundations. By reviewing the process of the formation of mainstream macroeconomic consensus, understanding its current state in the context of the Great Recession, summarizing economists' explanations and solutions to the major problems, and comparing these explanations and solutions with the facts, the present thesis hopes to give readers a clear picture about the rise and the collapse of mainstream macroeconomic theory from the period between the U.S. Great Depression to the recent hit of the Great Recession. The thesis also aims to discuss the implications for the future of macroeconomic theory and policymaking.

The main body of this thesis is structured in three major chapters with subsections. Chapter two reviews the evolution of macroeconomic theories before the hit of the recent crisis. Starting from the Great Depression, the chapter first introduces Keynes and his revolutionary influence on the economic thought when the field was dominated by the classical doctrines. Then it is shown how Milton Friedman and his alternative to Keynesian theory, namely the monetarists ideas, were extended and further developed by Lucas, Kydland, Prescott and the New Classical School of thought, and then, how these ideas, in turn, refuted most of Keynes' contributions to economics by replacing them with a refined version of the classical economic theories. After that, chapter two explores the

² Mirowski (2010) said: "...Consequently, the greybeards summarily expelled both philosophy and history from the graduate economics curriculum, and then they chased it out of the undergraduate curriculum as well."

Keynesian resurgence and the rise of New Keynesian School of thought, including how this thought revived some of the Keynesians' ideas but did so without rejecting many ideas from the New Classical School, thereby planting the seed for the birth of the New Consensus Macroeconomics Theory that would allow the conflicting New Classical School and the Keynesian School to coexist under one roof. By means of covering the evolutionary path of modern macroeconomic thought, the chapter also tries to talk about the relevant historical events such as the Great Depression, the Great Inflation and the Great Moderation as well as the evolving ideology of policymaking.

Chapter three begins with the details of the Great Recession between 2007 and 2009, including how it was triggered and how it spread. This is followed by an analysis of how the New Consensus Theory, the fragile marriage between the New Classics and the New Keynesians, collapsed during the Great Recession. Based on economists' opposing responses after the crisis discussed in this chapter, this thesis will show that, it is reasonable to argue that both schools of thought have returned to the relative comfort of their respective homelands. Without an agreement to speak a common language, it seems to be that no more room was left for further convergence between the two schools of thought.

Chapter four identifies the main weaknesses in the New Consensus Theory. The discussion in this chapter begins with the issue of confusions in policy-makings. By comparing the implications of the New Consensus policy prescriptions to the stylized facts of the Great Recession, the chapter shows the deficiencies in current economic modeling and economists' efforts in fixing them. It becomes clear that although some of the flaws can be fixed through amendments to the mutual compromise between the New

Classical and the New Keynesian approaches, some major issues seem to have roots within the underlying methodology. To thoroughly eliminate those deficiencies will require new methodologies to be employed. Chapter four shows how the resolution of these debates is going to affect the future macroeconomics.

The final chapter ends with some concluding remarks regarding the future of macroeconomics based on the ongoing debates among economists from different schools of thought.

Chapter 2: Macroeconomic theory before the crisis

We begin by reviewing the major developments of economic thought over the last eighty years. While the origin of economics trace back to Adam Smith and David Ricardo in the eighteenth century, these economists' ideas are less relevant to the major economic crisis we are currently facing than those ideas of more recent theorists. Therefore, discussions about Smith and Ricardo's ideas are beyond of the scope of this paper. We first talk about the debates between Keynes and the Classical doctrines during the last major economic crisis, the Great Depression.

2.1 Swings of mainstream macroeconomic theories after WWI

2.1.1 Keynes versus the Classical doctrines

Before Keynes, two beliefs were prevalent in economic theories. First, money was believed to be neutral. Second, demand and supply were believed to automatically balance. These two statements were usually used together to fulfill each other. According to Say's Law³, money serves as a medium of exchange to facilitate transactions. People produce because they want to either use the product or exchange it for money for future consumption. Under Say's law, there would never be an overabundance of products in the world, because no one would produce something that he either didn't use or exchange.

³ Say wrote: "I can see that circulation can be obstructed by superabundance of certain products, but that can only be a passing evil, for people will soon cease to engage in a line of production whose products exceed the need for them and lose their value, and they will turn to the production of goods more in demand. But I do not see how the products of a nation in general can ever be too abundant, for each such product provides the means for purchasing another (as cited in Cottrell, 1997)."

Therefore, according to the theory, the market is stable and free from any aggregate demand deficiencies. In Keynes' slogan, "supply creates its own demand." Under this idea, the only reason people would hold cash is to "bridge the time gap between the receipt of money income and its disbursement" (Rima, 2001, p. 443). From this point, Marshall developed the first quantity theory of money which can be denoted as $M^d = kPY$ (M^d is the amount of money in circulation on average in an economy. P is the general price level. Y is total output, and k is a fixed notion representing the velocity of exchanging money). According to this equation, the changes in the quantity of money have no real effects in the long run. Since the total production of an economy and the velocity of exchanging money are usually assumed to be fixed, excess money supply in a system can only be restored by a proportional increase in prices.

However, in contrast to the Classical economists' ideas about a tranquil economy, the world experienced the Great Depression from the late 1920s to the 1930s. Of all the economists who had wished to explain and find a solution for the Great Depression, John Maynard Keynes turned out to be the most distinguished one. At a time when economic theories were full of Classical doctrines, Keynes' ideas about aggregate demand management proved to be revolutionary. Indeed, these theories are still being seriously studied today.

With the belief that the subject of economics should provide proper guide for policy, Keynes focused on short-term effects of economic policy as he argued that, "in the long run we are all dead." This unique vision enabled him to theorize something that other economists may also have seen but failed to recognize. First, Keynes challenged Say's Law which argued the self-balance mechanism of supply and demand. Keynes

proposed a scenario where insufficient aggregate demand led to further demand shortages. For example, when there is a decline in marginal efficiency of capital. The fall of marginal efficiency of capital will reduce total investment, which, in turn, will bring a secondary downward pressure on consumption. However, the fall in aggregate demand will not necessarily lead to a sharp fall in interest rate due to a proportional rise in saving, as was proposed by classical economists. This is because saving, which equals total income net consumption, is usually passive. Additionally, there's a possibility that interest rates may be temporarily pushed up by greater liquidity preference ⁴ (Cottrell, 1997). In his General Theory, Keynes further showed that unstable business investment is the paramount cause for aggregate demand failures. According to Keynes, investment is only to some extent elastic to interest rates, but is subject also to other unstable variables such as business outlook and entrepreneurs' "animal instincts." Therefore, according to Keynes, the maintenance of aggregate demand requires active government interventions.

With Keynes' rejection of the applicability of Say's Law in the short run, the quantity theory of money also came under scrutiny. Since the labor market can be underemployed due to insufficient aggregate demand, the real output of an economy should not be predetermined at its full employment level as presumed by the Classics (Snowdon and Vane, 2005, p. 69). As long as there is positive elasticity between money and production, money can have real effects on output. The quantity theory of money doesn't hold true. In Marshall's function $M^d = kPY$, if Y is no longer assumed to be a

⁴ In contrast to classical loanable funds' theory, Keynes proposed liquidity preference theory to describe interest rate determination. Keynes argued that people's demand for liquidity assets depends not only on interest rewards but also on transaction motives, precautionary motives and speculative motives. Therefore, the classic doctrine which proposed interest rate as the only determinants in the saving investment nexus should be rejected.

fixed variable, but instead, a function of money, then we should not expect price levels to adjust proportionally to money supply adjustments. In other words, money is not always neutral. In the short run, an increase in money stock will have positive effects on output until full employment of the economy is reached (Snowdon and Vane, 2005, p. 70).

2.1.2 Monetarism and the New Classical wave

Inspired by Keynes' revolutionary vision, the British government was able to steer its economy back on track during the later years of the Great Depression through active monetary policies and fiscal policies. Keynes' theory was vindicated. Later, John Hicks and Franco Modigliani extended Keynes' ideas to a more structural IS-LM model. With this expansion of influence, Keynes' theory started to dominate the macroeconomic theoretical field for several decades after World War I. This dominance lasted until the late 1960s, when Milton Friedman's Monetarist ideas offered an alternative competing macroeconomic theory.

Interestingly, one of the most important contributions that Milton Friedman made was his revival of the classic quantity theory of money (Snowdon and Vane, 2005, p. 164). Standard Keynesian economists usually argued that the stock of money in a system will influence economic output, but Friedman believed that the long-run effect of money towards output was neutral. In other words, changes in the quantity of money will only affect long run price level changes. Interestingly, Friedman did admit that there can be short-run changes in output due to the time lag of the perceptions of changes in monetary stock. However, that was not the key research point in the Monetarism theory, because, according to Friedman, short-run policy effect analysis can be misleading due to unstable

environments and limited testing tools. Friedman denied that “one could expect to reliably model short-run adjustment processes (Woodford, 2008).”

Friedman challenged two arguments of Keynesian economics. First, he rejected Keynes’ non-neutrality of money argument by showing that inflation expectations by individual agents can affect the effectiveness of monetary policies. Instead of adaptively responding to nominal monetary changes as assumed by Keynes and all other former economists, individual market participants were viewed by the Monetarism School to act with more rationale and complexity. As Friedman explored the process of wage setting, he argued that workers care about is real wages, rather than nominal wages. If workers or other agents in the economy are rational enough not to suffer from money illusion, their expectation of inflation has to affect the wage bargaining process. For example, if workers expect 20% increase in price level for the next year, they will ask for wage increases of at least 20% in their negotiations with their employers. Similar processes will occur in other sectors of the economy that are contracted on nominal terms. If real wages, instead of nominal ones, are the key point in wage bargaining, then the relationship between nominal wage and unemployment level no longer exists. With this conclusion, Friedman was able to reject Keynes’ argument about the long run trade-off between unemployment and inflation. It was also a significant move to put “expectations on center stage for the development of macroeconomics (Mankiw, 2006).” This argument, put forward by Friedman in 1968, was considered one of the most influential economic articles written in the 20th century.

Friedman’s second key argument was the rejection of the effectiveness of Keynes’ fiscal policies. Through Friedman’s (1957) publication of the study of consumption

function and permanent income hypothesis, he argued that people's consumption behavior is determined by their expectation of longer-term rather than transitory income. According to Friedman's function, $C = C_p + C_t$, consumption is determined by both "permanent" component and "transitory" component. For the "permanent" portion of consumption, people with higher expected future income are likely to spend more than people with lower expected future income. The "transitory" portion of consumption is usually associated with "sudden illness" or "bountiful harvest" (Friedman, 1957). Since the "transitory" component of consumption varies among different groups of people, on an aggregate level, the marginal propensity to consume depends more on permanent income rather than transitory income. By stating this, Friedman was able to reject Keynes' fiscal policy effectiveness by pointing out that the marginal propensity to consume out of transitory income is insignificant and the multiplier effect assumed by Keynes is not obvious (Mankiw, 2006).

Inspired by Friedman's ideas and equipped with advanced macroeconomic analysis tools, the New Classical macroeconomic economists in the 1970s were more prepared to launch another wave of economic revolution against Keynes. They aimed to "discard Keynesian theorizing and replace it with market-clearing models that could be convincingly brought to the data and then used for policy analysis (Mankiw, 2006)."

The New Classical macroeconomists experienced two phases of development (Snowdon and Vane, 2005, p. 295). During the first phase, Robert Lucas' monetary equilibrium business cycle theory focused on monetary shocks and their relationship with macroeconomic "cycles." During the second phase, Kydland and Prescott developed the Real Business Cycle theory (RBC theory) to focus on real disturbances and its

relationship with macroeconomic “trends.” In spite of their differing emphases, the two phases generally shared the same classic macroeconomic framework where representative rational individual agents use available public information to rationalize economic decisions in a perfect market. The New Classical macroeconomists employed large numbers of equations of mathematical precision which Mankiw (2006) referred to as the “close cousins of physics departments across campus,” to perform analysis in a more finely-honed Walrasian general equilibrium framework. In addition, the two phases shared certain assumptions. For example, they generally assumed “market clearing ⁵” and rational expectations ⁶, with minor changes to the latter through the development that occurred from the first phase to the second phase of New Classical Theories.

During the first phase, Lucas assumed that agents have rational expectations, but they could suffer from asymmetric information and other signal distractions. For example, Lucas specified that a typical firm in a perfectly competitive market, when confronted with an increase in product market prices, must determine if the price increase is a result of increasing demand or, instead, is a phenomenon of general price inflation. The firm would need to make a decision to expand production or simply increase its prices. Since, according to Lucas, the general price level for other markets only becomes known with a time lag, there can be expectation-errors for firms (Snowdon and Vane, 2005, p. 233). If a firm mistakes general inflation for an increase in demand for its product, the firm will end

⁵ According to “market clearing”, the invisible auctioneer in the market matches every demand and supply by adjusting prices until the market clears. (Brian Snowdon, Howard R.Vane, p37) Whenever there is a supply shock or a demand shock, the market will quickly shift to a new equilibrium state due to price, output adjustment. There are no price rigidities.

⁶ “Rational Expectation Theory” assumes that when facing a stochastic shock, agents will incorporate their expectation of future changes into consideration in doing their utility maximization choices.

up hiring more workers and producing more output. On an aggregate level, this will result in a temporary increase in output. When the firm finally realizes its error, the output will have to return to normal, excess labor will be laid off and extra capital will be liquidated. By incorporating “surprise” into production functions, Lucas argued that the “cycles” in historical macroeconomic output data reflected temporarily confusions to money shocks. According to Lucas, government intervention is counterproductive as it only adds more to the confusion. He emphasized the importance of stable inflation and creditworthy monetary policy. As argued by Robert Lucas, if the economy were able to provide a relatively stable inflation, there would be fewer chances for firms and workers to have expectation errors when confronted with price changes, and thus there would be fewer output fluctuations. Since price level expectation tends to go pro-cyclical with monetary growth according to Monetarists’ theory, it is also important for central banks to provide a creditworthy monetary policy. Snowdon and Howard (2005, p. 234) showed that depending on how creditworthy the central bank policy announcement is to individual agents and central bank’s alternatives, the results of monetary policies can differ greatly. For example, in a situation where low monetary growth was not believed by the public, even if the central bank did implement low growth policy, the public would initially have higher expectations of inflation (which would be reflected in nominal contracts) and then realize their mistake. In this case, the outcome would be low inflation accompanied by a temporary period when the economy would not be able to reach full output. However, if the low monetary growth policy was believed by public, the outcome would be low inflation accompanied by natural rate of unemployment.

Since Lucas' model has successfully explained that expectation errors can largely be eliminated by stable prices and creditworthy central banks, during the second phase, also known as the Real Business Cycle school of thought, Kydland and Prescott generally assumed away the possibility of expectation errors. In other words, agents are assumed to have perfect rationale with full foresight. The only confusion they face is that when confronted with a productivity shock, agents are usually not sure whether the shock is temporarily or permanent. This assumption enabled economists to focus more on "real disturbances" and their "trend effects" on macroeconomic output rather than "nominal disturbances." Plosser (1989) used "Robinson Crusoe" and the shipwrecked title character's optimal decision makings when faced with a technological shock, to demonstrate the dynamic nature of macroeconomic output fluctuations under real disturbances. For example, when Robinson Crusoe faces a productivity shift that he thinks is temporary due to exceptionally good weather, he can consume the above normal output, or he can choose to invest the additional output to increase future productivity. The decision, however, depends on how Robinson values current consumption versus future consumption. Similarly, when the castaway faces a productivity shift that he thinks is permanent (for example, due to improvements in his fishing skills), Robinson will be more likely to increase his consumption and decrease his investment. Whatever he chooses, as argued by Plosser, Robinson Crusoe is better off he would be if chose to have his actions guided by others.

Aggregating from this underpinning of perfect microeconomic optimization, the New Classical School generally denies market failures or involuntary unemployment. Unemployment is viewed by New Classical economists as a behavior of "intertemporal

substitution” of leisure and work, which reflects the optimal responses by agents. They propose a free market economy. According to the New Classical economists, the best thing for government to do is to reduce “externalities” such as tariffs, quotas, and regulations which cause productivity downturns through damaging “incentives and divert entrepreneurial talent towards rent-seeking activities.” Due to the human instinct of self-interest and rationality of every market participant at the micro level, according to the New Classical economists, welfare will be automatically improved by the invisible hand of the market itself. Government intervention, such as the active policies suggested by Keynes will not help stabilize except to prompt further market confusions and to reduce market efficiencies.

By building perfectly competitive economic models and by recognizing supply side business cycles, the New Classical School denied most of Keynes’ interventionist macroeconomic policy propositions. New Classical critiques against Keynes’ theory were deadlier than those launched by Monetarists, especially when the Great Inflation period from the 1970s to the 1980s proved to be New Classical-friendly and particularly anti-Keynesian ⁷. Aside from its inconsistency with the reality of the Great Inflation during this period in history, Keynes’ theory was less attractive in its framework and research methodology. The New Classical model, with its solid microeconomic foundations was more convincing than the one provided by Keynes and his followers ⁸. Besides, the

⁷ Keynesian economists depicted a Philips Curve which argues the trade-off between inflation and unemployment. However, it was inconsistent with the fact that the western world experienced high inflation rate accompanied with high unemployment rate during the 1970s.

⁸ In 1978 Lucas and Sargent famously declared that ‘existing Keynesian macroeconomic models are incapable of providing reliable guidance in formulating monetary fiscal and other types of policy (as cited in Snowdon and Vane, 2005, p. 266).’ Lucas said students should not read the “General Theory” by Keynes any more (Snowdon and Vane, 2005, p. 276).

successful penetration of rational behaviors enabled more rigorous and consistent analytical capability than any of the previous general equilibrium models that were based on adaptive behaviors. In 1980, Lucas wrote a paper declaring the death of the Keynesian economics. In it, he stated that “people even take offence if referred to as Keynesians. At research seminars people don’t take Keynesian theorizing seriously anymore; the audience starts to whisper and giggle to one another (Snowdon and Vane, 2005, p. 358).”

2.1.3 The New Keynesians

Despite the Monetarists’ and the New Classical’s refutation of Keynes’ theories and in spite of Lucas’ pronouncement of the idea’s death, not all economists believed that they had seen the last of Keynes’ ideas. Indeed, the New Keynesians rose in the early 1980s with the aim of reviving Keynes’ influence in macroeconomic theory. The wave of New Keynesian was actually pushed forward by a heterogeneous group of economists that may even object to the label of “New Keynesians” (Snowdon and Vane, 2005, p. 385). Though different in backgrounds, there are two things these economists share in common. First, they agree with the New Classical economists that macroeconomic models require a solid microeconomic foundation. Second, this diverse group of economists believes macroeconomic models are best constructed within a general equilibrium framework (Snowdon and Vane, 2005, p. 360). They generally accepted the view from the New Classical Real Business Cycle Theory that economies constantly face real stochastic shocks that may cause output fluctuation. However, these economists have

not been convinced by the RBC school's theory about continuous market clearing and voluntary unemployment. Indeed, they agree more with Keynes in realizing that small market frictions in the micro level can lead to significant macro outcomes. The key problem for these economists was determining how macro level market failures can cooperate with perfect micro level market coordination like the "Robinson Crusoe" case. Instead of developing macro theories based on micro foundations, the New Keynesians aimed to adapt microeconomic theory to macro findings (Stiglitz and Greenwald, 1987). They helped to provide proper micro foundations to support Keynes' features in macroeconomic theories.

The core idea of New Keynesian theory is realizing imperfect information and incomplete markets in an intertemporal equilibrium framework. Through the realization of microeconomic failures such as nominal rigidities, real rigidities and capital market imperfections, New Keynesian economists were able to provide rigorous models to show that there is something at a micro level to prevent markets from clearing and to demonstrate that these small rigidities can have profound macroeconomic outcomes. More importantly, these New Keynesians successfully incorporated these micro inflexibilities into the general maximizing behavior of agents under rational expectations.

Nominal rigidities were explained through the introduction of "price changing cost." According to Blanchard and Fischer (1989), "price change cost" is a cost faced by producers when they are going to change the price. Price change costs can be divided into two kinds. The first kind is the information cost. "If the costs of changing prices come mostly from collecting information, it may be optimal for price-setters to change their prices at fixed intervals of time (Blanchard and Fischer, 1989)." The other kind is the

“menu cost” which is the price charged on producers to print new copies of menus. These two “price change costs” may result in price rigidity in different ways. Information cost follows time dependent rules. “Price setters in imperfectly competitive markets may find that, given other prices, not changing their own prices or changing them only infrequently may cost them relatively little. But the macroeconomic implication may be slow changes in the price level, large effects of aggregate demand on output, and large output fluctuation (Blanchard and Fischer, 1989).”

Real rigidities were explained through the introduction of “efficiency wage” theory. “Efficiency wage” theory first argued that unlike the productivity of machines, human productivity is elastic to real wages. Due to company profit maximization, the optimal wage paid to workers should satisfy two conditions. “First, the elasticity of effort with respect to the wage is unity. Second, the amount of labor a firm should hire should be up to the point where its marginal product is equal to efficiency wage (Snowdon and Vane, 2005, p. 385).” Managers realize that lower labor productivity is costly to firms. Therefore, instead of lowering real wages, companies that face recessions will usually lay off less productive workers, and keep the same real wage for more productive ones to avoid efficiency loss.

Capital market imperfect information can be seen as the asymmetric information for company managers and company equity holders. Funding through debt issuing will “expose companies to considerable risk, including the risks of bankruptcy.” Such risks will be magnified when companies are unsure about the future price of the products they sell. In many circumstances, worries about the potential risk of being unable to meet debt

obligations will affect companies' willingness to borrow. This explains the pro-cyclical behavior of business investment and inventories (Stiglitz and Greenwald, 1987).

By rationalizing incomplete markets and imperfect information, the New Keynesians were able to provide a solid microeconomic foundation for some of the Keynesian phenomena in economies such as the fact that wages and prices may sometimes fail to clear, and business investment is highly pro-cyclical rather than purely interest rate determined. In contrast to both the New Classical's continuous equilibrium model and Keynes' disequilibrium model, the New Keynesians proposed an intertemporal equilibrium model where certain rigidities prevent the economy from clearing from time to time in the short run. However, over the long run, according to the New Keynesians, the economy still tends to go towards an equilibrium state as short-term failures are gradually corrected.

Answering to Lucas' critique⁹ about formal macroeconomic modeling issues, the New Keynesians based their research on the New Keynesian Dynamic Stochastic General Equilibrium model (also known as the New Keynesian DSGE model, see Exhibit 1 for details) which had been highly favored in contemporary macroeconomic research. With the micro foundations shown above, the New Keynesians introduced a variable governing the price stickiness of the representative producing company and the wage stickiness of the representative agent. The DSGE model deals with the dynamic relationships between a government, a representative household, a representative intermediate goods-producing

⁹ Lucas (Lucas, 1976) argued that "Given that the structure of an econometric model consists of optimal decision rules vary systematically with changes in the structure of series relevant to the decision maker, it follows that any change in policy will systematically alter the structure of econometric models". It is always interpreted that economists should model parameters such as technologies, preferences and resources constraints that really govern individual behaviors.

firm and a representative final goods-producing firm. The representative agent optimized its utility among real money balances, leisure and consumption within budget constraint that ruled out Ponzi schemes. The representative final goods producing company maximized its present value of future profits with the choice of labor input and price adjustments. Monetary policy was operated by an interest rate feedback rule. However, since the model was originally developed by the New Classicals and was only adopted and revised by the New Keynesians, some of the Keynes' critical points against Classical doctrines had to be compromised to fit into the model. For example, by focusing on the supply side of the economy, the model revived the "Say's Law," which was once rejected by Keynes. The model generally denies any intrinsic effective demand failures, but embraces the Classical political economists' ideas of market clearing and the self-regulation of the system (Arestis and Sawyer, 2002). Moreover, by proposing monetary policy as the primary tool for aggregate demand management, the New Keynesian macroeconomics downgraded the priority of fiscal policy in aggregate demand management and denied Keynes' liquidity preference" theory and "liquidity trap"¹⁰ scheme which explained certain situations where monetary policy may be ineffective. This was considered by some economists as a theoretical retreat (Mankiw, 2006). For example, Leijonhufvud (2008) argued that, "besides some micro inflexibility, this brand of contemporary macroeconomic theory has basically nothing Keynesian about it..."The New Keynesians' attempt to rationalize rigidities and inflexibilities with utility/profit maximizations is viewed by some economists to be more as a synthesis than a competing

¹⁰ Liquidity trap described a scheme when people's demand for liquidity became infinitely elastic so further injection of money or further lowering of interest rates are not going to be effective in stimulating economy. Liquidity trap can occur when there are adverse events in the economy, such as a pessimistic business outlook, a highly unstable society or expectations for severe recessions.

alternative to the theories of the New Classicals. Although the outcomes of New Keynesians and the New Classical school were still different, their ways of solving problems and their scopes of analyzing economic models were converging towards each other. This provided the impetus for further convergence of the two schools in the late 1980s.

2.2 Convergence in macroeconomics and the Great Moderation

The development trend of macroeconomic theory after WWI and before the recent crisis was first divergent and then convergent. The Great Depression of the 1930s gave much credit to Keynes, but the worldwide Great Inflation period in the 1970s, where high inflation accompanied with a high unemployment rate, was more consistent with the New Classical schools' point of view, which argued that there is no long-run trade-off between unemployment and inflation. Through the emergence of the New Keynesian school of thought in the 1980s, the divergence between macroeconomic theories was replaced by a trend of convergence. The mainstream economists started to hold the view that we should pay attention to Keynes' market frictions in the short run, but trust the New Classicals' theories in the long run. With a common ground of vision and methodologies¹¹, during the last few decades of the 20th century, more of the New Keynesian and the New Classical economic ideas about monetary policy converged. This agreement between once-warring camps became known as the New Consensus or the

¹¹ Michael Woodford (2008) wrote, "I believe that there has been a considerable convergence of opinion among macroeconomists over the past ten or fifteen years...First, it is now widely agreed that macroeconomic analysis should employ models with coherent intertemporal general-equilibrium foundations...Second, It is also widely agreed that it is desirable to base quantitative policy analysis on econometrically validated structural models.... Third, it is now widely agreed that it is important to model expectations as endogenous. ... Fourth, it is now widely accepted that real disturbances are an important source of economic fluctuations...Fifth, Monetary policy is now widely agreed to be effective..."

New Neoclassical Synthesis. This theory coordination integrates “Keynesian elements such as nominal rigidities and imperfect competition into a Real Business Cycle dynamic general equilibrium framework (Snowdon and Vane, 2005, p. 411)”, with inflation targeting ¹² emphasized as the ultimate goal of monetary policy.

The formation process of the new consensus was made possible by the joint contribution of both the theory advancement in academia and feedbacks from real world policy implementations. It started with a wide recognition about the “cost of inflation ¹³” and “cause of inflation” among mainstream economists. Both the New Classicals and the New Keynesians had contributed to the formation of the general consensus. Marvin Goodfriend (2007) specified two arguments that were resolved between economists of the two schools during the synthesis. The first argument was about whether a central bank has the power to control inflation. Before the consensus, there was no clear answer to the question. Keynesian economists had argued the non-neutrality of money. Inflation was believed to be associated with non-monetary reasons like monopolistic competition, psychological effects and aggressive labor unions, rather than monetary policies. For the opposing economic camp, Milton Friedman had proposed the long-term neutrality of money. He showed that historically and internationally, long-term sustained inflation was always associated with excessive monetary growth.

¹² Inflation targeting is an economic policy that a central bank use interest rate adjustments to affect inflation to keep it low and stable.

¹³ Both inflation and deflation are viewed to be costly and destabilizing. Unanticipated inflation can distort the distribution of income and increases business uncertainty, reducing incentives to invest and to produce. As Leijonhufvud highlighted that national budget planning can be meaningless “when money twelve months hence is of totally unknown purchasing power.” Robert Lucas also argued that unstable inflation will cause producers to make more expectation errors when they are confronted with increases in prices as they are not sure it’s a signal of increasing demand, or a signal of general increases in price level of all products.

But both views had encountered problems. On one hand, inspired by Keynes' argument about the trade-off between inflation and unemployment, the central banks in the early 1960s became more expansionary pursuing low unemployment. Monetary policies were described as "go-stop" stance. This meant that central banks stimulated employment "until inflation became another headache" (Goodfriend, 2007). However, since employment usually responded with a lag, central banks were politically motivated to expansionary monetary growth. It was extremely difficult for them to reverse high inflation rate. Besides, "wage and price setters learned to take advantage of tight labor and product markets in the "go" phase of the policy cycle to make increasingly inflationary demands, which neutralized the monetary stimulus (Goodfriend, 2007)."

Monetarists encountered another problem in their approach to addressing the question of the central banks' role in economy. During the 1970s, Central banks had once tried to target the monetary base to tame inflation, but this ended with disastrous results. It was not until economists from the New Classical School and the New Keynesian School had refined models which successfully associated interest rates with output, that the central banks started to replace Keynes' and Friedman's orthodox approaches to monetary policy with the New Consensus interest rate adjustments monetary policy (Goodfriend, 2007)¹⁴. With the wide agreement that inflation is a monetary phenomenon that can be tamed by interest rate adjustments, many of the legitimate critiques regarding

¹⁴ In 1993, Taylor introduced "Taylor's rule" in his paper "Discretion versus Policy Rules in Practice". Taylor's rule described how much the central bank would or should change the nominal interest rate in response to divergences of actual inflation rates from target inflation rates and of actual GDP from potential GDP. This rule was expressed in a mathematical function and gave quantitative guidance to short term federal funds rate setting.

the weaknesses in each of the orthodox theories were answered and most of the previous disagreements between the economic schools regarding monetary policies were resolved.

The second argument was about whether central banks could credibly deal with widespread inflation expectations. Robert Lucas and Thomas Sargent showed that “inflation expectations could be made to conform to a central bank’s desired low rate of inflation if the central bank was credibly committed to following a noninflationary money growth rule (Goodfriend, 2007) ¹⁵.” The changes in the money supply, if preannounced and fully accepted by the public through the credibility of the central bank, would only change the price level, but not the output. Since a rational public would adjust expectations of inflation proportionally and reflect these expectations in their daily transactions, only non-creditworthy monetary increases would affect output. This argument was further vindicated in later years by Kydland and Prescott’s Real Business Cycle theory which convincingly showed that real output is more strongly associated with real factors such as productivity, preference and resources.

These answers provided by the Monetarists, the New Classicals and the New Keynesians formed the theoretical fundamentals of the New Consensus on monetary policy. Then in practice, Paul Volcker’s policy implementation during his term as the Federal Reserve Chairman helped to validate these theories. From the date he became chairman of the Federal Reserve, Paul Volcker was determined to take whatever necessary actions that a central banker could to tame the Great Inflation. On October 6, 1979, the Federal Reserve broke its long silence and made a public announcement to fight inflation. Despite the public’s fear of falling into recession, the Federal Reserve

¹⁵ Marvin Goodfriend quoted from Lucas and Sargent’s 1981 paper, “Rational Expectations and Econometric Practice”, University of Minnesota Press

raised the federal funds rate a few times to 17 percent in March 1980. However, such tight monetary policy was still not enough to tame the inflation scare, as the inflation rate in 1980 still remained on a high level of 10 percent. In the following year, 1981, the Federal Reserve raised the federal funds rate further to 19 percent. The Fed was determined to let the economy disinflate, even though the unemployment rate had begun to rise. The persistence of double-digit federal funds rate, despite the cost of recessions, gradually lowered the public's inflation expectations to some extent. With this consistent approach, the Fed gradually acquired credibility among the public about its determination to control inflation. Finally in 1984, the Fed successfully employed an interest rate policy, managing to hold the inflation to 4 percent without creating a recession in 1984. This was considered a paramount victory in inflation fighting policy implementation (Goodfriend, 2007).

With the positive feedback from real world implementation, academic economists then built on the evidence generated by the Volcker disinflation policy to forge “what later became known as the New Consensus monetary policy framework (Goodfriend, 2007).” Advancements in economic research from both the New Classical School and the New Keynesian School further enabled better monetary theory to guide central bank policy management. As noted by Marvin Goodfriend (2007),

“Calvo pioneered models of dynamic forward-looking wage and price setting...Bennett McCallum (1981) opened the door to the modern analysis of interest rate rules by showing that a short-term interest rate could be used as the monetary policy instrument if it is part of a rule which provides a nominal anchor, so that the price level is determinate...In 1987, Blanchard and Kiyotaki provided an important bridge from earlier work to the modern monetary policy consensus by analyzing what can be interpreted as an imperfectly competitive Real Business Cycle model with sticky nominal prices and wages. Rotemberg

and Woodford (1991, 1992) extended the bridge by exploring endogenous countercyclical markups for Real Business Cycles in a fully dynamic context...”

To summarize, four aspects characterize the New Consensus of monetary policy (Bean, 2007). First, monetary policy is the primary tool of aggregate demand management. Fiscal policy, by contrast, is less effective and should only be used when the government balances its payments. Second, the implementation of monetary policy can only be ensured with central bank independence. Since there is still short-term trade-off between inflation and unemployment due to all kinds of nominal rigidities, a non-independent central bank that faces constant political pressure cannot fulfill its goal to tame inflation. Third, inflation targeting is viewed as the ultimate goal, instead of the intermediate goal of monetary policy. Fourth, inflation expectations and central bank credibility are key roles in implementing monetary policy. As discussed by Michael Woodford, only when central bank monetary policy is viewed as credible, will rational agents have the same inflationary expectation in their mind, and the change in nominal prices won't lead further into output fluctuations. While inflation targeting becomes the final goal of monetary policy, inflation forecasting is viewed to be the intermediate goal (See Exhibit 2 for details).

With inflation under control after the late 1980s by central banks' adjustments of nominal short term interest rates, the U.S. economy and the world economy experienced a long period of boom with little volatility. The variability of quarterly growth in real output (as measured by its standard deviation) as documented by Oliver Blanchard and John Simon, has declined by half since the mid-1980s, while the variability of quarterly inflation has declined by about two thirds (Blanchard and Simon, 2001). Similar results

were found by Kim and Nelson (as quoted in Bernanke, 2004) ¹⁶. The period in which these changes in volatility occurred became known as “the Great Moderation.”

Mainstream economists analyzing the Great Moderation usually associate this period with macroeconomic theory advancement and monetary policy improvement. In 2003, Robert Lucas declared that the “central problem of depression-prevention has been solved, for all practical purposes (as cited in Krugman, 2009).” In 2004, Bernanke (2004) announced at the meetings of the Eastern Economic Association that, “Improvements in monetary policy, though certainly not the only factor, have probably been an important source of the Great Moderation.” He also argued that “The monetary policies in the 1960s and the 1970s were prone to creating volatility.” Peter Summers (2005) summarized in his paper that, “...the combination of improved monetary policy, which helped lower and stabilize inflation, and better inventory management techniques may have contributed importantly to lower GDP volatility.”

In the new consensus, economists had not only enabled peace between previously-warring schools of thought but they also contributed to the resolution of a serious economic crisis. With these accomplishments, most economists enjoyed an atmosphere of professional confidence and celebration.

¹⁶ In a meeting of eastern economic association, Bernanke (2004) wrote about the great moderation, “Kim and Nelson (1999) and McConnell and Perez-Quiros (2000) were among the first to note the reduction in the volatility of output. Kim, Nelson, and Piger (2003) show that the reduction in the volatility of output is quite broad based, affecting many sectors and aspects of the economy. Warnock and Warnock (2000) find a parallel decline in the volatility of employment, especially in goods-producing sectors.”

Chapter 3: The Crisis

3.1 The origins and consequences of the Subprime Crisis

The “Great Moderation”, where mainstream economists believed they had solved major problems of macroeconomics, ended with a dramatic downturn beginning in 2007. The U.S. subprime crisis crashed into the economy in 2008, bringing devastating consequences both regionally and globally. The crisis was first triggered by a dramatic rise in mortgage delinquencies and foreclosures in the U.S. real estate market in 2007. The consequences of the housing mortgage crisis then spread to the financial markets and other sectors of the economy during the following years.

The U.S. housing market was enjoying a substantial boom before its peak in 2006. Nominal housing prices were growing at 12.5% yearly during the period from 2003 to 2005 (Jane Dokko et al, 2008). The cumulative growth in home prices between 1997 and 2006 was 124% (CSI, 2008). So was the growth of home-ownership. According to U.S. Census data, the number of home owners peaked in 2004 at 69.2% of the population. Between 2001 and 2005, 80% of the homes purchased were bought with adjustable-rate mortgages known, which are also known as ARMs. These mortgages enabled individuals inspired by the government homeownership promotion efforts, even those borrowers with the lowest credit ratings, to enjoy a below-market interest rate for some predetermined period, followed by market interest rates for the remaining of the mortgage's term. Once the initial grace period ended, most borrowers, facing a higher monthly payment, would

try to refinance their mortgages. Under low interest rate, easy credit approval and the background of increasing home prices, these mortgages were very attractive to buyers who believed they could always refinance to keep the mortgage payments low. While the real estate market was in an up-swing state, both mortgage funders and financiers were eager to make transactions. Buyers liked to purchase homes because the asset appreciation covered most of the interest costs associated with a mortgage. Financiers were also willing to provide credit to home buyers as delinquencies and defaults were low and the profit to be gained was big. Further, even if those mortgages did default, financiers didn't have to worry as homes could soon be sold to another buyer at a price very likely to cover the principle. In other words, financiers didn't face a real loss.

In 2007, things started to change. The real-estate market plummeted. House prices started to fall by 20-30%. The slashing of home prices led to several consequences. First, mortgage funders felt reluctant to allow buyers to refinance as the risk were higher. Second, when the initial grace period ended, some ARM payments doubled or tripled their sizes. People without strong income sources to make such payments had to default. Third, when mortgage liability amounts exceeded the value of the houses, homes actually became negative assets to home-buyers. Under such circumstances, many people chose to default voluntarily. Defaults of this kind composed 47% of foreclosures during the second half of 2008 (Leibowitz, 2009).

Normally, such a crisis can be constrained to the real-estate market only. However, three factors turned the real-estate crisis into financial crisis, which, in turn, later became what is now known as the "Great Recession." First, the total dollar amount in issued subprime mortgages was of extraordinary size. In 2007, about one trillion USD worth of

subprime mortgages were outstanding in the United States. In this situation, even single-digit default percentages imply billions of dollars in losses.

Second, with financial market innovation, the sponsors of the subprime mortgages and their related financial assets were numerous and complex. Through the Wall Street securitization machine, those mortgage payments were actually pooled into mortgage-backed securities, which later were sold to different mutual funds, hedge funds, and pension funds. Rating agencies played a misleading role here, as they graded these risky assets triple A (Krugman, 2010) ¹⁷. When delinquencies and foreclosures began to occurring in a large scale, it triggered two consequences. First, billions of subprime mortgage backed securities suffered great losses. Some couldn't be sold at any price and thus became "toxic" assets. As a result, those who held them suffered a huge amount of asset write-downs on their balance sheets, causing financial instability. Second, with defaults on payment, some financial institutions that relied on these income streams as cash flows suffered liquidity problems. Long-term assets on balance sheets had to be liquidated at below market price to meet cash flow needs.

Third, the widespread transactions of over-the-counter financial derivatives like Credit Default Swap (CDS) further magnified the crisis to unbelievable scale. CDS is a financial derivative that bets on certain credit events. CDSs are supposed to provide buyers of financial instruments protection, a sort of bond insurance against potential risks. However, since the CDS market is largely unregulated, it was more often used as a financial gambling tool. As Stiglitz (2009) pointed out, "With these, one party pays

¹⁷ Krugman wrote: "...Of AAA-rated subprime-mortgage-backed securities issued in 2006, 93 percent — 93 percent! — have now been downgraded to junk status."

another if certain events happen—for instance... if the dollar soars... Thus, if you felt confident that the dollar was going to fall, you could make a big bet accordingly, and if the dollar indeed fell, your profits would soar.” The total value CDSs had reached a significant \$62.2 trillion by the end of 2007. These derivatives, with little transparency to public investors, were held by numerous financial institutions with complex ownership relations. When the subprime mortgage crisis hit the market, liquidity problems, magnified through significant amount of outstanding CDS, soon became widespread. Moreover, the confidence in the market started to collapse. Banks no longer trusted each other as “no one could be sure of the financial position of anyone else—or even of one's own position. Not surprisingly, the credit markets froze (Leijonhufvud, 2009).” The Fed had to play the role of lenders-of-last-resort to keep the situation from further worsening.

According to the old Glass-Steagall Act ¹⁸, if the liquidity problem occurred inside the depository banking system, the Federal Reserve can usually restrain its impact by providing liquidity. If the liquidity problem was associated with more risky investment banks, the Fed could simply let the banks fail. However, due to the “economic liberalization” of the 1980s that allowed extra risk-taking by depository banks, the crisis was widespread among all kinds of financial institutions, including both depository institutions and “shadow banks.” The Federal Reserve lender-of-last-resort could not help ease the market run while avoiding moral hazard. The result was large failures –and thereby nationalization of giant financial institutions. The subprime crisis reached its

¹⁸ Glass-Steagall Act was first introduced in the Great Depression in the 1930s to separate commercial banks and investment banks in order to prevent the systematic fall of financial systems. In the 1980s, the part of the Act that allowed the Federal Reserve to regulate interest rates in savings accounts was repealed. Provisions that prohibited a bank holding company from owning other financial companies were repealed in 1999. According to some economists, these repeals have contributed significantly to the financial crisis as commercial banks were able to hold more risky assets.

peak in October 2008 when three of the top five investment banks on Wall Street either went bankrupt or, merged with depository institutions¹⁹. Mortgage corporations were nationalized by the U.S. government²⁰. Hundreds of banks were taken over by the FDIC.

While banks were contracting, reluctant to provide liquidity, many businesses faced liquidity problems as the businesses were unable to meet most of their business contracts. The effect was magnified when market's overall reliance on the fragile "shadow banking system" has been enormous. Businesses cut wages, laid off people, and stopped expansion. Some, facing severe solvency problems, had to declare bankruptcy. When this happened in a large scale, the financial crisis turned into the Great Recession. During the period from early 2007 (before the crisis hit) to mid-2009 (the worst period so far), the industrial production index declined 15%²¹, unemployment rose to 10%²², a trend that followed a downturn pattern similar to the first several years of the Great Depression. In addition, \$3 trillion worth of private assets were liquidated (Whalen, 2008). The Dow Jones industrial average fell by 22% within several days. Stock value lost almost half of their worth in the July 2007 peak. Trillions of dollars evaporated almost overnight.

The impact on the real economy was not constrained to the United States. With the global relocation of American and European manufacturers to Asia and South

¹⁹ On March 16, 2008, Bear Stearns was sold to JP Morgan Chase backed by the Federal Reserve. Sept 14, 2008, Merrill Lynch was sold to the bank of America. Lehman Brothers fell on the same day.

²⁰ In 2008, the U.S. government took over the Federal Home Loan Mortgage Corporation and Federal National Mortgage Association.

²¹ Data comes from the following source:
<http://research.stlouisfed.org/fred2/series/INDPRO/downloaddata?rid=13>

²² Data comes from the following source: www.miseryindex.us

America, great declines in output also took place in those export oriented economies as they saw a global decline of demand. In 2008, the Tokyo index lost 42% and the Shanghai index lost 50%. Oil prices dropped from \$145/barrel to \$30.28/barrel due to pessimistic output expectations. The world experienced the most severe economic downturn since the Great Depression.

3.2 The Great Recession and the government's responses

Soon after the subprime crisis crashed into the economy, the U.S. government responded with a series of anti-cyclical programs which included: measures to prevent further falls in home prices, bailouts of financial institutions, assistance for home-owners, and a fiscal stimulus package designed to increase aggregate demand.

In December 2007, then President George Bush announced a plan to temporarily freeze ARMs, reducing the default rate. However, this later proved to be far from enough. The biggest hit of the crisis in September 2008 brought total chaos to the market. Almost immediately after a strong hit from the crisis, the Federal Reserve took over Fannie Mae and Freddie Mac, and lent \$85 billion to AIG to avoid its bankruptcy. In October, 2008, The U.S. senate passed the \$700 billion bailout bill to relieve troubled assets in the financial market. Meanwhile, the Federal Reserve announced that it would provide \$900 billion in short-term loans to banks, \$1.3 trillion in loans directly to companies outside the financial sector to relieve liquidity constraint and further cut its lending rate. Later in October, the Federal Reserve announced another \$540 billion purchase of short-term debt through open market transactions, further injecting liquidity to the frozen financial market.

Unfortunately, the bailout was not enough as the market heads into a panic. More fiscal policy and monetary policy stimulus actions were applied to prevent the U.S. economy from sliding into recession. On February 17, 2009, U.S. President Barack Obama signed the American Recovery and Reinvestment Act of 2009, a \$787 billion stimulus package with \$120 billion in tax cuts for individuals and small business, and billions more to be spent on public works, including 12,500 transportation projects. On December 17, 2010, Obama signed the Tax Cut Bill to further reduce the tax burdens of United States citizens.

These programs effectively saved troubled banks in our crisis, but the economy has not yet recovered. In 2008, the Federal Reserve responded to the crisis by cutting federal funds Rate from 5.25% to 2% with little effort. Moreover, with interest rates approaching zero, unconventional monetary policy had to be used to save the struggling economy. Late in 2009 and early 2010, Bernanke further introduced “quantitative easing” to replace the traditional short-term interest rate adjustments in monetary policy. Quantitative easing does not exist in standard macroeconomic textbooks. It is an extreme central bank monetary tool in which the Federal Reserve buys a significant amount of government debt and financial assets from the market to increase the total money supply in an economy by infusing the money it creates electronically. In more ordinary words, the Fed is printing money. The results of these policies are still unclear right now. At the beginning of 2011, unemployment throughout the United States still hovers around 10% and shows no sign of declining. Businesses still feel reluctant to hire as their expectations about the future remains uncertain. Meanwhile, individual saving rates have reached historical lows while the total outstanding of government bonds remains high. In 2008,

the household debt, including both mortgage debt and credit card debt, to GDP ratio had risen to 102%, meaning that an average person borrowed more than he had produced (See Exhibit 3 for details). Compared to 48% debt to GDP ratio in 1985, the figure has been more than doubled.

3.3 Liberalism or Interventionism: economists' responses to the Great Recession diverge again

Aside from the responses from politicians and monetary authorities, the crisis also left many topics for scholars in economics to debate. During the Great Moderation years, most mainstream economists believed that the “central problem of depression-prevention had been solved (as cited in Krugman, 2009).” However, the same theory now faced new challenges after the Great Recession crashed into the economy. Meanwhile, a new interest developed in Keynes and his orthodox theories. The wide use of fiscal policies in 2008 to 2009, the re-emphasizing of “market failures” and “financial market regulations” effectively declared the resurgence of the orthodox Keynesian economics. Similarly, once marginalized heterodox macroeconomic theories such as the Austrian School and the Post Keynesian School regained popularity as these theories' scopes provided convincing perspectives to understand the current recession.

In contrast, the economists bearing the flag of the New Consensus theory, which in the past few decades had represented the synthesis of the most advanced research result of mainstream macroeconomists, began to scatter, trending toward conflict and scattered responses. While the New Consensus Macroeconomic theory was synthesized by both the New Classicals and the New Keynesians, during the crisis, observable trends

could be seen through economists' responses and that the two schools of thought differed greatly in terms of explanations and solutions to the Great Recession became apparent. In their responses to the Great Recession, the New Classicalists reverted to their tradition of proposing "economic liberalism." The Keynesians, similarly, returned to their theoretical homeland, promoting "active government intervention."

For a long time, most economists believed that the treaty between New Classicalists and the New Keynesians signaled that the optimal balance between "liberalism" and "interventionism" had been found. They generally accepted the view that market is capable of correcting itself in the long run, but also accepted that, due to some nominal inflexibilities, the economy shows some Keynesian features in the short-run. This wildly influential view was marked historically by the 1989 "Washington Consensus" which represented an era leaning towards economic neoliberalism over the next two decades. Inspired by these economic theories, financial markets and international capital flows were liberalized to prevent potential productivity losses through the redirection of entrepreneurship to other "rent seeking activities;" government played a less significant role as these actors were considered to be less efficient than private capital owners. This assumption lasted until the idea of neoliberalism came under severe scrutiny after the Subprime Crisis crashed into the economy.

Now, it seems that our current crisis was at least partially the result of "market disabilities." For example, people were forced to leave their houses which, even with 20% or 30% percent off their original prices, were left empty with no other people to take over. Something beyond the pure mechanism of supply demand matchup and price adjustment was at work here. Besides, instead of assisting scarce economic resources to be allocated

at the most productive uses, today's financial market spent huge amounts of money on poorly managed and unregulated financial transactions that later became "toxic" assets and had to be separated from the balance sheet to be taken over by the government. Meanwhile, an increasing inequality could be found in international trade balances and income distribution. With neoliberalism being challenged, the macroeconomic theory that had backed up the movement, that is, the consensus between the New Classicals and the New Keynesians also became less convincing.

The standard New Classical macroeconomic theory assumed continuous market clearing and therefore assured the economy to be free of "bubbles" or "speculations." Even after the hit of the crisis, some die-hard New Classical economists still believe in "market power" and propose "hands-off" economic liberalism. From a different perspective, some New Classical economists attributed our crisis to be a result of government destabilizing failure. For example, in a recent interview regarding subprime crisis (Cassidy, 2010), Eugene Fama, the originator of "efficient market hypothesis," argued that there was no overheating or speculating as is always suggested in the New Classical theory. Instead, he explained, our current mess was just a normal recession that can happen at any time in history. He argued that a drop in housing prices is a global phenomenon. The cause of the price drop is "unsure yet," but is usually associated with changing exogenous variables, such as changing preferences or real shocks. The recession which made a higher percentage of buyers unable to pay their mortgage payments, according to Fama, should not have been worse than the 2001 dot-com bubble burst. However, Fama argued that "market externalities," such as government promotion

of home-ownership²³ and bailouts of financial institution had pushed a normal recession further into a financial crisis. He emphasized that the last-moment government bailouts of troubled markets created a moral hazard for corporate investors and managers to risk more in order to earn exceptionally higher return. If everyone (both the management and the investors) assumed that government would bail them out, the liquidity and solvency risks of investors would be eliminated, so would asset pricing be influenced in the stock market²⁴. Similar ideas can be found in work by Eugene Fama's colleague, John Cochrane (2009) at the University of Chicago. John Cochrane explained that the subprime panic "was induced by the moral hazard that comes from 30 years of 'too big to fail' policies and actions...After the Bear Stearns bailout earlier in the year, markets came to the conclusion that investment banks and bank holding companies were 'too big to fail' and would be bailed out. But when the government did not bail out Lehman, and in fact said it lacked the legal authority to do so, everyone reassessed that expectation. 'Maybe the government will not, or cannot, bail out Citigroup?' Suddenly, it made perfect sense to run like mad." In other words, according to Fama and Cochrane, if the government had always kept a good record of allowing high risk-taking financial institutions to fail and then recycle them rather than bail them out, we would not have today's panic.

²³ Increasing home ownership has been the goal of several presidents including Roosevelt, Reagan, Clinton and G.W.Bush. ^ Whitehouse-President Hosts Conference on Minority Home Ownership-October 15, 2002 <http://georgewbush-whitehouse.archives.gov/news/releases/2002/10/20021015.html>

Eugene Fama (Cassidy, 2010) said: "That was government policy; that was not a failure of the market. The government decided that it wanted to expand home ownership. Fannie Mae and Freddie Mac were instructed to buy lower grade mortgages."

²⁴ Eugene Fama said in his interview that "If it becomes the accepted norm that the government steps in every time things go bad, we've got a terrible adverse selection problem."

For Eugene Fama and John Cochrane, avoiding the “too big to fail” phenomenon is the lesson we should learn from our current crisis. We do not have to worry about banking malfunctioning. As suggested by Fama, a malfunctioning banking system will soon be replaced by a new system after a crisis. Regulation is neither necessary nor helpful, because “Private companies are very good at inventing ways around the regulations. They will find ways to do things that are in the letter of the regulations but not in the spirit. You are not going to be able to attract the best people to be regulators (Cassidy, 2010).” Fama and Cochrane suggested predatory competition in the market to facilitate self-regulation. Management and investors should be responsible for their losses, rather than waiting for government last-moment intervention. Any banning of short sale of company stock, like what happened in October, 2008 will bring even more “externalities” to the market to prevent it from functioning properly because “an efficient market doesn’t guarantee people won’t lose money.” In other words, by using taxpayer’s money to spoil corporate investors and managers helping them avoid losses, the market was prevented from working as capitalist economy should.

Contrary to the New Classical economists’ defense of “economic liberalism”, the New Keynesians’ arguments about how to respond to the crisis revealed an obvious trend away from the limited government intervention, which had been supported under the New Consensus, with a return to the orthodox Keynesian traditions of tight regulation and active government intervention.

The New Keynesians believed that the corruption of financial institutions and failure of their regulators had created the crisis. The New Keynesians specified two problems that had led to the meltdown. The first problem was associated with how

mortgages with little documentation and income support had been approved. One need not be an economist with PhD degree to understand that low credit rating mortgages, also known as the “ninja” loans (no asset, no income), which did not even require a significant down payment, are very vulnerable whenever there are downward pressure on the housing prices, as collateral cannot meet debt obligation. Despite the risks associated with these mortgages, the number of “ninja” loans skyrocketed before our current crisis. People were offered Ponzi mortgages that they could abandon without any penalty. One must wonder how mortgage credit providers could be so ignorant or insouciant when faced with the risks associated with subprime lending. Investigation after the crisis (Dymski, 2010) showed that the recent development of mortgage securitization, which allowed mortgage initiators to issue mortgage credit and then distribute it to other financial institutions without having to hold it to maturity, had, in fact, exempted the mortgage issuers from all potential risks. Therefore, the self-interest motives that should have prevented providing credit to Ponzi financiers no longer existed. Mortgage issuers approved mortgages not because borrowers were likely to repay the loans, but instead approved applications because the issuers could earn a significant bank commissions. By packing these mortgages into securities and sell these packages to others, they could earn another fat fee. They didn't really care about whether these mortgages will ever be paid back.

The second problem behind the crisis, according to the New Keynesians, was associated with how these inferior securities, backed by risky mortgages, somehow managed to be exchanged in the asset market. The trading of these securities has been

proven to be destabilizing. Whalen (2008), Bernanke ²⁵, and McCulley (2009) all recognized the important role of “shadow banking system” in the aggravation of the crisis. The so called “shadow banking system” refers to the non-depository financial institutions such as investment banks and hedge funds that grew rapidly in the last decade, eventually rivaling the size of traditional banking business. Due to their non-depository nature, shadow banks are not subject to regulation and usually operate with higher debt leverages. Like traditional banking, they too, serve as financial intermediates between lenders and borrowers but are involved in riskier, higher returned transactions. Shadow banks engage in the borrowing of short-term liquid markets to purchase long-term, illiquid, risky assets such as subprime mortgage backed securities. The reliance on a cash inflow stream to constantly payoff short-term debtors made these institutions extremely vulnerable in the face of sudden credit disruptions such as defaults of large scales. In addition, the “shadow banks” are active in the OTC market trading financial derivatives like the fast expanding Credit Default Swaps ²⁶ products (also known as the CDSs) which also face insufficient regulations. CDSs are financial instruments designed to be a protection for debt-holders, a sort of insurances. However, CDS is unregulated and was usually involved only on off-balance sheet transactions. For example, a number of fraud cases being investigated recently show that some financial companies had intentionally designed some financial products that were going to fail in order to win huge amounts of money by betting against

²⁵ In a testimony about the causes of subprime crisis released on September 2nd, 2010, Bernanke recognized that shadow banking and private sector’s dependence on shadow banking is much to blame for the causes of the financial crisis.

²⁶ The size of CDS market grew rapidly from \$600 billion in 2001 to \$60 trillion in 2007.

the success of these products²⁷. Informational opacity in the extraordinarily-sized CDS market became one of the key triggers in spreading our recession as inter-bank broke down soon after the hit of the crisis due to uncertainty about each other's solvency status. It is no wonder what the credit market froze.

On some occasions, the New Keynesians started to blame the New Classical economic theories as the hand-off New Classical propositions (especially the Real Business Cycle theory that had emphasized productivity over regulatory issues) stating that they have backed the economic liberalization and provided the moral umbrella for all sorts of greedy, predatory behavior and incompetent regulation. With more and more corporate fraud and moral hazards in financial market being uncovered recently²⁸, according to most New Keynesians, the "invisible hand" of the market started to look more like a crooked "invisible dealer" at a casino.

Rather than being a new argument, this critique marked a resurgence of pre-New Consensus orthodox Keynesian ideas. More than seventy years ago, Keynes expressed his distrust of self-regulation of financial market by saying that, "When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done (as quoted in Krugman, 2009)." Whalen (2008) blamed that today's financial market regulation problems represents "a reversal of nearly a century of regulatory and prudential practices in the US." Stiglitz (2010) stated that the U.S.

²⁷ In addition, in an article called "Crocodile Tears on Wall Street", Huffington Post journalist Bill Moyers and Michael Winship tell the story of a hedge fund "Magnetar took that knowledge and bet against the very same investments they had recommended to buyers, selling short and making a fortune." The article can be retrieved: http://www.huffingtonpost.com/bill-moyers/crocodile-tears-on-wall-s_b_541032.html

²⁸ On Jan 18th, 2011, the FCIC issued an official inquiry report on financial crisis to disclose the origin of the crisis was due to "Widespread failures in financial regulation" and "systemic breaches in accountability and ethics at all levels."

financial market “wasn’t making our economy more productive; it was making our economy less productive... the financial sector figured out how to steal as much money as it could from the poorest Americans.” Stiglitz’s response was echoed by another Nobel Laureate, Paul Krugman (2009) who also wrote, “Economists turned a blind eye to the limitations of human rationality that often lead to bubbles and busts; to the problems of institutions that run amok; to the imperfections of markets — especially financial markets — that can cause the economy’s operating system to undergo sudden, unpredictable crashes; and to the dangers created when regulators don’t believe in regulation.”

In the short run, after all the devastating consequences of the subprime mortgage crisis, the critics of New Classical responses to the crisis proposed old school Keynesian anti-cyclical programs to be used as a temporary cushion to protect the economy from worsening further. Proponents of Keynes’ ideas specified that government should play a more active role in allocating resources to the neediest parts of the economy²⁹, specifically, the parts that can best facilitate the economy through Keynes’ multiplier effect. In the long run, they proposed that tight regulations had to be enforced in financial markets to prevent similar economic crises to rock our economic worlds in the future.

These statements, which clashed so tremendously with the actions proposed by the New Classicals, marked the end of a ceasefire and a disintegration of the New Consensus. With the divergent trend returning to macroeconomics, New Consensus, the once broadly accepted sentiment of the New Consensus was replaced by warring philosophies, namely economic liberalism and interventionism, held separately by the

²⁹Huge government bailout programs and stimulus packages were put into market soon after the Oct, 2008 crash. Ben Bernanke said in his proposition of a \$700 billion emergency bailout program on Sept, 2008 to Treasury Secretary Henry Paulson, "If we don't do this [bailout programs], we may not have an economy on Monday."

New Classicals and the New Keynesians. Ideological conflict had returned to macroeconomics.

Chapter 4: Macroeconomic theories after the crisis

Though the voices of dissent to the New Consensus were quiet compared to the trumpeting majority of the mainstream who believed in the New Consensus, it should not be forgotten that the New Consensus and its ideology of liberalism have never been truly accepted without objections, even in the period of macroeconomic peace. From the first day that supply-side economics³⁰ started to dominate macroeconomic theory and policy-making, challenges could be heard from economists, especially those economists with orthodox Keynesian backgrounds, who associated the numerous regional financial instabilities cropping up with financial liberalization could be heard. However, these voices were minor compared to the majority of the mainstream in believing the New Consensus. Besides, since financial crises happened then were relatively small in scale and shorter in period in the context of fast growing 1990s, worries about a potential economic disaster were largely kept non-mainstream and wasn't warranted necessary attentions.

For example, the savings and loan debacle that occurred in the United States as well as in some South American countries (e.g., Chile), and in which a large number of depository institution failed in the mid-1980s, reminded people of the potential instability in the financial sector as a result of deregulation. According to Akerlof and Romer

³⁰ In contrast to Keynes' emphasis on aggregate demand management, the Real Business Cycle School emphasized improving productivity through lower entry barriers and less regulation. Therefore, it is also known as supply side economics. The spirit of supply side economics was then inherited by the New Consensus Theory.

(1993), many of these failures could be tracked back to irresponsible borrowing behaviors and unethical business conduct known as "bankruptcy for profit" in the market. In their three-stage model, Akerlof and Romer have shown that, by taking advantage of limited liability, owners of corporations can profit from intentionally declaring bankruptcy and then leaving the resulting mess to the government and tax payers. This created a moral hazard in the market by encouraging dishonest behavior, and led to significant social welfare losses. The implication was critical to the New Consensus approach to liberalization, instead suggesting that more government oversight was needed on loan procedures to protect against potential bad incentives and fraud.

Another notable financial meltdown was known as the "East Asian Financial Crisis", which occurred in East Asia in 1997 and 1998. One factor that contributed to the crisis was that poorly-managed and under-supervised financial sectors in South East Asian countries such as Thailand, Malaysia, and Indonesia provided opportunities for currency speculation from global hedge funds. Some historical literature (e.g., Kaminsky and Reinhart's 1998 article "Leading Indicators of Currency Crisis") investigated how these failures have been associated with financial liberalization. Another contributing factor was that structural flaws in the Washington Consensus caused the IMF's intervention to become useless. When George Soros bet on the devaluation of local currencies, these Asian countries, with current accounts in deficit and the banking sectors operating at high leverage, found that they were trapped in a dilemma. Both the act of devaluing the currency and the alternate option of defending the currency through rising

domestic interest rate would have resulted severe solvency problems in local banks ³¹. Later on, with local governments' endeavoring to try to raise domestic interest rates to defend currencies under the advice of IMF, the exchange rate of local currency kept plummeting as investors had been expecting more drops, and their expectations became self-fulfilling with every drop of the value of the currency. "Rational expectations," as argued by Stiglitz (1998), had played a much less significant role than "group manias" in the currency collapse in South Eastern Asia countries. As a result, all these countries had experienced severe drops in currency value and double digit declines in output in the following years.

Later, in 2000, the dot-com bubble popped in the U.S. casting doubt on the efficiency of financial market. With the NASDAQ composite index expanding five times its size during the period from 1994 to 2000 and then shrinking more than 70% in the following three years, the burst of the dot-com bubble seemed to refute the market efficiency theory that supply-side economics had proposed. Despite the fact that some economists as well as some management in the industry ³² warned about the stock market bubble, investors kept fueling the bubble to an unsustainable level with little consideration to textbook investment principles. Many even quit their jobs to become day traders. Welfare loss occurred when the dot-com bubble burst and \$5 trillion evaporated within two years. Many computer programmers faced job losses. The low interest rate

³¹ On one hand, since a large amount of bank's liability was denominated in foreign currency, a devaluation of currency would cause solvency problems to the banking sector. On the other hand, defending local currency through the rise of interest rates would similarly cause solvency problems through the devaluation of bank's assets which were denominated in local currency.

³² Greenspan (1996) once warned about an "irrational exuberance" in 1996. Steve Ballmer of Microsoft told reporters that "there's such an overvaluation of tech stocks, it's absurd (Mulligan, 1999)."

policy employed by the Federal Reserve in the background of the subprime mortgage crisis was initially a policy response to greater output gaps after the dot-com bubble and 9/11 terrorists' attacks.

These financial fluctuations had cast doubt on the foundations that the New Consensus Macroeconomics ideology was built upon. However, the critics who, in the face of these financial crises, suggested adoption of a more skeptical approach to the New Consensus and its attendant policies of liberalization were rebuffed with the explanation that the financial crises happening at that time were small in scale and shorter in period in the context of fast-growing 1990s. Worries about a potential economic disaster were kept out of mainstream discussion and were thought unworthy of much attention. In several circumstances, taming of these crises even created an illusion that “problems in depression-prevention” had been resolved (as cited in Krugman, 2009). In contrast, some economists (e.g., Stiglitz, 2002) have argued that “business cycle was not dead.” Seeing the previous crisis coming mainly from financial sectors after deregulation, Stiglitz (2002, p.86) warned that, “If we don’t learn from our mistakes, for which the private sector and government both bear responsibility, we may not be so lucky next time.” It is unfortunate that Stiglitz was right. What is more unfortunate is that his warnings were largely neglected.

Only when the Great Recession arrived did most of the mainstream economists accept that not all macroeconomic problems had been solved by the New Consensus Theory. The crisis’ extraordinary size and devastating consequences announced that things were different this time. When this realization settled in, complacency in the macroeconomic fields was replaced by a chorus of criticism, which came not only from

heterodox economists, but also was issued by mainstream economists themselves. Certainty and comfort in the era of the New Consensus was replaced by a swirl of questions: What went wrong? Who is responsible for this crisis? Can it be tamed with current macroeconomic management tools? Will it happen again? These are the questions that economists have been thinking about after the crisis.

Two years after the darkest hour of our recent crisis, various explanations and solutions have been provided by economists from different backgrounds. An interesting trend in economists' responses was that their focus has moved from a superficial to a fundamental layer. To be more specific, economists at first believed the problem behind the crisis was rooted in specific policies such as the interest rate policy, later they discovered the problems were far more prevalent and more complex. With this understanding of complexity, economists' focus inevitably shifts to a wide range of issues, from specific policy concerns such as inappropriate macroeconomic policies and external shocks, to theoretical and methodological problems that these theories were built on.

With a broader base of economists challenging many aspects of the New Consensus Theory, improvements and changes in macroeconomics are widely expected. From different responses from economists of different backgrounds, it seems like the future of macroeconomic theory depends on the current debates revolving around the following three issues: policy, theory and methodology.

4.1 Confusions about Monetary Policy and Government Supervision

Some subprime mortgage defaults were triggered by liquidity problems resulting from increases in mortgage payment obligation due to the significant rises in interest

rates starting in 2005³³. The Federal Reserve monetary policy had been a major target for critique soon after the hit of the crisis. There have been serious debates among economists in relating monetary policy during the early years to the Great Recession triggered by the 2006 housing market crash.

A number of economists argued that the crisis resulted from too low of an interest rate from 2001 to 2004. John Taylor (2009), the originator of the Taylor's Rule, which is an important component of the New Consensus Macroeconomic Theory, criticized the Greenspan Federal Reserve for lowering interest rate too much during the period. He suggested that a low federal funds rate reduced the rate for home mortgages, and therefore increased the demand for home financing, creating a bubble in the housing market. Through his research, he showed a number of flaws in the approach: First, he argued that the interest rate was set below Taylor's rule in the New Consensus Model³⁴. He called this "the Great Deviation." Second, he demonstrated that, there is statistically significant effect of the federal funds rate on housing with a time lag. Third, by applying a counter-factual test, Taylor (2009) argued that, "there would have been a much smaller increase in housing starts with the counterfactual simulation of a higher federal funds rate. Hence, a higher federal funds rate path would have avoided much of the housing boom, according to this model."

Taylor's critique against the Federal Reserve's low interest rate policy soon won support from some other economists. Jane Dokko et al (2008, p24) suggested that "in particular, the demand for housing is especially sensitive to persistent shifts in the federal

³³ Data source: Federal Reserve Bank of New York

³⁴ Taylor (2009) wrote: "From early 2001 until late 2006 the Fed kept the federal funds rate on a path well below the estimated rate that would be consistent with targeting a 2 percent inflation rate."

funds rate, as such shifts have large effects on the user cost of housing because housing are long-lived assets.” Lawrence H. White (2009, p117) wrote, “The Greenspan Fed reduced the rate further in 2002 and 2003, pushing it in mid-2003 a record low of 1 percent, where it stayed for a year. The real Fed funds rate was negative - meaning that nominal rates were lower than the contemporary rate of inflation - for an unprecedented two and a half years. A borrower during that period who simply purchased and held vacant land, the price of which (net of taxes) merely kept up with inflation was profiting in proportion to what he borrowed.”

This vision was also shared by some economists from Austrian school of thought, who provided an explanation to our crisis backed by Austrian economics of business cycles theories. According to these economists, central bank’s low interest policies from 2001 to 2006, which encouraged borrowing but discouraged saving, had created an artificial boom through the temporary rise of both investment and consumption. Our current crisis was a “destined” bust from a bubbled economy during the last several years of the Great Moderation. The only solution, according to the Austrian school of thought, is to wait for the economy to gradually transition to a more sustainable growth (See Exhibit 4 for details).

These critiques may seem decent at the first appearance, but they do not reflect the whole picture of the crisis. When critiques are focused on monetary policies only, people seemed to be neglecting all the other problems like speculation, frauds, unethical behavior that could otherwise have blown the bubble. Different opinions were raised after re-examining the nature of our crisis. It turns out that relating monetary policy to the housing bubble can be quite biased and misleading.

The first challenge is that whether or not federal funds rate adjustments can affect housing demand so much as to blow a real-estate bubble and then burst it. In response to Taylor's challenge on loose monetary policy, Greenspan (2010) wrote back arguing that it was the global "saving glut" rather than the low interest rate in the U.S. that should be viewed as a relevant contributor to the crisis. He argued that from the micro level, it was not the low short term rates that the Federal Reserve had controlled that caused the real-estate boom, but instead, the low long-term rate that are "market determined" brought relatively cheaper housing financing options. For Greenspan, the housing prices increase was more a result from excess supply of funds that had made mortgage loans more available, rather than a result from a lower overnight federal funds rate. Greenspan (2010) specified that, in the globalization of today's economy, mortgage rates in the last few years were largely affected by a "global saving glut" from emerging economies where total savings exceeds total investment opportunities. For example, the Chinese government has bought nearly \$50 trillion worth of mortgage assets from Fannie Mae and Freddie Mac. The money was then used as a supply of funds in the U.S. mortgage market, boosting the local supply for housing finance and deteriorating credit standards through poor management of these funds. Somehow, Greenspan's explanation to the crisis was echoed by Richard Duncan (2005)³⁵, whose book "The Dollar Crisis: Causes, Consequences, Cures" explained how rapid globalization in recent years caused asset bubbles in the U.S. through the so called "international vendor financing" paradox (See

³⁵ Richard Duncan was not alone. Some mainstream economists also realized the problem. Leijonhufvud (2008) pointed out the puzzling part of our current imbalance of current account deficit by arguing, "The process leading up to today's American financial crisis had the dollar exchange rate supported by foreign central banks exporting capital to the United States. This capital inflow was not even to be discouraged by a Federal Reserve policy of extremely low interest rates." Stiglitz (2010) also recognized our current international reserve system as a threat to global economy stability.

Exhibit 5 for details). According to Duncan, the old trade balance mechanism under gold standard had vanished. The U.S. dollar, being both a domestic currency and the most widely accepted international reserve currency, play a conflicting role in terms of exchange rate and interest rate determination under the so called “post Bretton Wood” period in the international reserve system with “inflation targeting” policies in domestic economies. Even though the U.S. has maintained a low domestic interest rate; there were still huge amounts of money coming from abroad to the U.S. market seeking investment opportunities. Through Wall Street financial innovations, these money inflows have weakened the Federal Reserves’ influence on domestic economic activities. Failure to realize this problem in time has led to unusual responses in the market.

The second challenge centered around the difficulty economists face in trying to explain why “easy money”, if there was any during the Greenspan governance, was allocated more often to the bubbling real-estate market rather than enterprises that really demanded capital, such as the green energy industry and infrastructure construction projects. In addition, economists seem reluctant to correlate low interest rate policy with financial instability. Low interest rate policy was not designed to destabilize the economy. Historically, such policies have usually facilitated the economy. However, some economists (e.g., Taylor) seemed to be suggesting that our economy went burst because businesses had faced a lower cost of capital investment, and housing mortgages had been more available to home owners (Stiglitz, 2008). It sounded absurd. It seemed certain that something else played a more important role during our crisis than monetary policies.

Greenspan and others’ responses steered major criticism against central bank monetary policies back to problems associated with the management of the subprime

mortgages. To be more specific, the criticism fell on the banks that issued subprime mortgages and then traded them through dice-and-slice mortgage securitization. In a recent report (FCIC, 2011, p. 153) issued to the U.S. government, the Financial Crisis Inquiry Commission, known as the FCIC tends to hold the opinion that, although monetary policy has created the conditions for a housing bubble, such policies need not have led to a crisis. Rather, the report reads that the crisis was due to irresponsible, unethical conduct in the market. In contrast to the classical belief that financial market help to allocate resources more efficiently, Wall Street poorly channeled this money into very risky uses that resulted in a systematic down turn. At the same time, the report did recognize that Federal Reserve failed its job as a market authority when it chose a course of inaction at a time when the market was full of fraudulent conducts in both mortgage issuing and financial derivatives trading. As a regulator, the Federal Reserve had hardly enforced any regulation to prevent unethical behavior in the market. If stronger regulations had been applied before fraudulent conducts became pervasive, and if necessary action had been taken to constrain the bubble before it got too big, today's tragedy could have been mitigated.

However, further confusions arise around government interventions. According to the New Classicals, government regulation was believed to be harmful to economic productivity, as it steers innovations and entrepreneurship back to rent-seeking activities. Models for central bankers to monitor asset bubbles had always been missing (Greenspan, 1996). But after the crisis, FCIC's report seems to deny the whole idea of *laissez-faire* which has dominated both policy-making and business operation since the advent of the

era of neoliberalism. The FCIC also seem to forget that, in practice central banks are not expected to deal with asset price abnormality *ex ante*.

4.2 Deficiencies in Economic Theory and Modeling

4.2.1 The modeling of monetary policy

After the crisis, some economists³⁶ had initially tried to contain the problem within standard monetary economics theory. They tried to treat the crisis as a stochastic shock and hoped to solve the problem with established models. But quite contrary to their hopes, the complexity of the crisis turned out to be beyond the grasp of standard macro theory. In fact, the crisis in macroeconomic theory is growing obvious and is becoming a serious matter in both academia and policy circles.

When the New Consensus Theory was being constructed, the agent in the model are assumed to be fully capable of evaluating the risks of their transactions; this assumption “prevents families from choosing such a path [with higher and higher levels of borrowing], with an exploding debt relative to the size of the family” (Blanchard and Fischer, 1989, p.49), but as we have shown earlier, contrary to the assumptions, today’s crisis was triggered by the wide inability of U.S. households to pay their mortgage obligations.

³⁶ Aside from Taylor who sees the problem mainly associated with the “Great Deviation” in interest rates. Peter N. Ireland (2010) believed that “the 2007-2009 recession has its origins in a combination of aggregate demand and supply disturbances that resembles quite closely the mix of shocks that set off the previous two downturns. The main difference is that for the most recent recession, the series of adverse shocks lasted much longer and became much larger; hence, the effects of that series of shocks lasted much longer and became much more severe as well.” He further argued that, “the basic New Keynesian model continues to serve as a reliable guide for business cycle analysis and monetary policy evaluation.” The only problem associated with it is that when facing prolonged and severe adverse shocks like in today’s crisis, there are issues in “relating to the zero lower bound on the nominal interest rate.”

In addition, built on a RBC core, the New Consensus Theory presumes the market to be efficient and frictionless in the long run. The only things that draw the economy away from equilibrium are stochastic shocks from exogenous, whose impact on output gap can then be mitigated by adjusting the federal funds rate to target the nominal price level. These assumptions fail to recognize that the financial market can go astray long enough to bring about systematic instability, as has happened in the recent meltdown. Additional foundational weaknesses come from aggregating the so-called “micro foundation.” In this model, there is only one bank, both the central bank and the financial intermediate, one intermediate goods production firm, one final goods production firm and one representative agent. The changes in central bank monetary base will immediately affect representative agents’ budget and then affect the real economy through the full rationality and utility maximizing feature of this agent. There is no room in this model for trading of securities, inter-bank loans and so on. Therefore, there are no endogenous defaults. All problems associated with liquidity, solvencies and banking crises, the kind of which dominated the recent economic meltdowns, have been eliminated at the very creation of the modeling.

It is reasonable to argue that due to the flaws with the model, the New Consensus Theory is totally irrelevant to the problems we are facing today. Not only did the model fail to recognize the devastating results that could come from endogenous coordination problems within the economy, in addition, the model is missing necessary tools that the central banks need to deal with both the causes and the consequences of great financial instabilities. Even though maintaining financial stability is one of the responsibilities for the central bank, the New Consensus Theory does not have a detailed model on how

financial instabilities can occur. In fact, the central banks in the New Consensus Theory are not supposed to know better than anyone else about the intrinsic value of an asset³⁷, which is only revealed after the constant arbitrating trading among different market participants *ex post*. More than ten years ago before the occurrence of the dot-com bubble, Greenspan (1996) once reminded that models to understand and deal with asset bubbles have been missing. Unfortunately, these models are still missing a decade later. As a result, it is usually considered unwise for the central banks to deal with an ambiguous asset bubble *ex ante*, because it implies huge risks to employment, output and productivity. Compromising to this deficiency, central banks are more expected to deal with output gaps resulted from the burst of asset bubbles *ex post* through active monetary policies and the lender of last resort facility after all the damages on real economy have become reality (Plessis, 2010).

As argued by some economists (Arestis and Sawyer, 2002), the incapability of the New Consensus model to deal with output gaps of great size made the model similarly unprepared for the great economic turmoil caused by financial instabilities. The policy tools applied in the New Consensus theory are quite limited. The only tool allowed in the New Consensus IS equation is the adjustments of interest rates. This practice is flawed, first of all, because it is against empirical findings that show the non-linear, asymmetric relationship between output and interest rates (Kriesler and Lavoie, 2004). Besides, the IS equation does not incorporate the multiplier effect into output brought by government deficit spending or the effect of trading balance on output through changes in exchange rate policies. The approach also failed to recognize the “liquidity trap” effect when

³⁷ Plessis (2010) argued that central banks do not generally know when an asset market boom had turned into a bubble, neither *ex ante* nor always even *ex post*.

interest rate reaches zero bound. With these limitations, such a monetary policy can be effective only when the economy is free of “major depressions or even significant recessions” and the stochastic shocks are both “relatively small and serially uncorrelated” (Arestis and Sawyer, 2002, p.7). The limitations of this policy in action were reflected in the fact that, with current interest rate already approaching zero, there is simply no room for the Federal Reserve to further lower interest rates. As a result, both unconventional monetary policy (quantitative easing) and the once ignored fiscal policies had to be implemented to save the struggling economy.

The upside is that after having these deficiencies revealed so startlingly, economists have taken notice of these limitations of the approach and more readily accepted critiques. For instance, in contrast to his optimism before the occurrence of the Great Recession, Oliver Blanchard (2010) wrote another paper named “Rethinking Macroeconomic Policy” after the Great Recession addressing the problems he was aware of (e.g., the role of countercyclical fiscal policies and regulation as a monetary policy tool). In addition, various efforts have been made to amend the flaws in the New Consensus Model. For example, understanding that the zero lower bound as the limitation of current monetary policy, Michael Woodford (2010) extended the standard New Keynesian model to the one that involves “explicit quantitative easing” suggesting that “purchases of illiquid assets are particularly likely to improve welfare when the zero lower bound on the policy rate is reached.” Similar efforts can be seen from some economists who had argued that the “inflation targeting” monetary policy regime should give its way to a multiple-targeting central bank policy. This concerned both the price and the potential instability in the financial market noting that the central bank’s

responsibility for financial stability is similarly important (Blinder, 2008; Mishkin, 2008). The economists supporting some of these newly-critical theories propose more efforts be spent on the study of monetary transmission to deal with excess risk taking in daily operations. Plessis (2010) argues that, as a bank regulator and supervisor, the central bank has much better information about bank lending and the prudence of that lending. Therefore, following this argument, improvements in monetary policy modeling should focus on monetary transmission over financial asset investments. Once the monetary transmission can be carefully studied, central banks can be more confident than ever in their dealing with the “inappropriate investments” and excess risk takings.

Plessis (2010) recommends Goodhart et al (2004) who introduced a financial fragility model to study financial market instabilities through the analyzing of monetary policy transmission mechanism in the financial market³⁸. The purpose of the model is to understand how financial instability can occur and spread. How central banks should deal with it. Based on this model, Goodhart (Goodhart et al, 2010) further developed it to allow “securitization” and incorporated it into standard New Consensus Macroeconomic models in his 2010 publication to allow practical uses for policy advisors. Unlike the conventional representative agent model in the New Consensus Theory, Goodhart’s model allows for the existence of financial intermediates, for heterogeneous banks with differing portfolios, and third, endogenous defaults in market. The model is also built

³⁸ Stan du Plessis (2010) said: “Goodhart, Sunirand, and Tsomocos have suggested a new definition of financial fragility that is explicitly aimed at modelling the welfare effect of financial instability that emerges as an equilibrium outcome in the model. At the heart of their concept of financial instability is the combination of (i) high probability of default for banks; and (ii) low profitability for banks. This allows the formulation of a model that is designed to analyse the consequences of risk taking by individual banks, the possible contagious relationship between banks as well as provide a framework for analysing regulatory policy and its effect on financial fragility.

upon two periods (implying a change of state), with two goods (consumption goods market and housing market). There are two financial intermediates in the model. One low capitalized bank is involved only in the consumer credit market. The other highly-capitalized bank is involved in both consumer credit market and the housing mortgage market. In this model, a financial default occurs when the total worth of debt collateral cannot meet total debt obligations. There is trading between the two banks in the model. Equilibrium is reached when goods market, mortgage market, short term loans market, and consumer deposit market clear. He further added hedge funds and investment banks into the model. The market equilibrium is reached when all ten markets (goods, housing, mortgage, short term loans, consumer deposit, repo, interbank, MBS's, CDO's and wholesale money markets) clear.

Goodhart et al draw a number of conclusions from his work with this model: First, he found in times of crisis, monetary policy conducted by means of the interest rate instrument is more effective than using the monetary base instrument. Second, CPI should include an appropriate measure of housing prices. Third, optimal regulatory policies should target systemic financial agents and induce them to behave more prudently before crises (Goodhart et al, 2010).

Goodhart et al's model offers a tool to support the central bank's early engagement in crises. Additionally, although the model allows heterogeneous agents to some extent, other assumptions of the model (such as the fully rational and profit maximizing individuals) still hold the same with the DSGE framework. It is still consistent with conventional mainstream approaches to the economy (Plessis, 2010).

4.2.2 Regulation and business norms

After the Great Recession, critics have been able to successfully demonstrate that there are also problems regarding the micro foundations of the New Consensus Theory. Inherited from the Real Business Cycle Theory, which is then built on neoclassical microeconomic optimization, the New Consensus macroeconomics generally accepted the idea of self-regulation. The idea of self-regulation was based on the belief that the stability of the market can be efficiently warranted if everyone in the market conducts sound risk management out of sheer self-interest. Under this idea, government regulations are less efficient than protection motivated by self-interest and usually hurt business productivity, innovation and entrepreneurship.

Now, it seems that self-regulation falls far short of truly protecting the integrity of an economy. Government regulation, in spite of its disadvantages, is still necessary³⁹. A number of facts from the recent crisis support this idea. For instance, fraud was prevalent frauds in the subprime lending market, which played a significant role in enabling irresponsible lending that, in turn, contributed to the mass default. Brooks and Simon (2007) have shown that in 2006, 61% of subprime borrowers actually qualified better loans than they were provided with. However, brokers, whose self-interest drove them to secure larger commissions through riskier loans, offered those borrowers subprime loans with higher interest rates. Krugman (2011) noted that the subprime mortgages issued in the private, unregulated sector were the most risky ones. These unregulated mortgages, rather than the mortgages issued by Fannie Mae and Freddie Mac, were the major causes

³⁹ Bernanke said in his testimony that: “[t]he size of global financial markets, prospective subprime losses were clearly not large enough on their own to account for the magnitude of the crisis. Rather, the system’s vulnerabilities, together with gaps in the government’s crisis-response toolkit, were the principal explanations of why the crisis was so severe and had such devastating effects on the broader economy.”

of the subprime mortgage crisis. This demonstrates the hazards of relying on self-regulation. When people are judging their own risks, they care only about themselves, not the whole system. This is especially true in the case where the bailout of the system requires all taxpayer's effort ⁴⁰ (Stiglitz, 2010). Unfortunately, this side of the self-regulation is never recognized in the micro-foundations of the New Consensus theory. In the case of our crisis, self-regulation and self-interest seemed to have provided the moral umbrella for all the greedy, irresponsible and unethical behavior of the Wall Street banks that put social welfare at risk. As a result, even equipped with the fastest information sources and the most advanced calculation machines for risk management, the banks and financial institutions on the Wall Street have shown their failure in protecting themselves and the market. With their so-called "risk management," systematic risks were increasing. The loss from defaults of subprime mortgage crisis was magnified instead of constrained. By 2009, the total subprime mortgage amounted to a few hundred billions of dollars. Even if 100% of these mortgages had defaulted during the crisis, the loss should not exceed a few hundred billion dollars. However, the U.S. government had invested 10 times the money trying to bailout the banks and to put the financial market back to function (Leijonhufvud, 2009).

In addition to the missing checks and balances on self-interest, the New Consensus theory did not consider the role of "noise traders" in the market. "Noise traders", or people who are motivated to act by reasons other than profit-maximizing motives, are now widely recognized as one of the important causes of the Great Recession (Elkhoury, 2009). As Blinder (2008) and Shiller (as cited in Ross, 2010) have

⁴⁰ For example, the mortgage brokers that had issued the subprime loans cared more about the commission they could earn rather than the capabilities of paying back these mortgages.

argued, financial instability sometimes results from “irrational behaviors” rather than rational profit maximizing actions during the credit expansions. For example, some people are acting with profit-maximizing motives, but others are simply acting because everyone else is doing the same. Other non-rational actors are motivated by the belief that, if they do not take a certain action, somebody else will. It should be noted that noise traders are not something new to the financial market. Keynes once used an analogy of beauty contest to describe the stock market. In Keynes’ assessment, it often does not matter much to investors which stock he prefers as long as he knows which stock that the majority of investors prefers (as cited in Elkhoury, 2009). Failure to take irrational noise traders into account has made self-regulation sound absurd.

All of these trading behaviors have been ignored in the New Consensus Theory. However, they are better understood through the vision provided by the newly developed behavioral economics. In the real world financial industry, a portfolio manager who does not follow the tide during a bubble inflation period will suffer worse performance compared to his peers, putting himself under competition pressure. Under behavioral economics, it is recognized that it is actually optimal for the portfolio manager to act as everyone else is doing. In this case, the reasoning goes, at least, he will not be the only one to suffer the losses when the bubble bursts. If every manager does like this, social welfare is put at risk. This manager’s dilemma implies a conflict of interest among personal interest, corporate interest and social interest, which according to Ginitis and Khurana (2008), has severely confused the goal of profit maximizing managers during the crisis. Further, Ginitis and Khurana (as cited in Ross, 2010, p.400) argue that the financial market encountered severe mess “because business schools have for years

taught that the job of executives is to maximize shareholder value, rather than to instill professional ethos based around community service and social responsibility.” There are many ways to increase corporate value. Cheating and giving up social responsibility at times can be one of the quite lucrative options. By exploring the origin of neoclassical models for business and comparing these to insights from game theory and behavioral economics, Ginitis and Khurana (2008) have shown that the widely held neoclassical model of manager professionalism, which was commonly expressed as maximizing corporate value, is inconsistent with social welfare protection. Internalizing this flawed model with daily practices will weaken any “adherence to socially functional values and norms like honesty, integrity, self-restraint, reciprocity and fairness, to the detriment of the health of the enterprise” (Ginitis and Khurana, 2008, p.23). To cure this, the economy will have to need the return of professionalism in the business sector. Base on this insight, Ginitis and Khurana argued that a normative revision that instills integrity⁴¹ and value creation in the daily businesses is necessary to better guide the professionalisms of corporate managers. In practice, this will be realized through an improved internal control procedure applied by the board of directors to induce management to act prudently and to implement more rigorous code of conduct, allowing regulators to prevent business misconduct to cost social welfare losses. Similar arguments had been made by Charles Handy (2002, p51), who spoke out a few years ago concerning the Enron-Anderson accounting scandal. Handy said that, “We need eat to live; food is necessary condition of

⁴¹ Jensen (2006) has given thought about how to introduce the notion of the character virtue as a central element of economic value creation. Jensen has recently proposed a framework for value creation that resonates with one of the key character virtues associated with professionalism. The author argues that integrity is a necessary condition to the maximizing of value. An economic entity has integrity when it is “whole and complete and stable.”

life. But if we lived mainly to eat, making food a sufficient or sole purpose of life, we would become gross. The purpose of a business, in other words, is not to make a profit, full stop. It is to make a profit so that the business can do something more and better. That ‘something’ becomes the real justification for the business. Owners know this. Investors needn’t care.” He further proposed that business should, as charitable organizations do, measure success in terms of outcomes for others as well as for themselves.

4.2.3 Other problems

Some economists (e.g., Stockhammer) have shown income distribution to be a contributing factor to the creation of the crisis. As Stockhammer (2010) argued, since the era of neoliberalism began, the distribution of income has been polarized, favoring capital owners and the rich rather than the average working citizens. With productivity increasing in the last decade, the real wage of the middle class has actually fallen. This has two effects in the economy. First, the aggregate demand fell since a greater share of income was allocated to rich people, whose marginal propensity to consume is lower than people with low incomes. The middle class people, in contrast, had to depend on credit-financed consumption to sustain their current life standards while their real wages fell. This pushed the middle class deep into debt trap. Second, the savings through the top income tier had provided a cash flow in the financial market seeking returns that, in turn, contributed to the bubbling of asset markets in the United States. The two effects all together had created a fragile economy with shrinking aggregate demand, heavy debt burdens and inflating asset bubbles.

The psychological factors that had contributed to the crisis are mostly recognized through post-Keynesian economists' comments on the Great Recession. Following Hyman Minsky's financial instability hypothesis, many economists now agree with the post Keynesians, recognizing our crisis as a "Minsky moment." The reference is to Minsky's identification of three types of financing behavior that contribute to the accumulation of insolvent debt: hedge borrowers, speculative borrowers, and Ponzi borrowers. In the hedge case, borrowers are able to pay back interest and principal when a loan comes due. In the speculative case, they can pay back only the interest and therefore must roll over the financing. And in the case of Ponzi finance, companies must borrow even more to make interest payments on their existing liabilities. After the hit of the crisis, MacCulley had explored the developments of home mortgage market in recent years and found them consistent with Minsky's debt accumulation journey (McCully, 2009). Randall Wray (2009) quoted that "Stability is destabilizing", an idea originally proposed by Minsky, suggesting that, immaterialized risks tend to lower people's perception of risks and encourage them to take excess risks that, in turn, will destabilize the economy. For Wray, our crisis was an intrinsic downturn after the long peace during the Great Moderation. Global "money managers" pursued higher risks than they could actually handle through the "shadow banking system" because these managers thought their time was really different. By designing complex financial derivatives and contracts, they used the money accumulated during the boom period to pursue the highest return possible. The market returned them with extraordinary rewards in the short run, further encouraging such actions. They were then lured to take on higher leverages. Rating companies and economic modelers served as credit enhancers to help these complex

financial assets sliced and diced from bad fundamentals earn investment ratings. Regulation agencies loosened their regulations because they fell in love with the illusion of self-regulation after the long moderation period. These psychological changes at the end of the Great Moderation wired the economy for disaster. When small risks accumulated into much larger ones, a systematic downturn was triggered by the reverberating crashes. Many economists now realize that such a situation can only be cured with tight regulation with a large, stable big-government leading economic growths.

4.3 Problems in Methodology and their Common Roots

While certain policies, theories and economic models are being criticized, there are also active debates among economists regarding the appropriateness of the economic research methodology. For some economists (e.g., Goodhart and Minshikin), the mainstream macroeconomic theory, even with all its known flaws, is worthy of preservation and further development. The deficiencies in the theory can be cured by developing our current model into details. However, some other economists are suspicious about whether the amendment to the New Consensus Theory will change the theory's flawed nature. Some even suggest major changes in methodology.

4.3.1 Challenges in the representative agent approach

Both the New Keynesians and the New Classicals begin with a representative household's optimization behavior as a micro foundation. This is because the economists using this foundation believe group behavior of a society can be studied by multiplying

the behavior of a single individual. The same aggregation was applied to the representative intermediate goods producing firm, representative final goods producing firm and the banking sector. The representative agent approach brought some analytical convenience, but it also involved some serious deficiencies in modeling.

Traditional literature has criticized that the representative agent approach ignored the general heterogeneity in the economy system. Macroeconomic models built on such approaches do not internally allow any study of a specific sector of the economy or offer an opportunity to explore a specific incidence (Kirman, 1992). By treating everyone to be the same as a whole, economists missed the existence of incentive problems brought by complex ownership relationships, corporate governance, and debenture relations; therefore, they also assumed away the possibility of defaults or any other relevant coordination problems which are usually the triggers of major economic crisis.

Recent publications (Leijonhufvud, 2008) also suggest that such an approach is inadequate in dealing with the consequences of “too many people doing the same thing.” Since the representative agent itself is governed under by prudent behavior norms usually expressed in mathematical equations, once these norms are overcome by temporary psychological changes after certain great incidents, for example, the panic during war times or economic crisis, the model can bring results that deviate greatly from reality. Policy decisions based on such results can also be misleading. This idea was echoed by Hoover (2010) who argued that macroeconomic aggregates are “importantly different” from physics aggregates. According to Hoover, economics aggregation relies more on the “collective intentional states of underlying individuals,” from which instability results rather than the “individual identities” current micro foundation of macroeconomics

promotes. The reliance on the aggregation of representative agent in economic research has only limited implication.

Not only does the approach of representative agent lead to deeply flawed macroeconomic modeling, the whole aggregation process behind most modern macroeconomic models, also known as the down-top approach is unjustified philosophically.

For example, Kirman (1992) has argued that the need for homogenous individual agents in macroeconomic aggregation is in conflict with the requirement to have heterogeneous individuals in general equilibrium setting where the uniqueness of market equilibrium is warranted by the constant arbitrage of different individuals. In other words, there is an internal inconsistency of mainstream macroeconomic assumptions regarding its micro-foundations ⁴².

Echoing Kirman, Hoover (2010) explains the down-top approach employed by most economic modeling has never rested on firm foundations. The aggregation methodology used by the mainstream, as explored by Hoover (2006) represents a reductionist ideology. This ideology which supports the most basic economic modeling, rests on a mistake about the ontology of the social world ⁴³. By quoting the example from David Levy which states that microeconomic actors necessarily employ macroeconomic concepts in their decision making. Hoover (2006, p9) argued: “Since these

⁴² Eugene Fama (Cassidy, 2010) once expressed his distrust about government regulation as he said, “market participants will always outsmart the regulators.” By saying this, he unconsciously admitted the heterogeneity among individuals.

⁴³ Hoover argued that: “The ontological mistake of macroeconomics is to believe that the objects of macroeconomic analysis are not ontologically independent. Macroeconomists fear that they are not dealing with solid economic entities unless they can trace the route along which those entities reduce ontologically to individual decision-makers. But, since this is an impracticable task, they emphasis the connection of the aggregate to the individual by aping the analytical forms of microeconomics.”

macroeconomic concepts are not those of an outsider who is observing and summarizing the microeconomic facts, but are those of individual agents who are making the microeconomic facts, it would seem like macroeconomic concepts are, in fact, constitutive of parts of microeconomic reality. A reductionist use of supervenience requires that the microeconomic and the macroeconomic belong to separate domains, but here they cannot be separated.” The interdependence of macroeconomics and microeconomics then eliminated the possibility that “the exact same micro facts must generate the exact same macro facts (Hoover, 2009, p11).” He then recommended John Searle’s *The Construction of Social Reality* as an example of “a richer, but still intelligible account of the connection between the individual and the aggregate, which incorporates the specifically social features of economics.”

4.3.2 Challenges in economic equilibrium

Equilibrium in economics is defined as a stable situation in which at the ruling system of prices, the supplies and demands of all commodities are equal (i.e. there are no unsatisfied buyers or sellers) and no improvement in anyone’s position is possible without a worsening of someone else’s position (Kaldor, 1985, p. 13). The equilibrium itself is assumed to be stable, deterministic, and Pareto optimal ⁴⁴. In modern macroeconomics, both the New Classicals and the New Keynesians, in spite of their differences, have based their research on a general equilibrium framework, further

⁴⁴ Nicholas Kaldor wrote:” that equilibrium, and hence the near-actual state of the world, provides goods and services to the maximum degree consistent with available resources; that there is full and efficient utilization of every kind of " resource "; that the wage of every kind and quality of labour is a measure of the net contribution (per unit) of these varying kinds and qualities of labour to the total product; that the rate of profits reflects the net advantage of substituting capital for labour in production, etc” (Kaldor, *The Irrelevance of Equilibrium Economics*, 1972)

developing the framework in increasing detail ⁴⁵. However, similar to the representative agent approach, while initially helpful, the hypothesis of economic equilibrium seems to have become more of an obstacle for future improvements in macroeconomics ⁴⁶ rather than an ongoing analytical convenience.

Historically, heterodox economists have questioned the significance or even the existence of economic equilibrium in practice. For example, Kaldor (1972) once argued that the explanatory power of economic equilibrium rests on the assumption of unique, stable and satisfying Pareto optimality; however, few attempts have been made to verify the realistic nature of those assumptions. Besides, factory production usually responds to inventory signals, so in real world economics, there is no real “market clearing” (1985, p. 13). For Kaldor, economic equilibrium is no more than a beautiful misunderstanding of previous economists’ works. He argued that the original authors of general equilibrium analysis “were motivated by the belief that they were only laying the foundations of an explanation of how a market economy works, an initial stage of the analysis which is in the nature of ‘scaffolding’ it has to be erected before the permanent building can be built, but will be removed step by step as the permanent building nears completion. However, since Walras first wrote down his system of equations over 100 years ago, progress has definitely been backwards not far more restrictive than those of the original Walrasian model.”

⁴⁵ It should be noted that Keynes’s notion of equilibrium is not the same as that used in the New Classicals and the New Keynesians. Wray and Tymoigne (2008) have argued that Keynes’ equilibrium don’t imply market clearing and full employment. Therefore, it doesn’t satisfy Pareto optimality.

⁴⁶ Kaldor (Kaldor, *The Irrelevance of Equilibrium Economics*, 1972) once pointed out that economic equilibrium has become an obstacle for further theory advancement. “Without a major act of demolition-without destroying the basic conceptual framework-it is impossible to make any real progress.”

In a recent presentation at the University of Denver, Geoff Harcourt used an analogy of running wolf packs to describe his view against the stability of economic general equilibrium. If one of the wolves in the wolf packs is leading, or falling behind, the mainstream assume the one that went astray will be brought back by very powerful forces. The heterodox economists say maybe the runaway wolf will run further astray for at least a long enough period of time. Both outcomes are likely depending on the situation; therefore the efficiency of market forces may not be as significant as assumed by economists.

By accepting the equilibrium approach to economics, the timing and path of market adjustment is usually paid little attentions. Equilibrium-based economic conclusions, whether governed by interest rates or the animal spirit, seem only to focus on the starting point and the end point. There is little talk about how long, and in what path, the equilibrium can be attained. The case in our recent crisis proved that asset pricings can go out of equilibrium long enough to bring about systematic instabilities. However, it seems to economists, whether the adjustments follow a U-shaped path or a V-shaped path, whether the adjustments take one century or one second is unimportant. But this part is certainly not unimportant to the millions of individuals affected personally by the crisis. Skipping the discussion of the details of economic equilibrium inevitably results in an overlook of the efficiency of the *laissez-faire* approach and neglects the consequences of insufficient attention to government supervisions.

4.3.3 Releasing the burden from metaphysics methodology

Referring to his 1989 publication, Mirowski (2010) argued that the root of the whole ideology of neoclassical economics has its origin in marginalists' imitation of nineteenth century physics in which Jevons, Walras and Menger independently but almost simultaneously formed the utilitarian theory and built the basic structure of economic general equilibrium through the "penetration of mathematics." This ideology and all its associated methodologies, including the now widely questioned representative agent approach and the postulate of general equilibrium were first adopted from the marginalists by the New Classical School of economic thought. The New Classical then brought these ideas to influence today's New Consensus Theory.

According to Mirowski, the theory of value in neoclassical economics is a "wholesale appropriation of the mid-nineteenth-century physics of energy." Similar logic in the body-motion-value-field triangle theories under energy theory can be found in the analogy of neoclassical economics. For example, in neoclassical economics, value is described in a metaphor as "energy" whose function is to "render commodities commensurable in a market system." According to this ideology, the total value of commodities in a closed economic system is preserved during the exchanging process through something commonly described as utilities.

The metaphysical methodology is a byproduct of this economics-physics analogy. The postulate of representative agents and the ideas of macroeconomic aggregation also came directly from analogies to Newtonian physics, where motions of objects were studied as the aggregation of homogenous particle movements. Similarly, equilibrium, commonly used to facilitate economic analysis, was actually first used in the analysis of

“energy conservation” in physics. The whole imitation of physics analysis can be found with some marginalists’ early writings⁴⁷.

The successful imitation of the energy theory of physics in both terms of definition and analytical methodology, as argued by Mirowski (1989), had “displaced the weight of commensurability from external substances (from the classical economists) to the mind, but the mind portrayed as a field of force in an independently constituted commodity space.” Such an imitation offers research convenience, but does so at the cost of realism. Remember that the first generation economists like Adam Smith and John Stuart Mill generally rejected the idea of priori hypothesis and deductive reasoning in formulating their ideas (Barigozzi, 2007). Economics studied by these classical economists was more like an empirical science that involved only direct investigation of empirical behaviors and empirical testing. However, by introducing metaphysics and the use of mathematical tools, the marginalists brought an analytical approach in to economics to replace the old empirical approach. With “value” working as “energy” did in Newtonian physics, economic “motions” of utility maximizing individuals were explained and the marginalists’ analysis of the market system became similar to a physics question that anticipated outcomes when “an irresistible field of force meets an immovable object” (Mirowski, 1989). The analogy allowed economists to no longer be constrained by their own histories and observations. However, the new freedom also

⁴⁷ Jevons once wrote explicitly that, “The notion of value is to our science what that of energy is to mechanics.” Similarly, Walras wrote “The pure theory of economics is a science which resembles the physic-mathematical sciences in every respect (as cited in Mirowski, *More heat than light*, 1989, p. 219).” Mirowski also wrote that, “I have argued elsewhere that the core of neoclassical research program is a mathematical metaphor appropriated from physics in the 1870s which equates potential energy to utility, forces to prices, commodities to spatial coordinates, and kinetic energy to the budget constraint (Mirowski, *How not to do things with metaphors: Paul Samuelson and the science of neoclassical economics*, 1989).”

allowed economists to pull up their anchors from the study of real world economic problems to drift into the study of an “artificial” world.

Marginalists, as reflected by their writings, were very careful about their methodological metaphor borrowed from physics. The marginalists fully understood the imperfections and limitations of this vision. However, for some reason, the marginalists’ metaphor was gradually mistaken to be literal fact. This misunderstanding was later inherited and further developed by the New Classical economists, and it also influenced today’s mainstream macroeconomic theory through the “New Neoclassical Synthesis” with little challenges. Today, the whole subject of economics has been so deeply influenced that “economists tend to be open-minded about content, but doctrinaire about form. They are more wedded to their techniques than to their theories. They will believe something when they can model it (as cited in Skott, 2010, p.7).” Often, when today’s economists are talking about economic issues, they are unconsciously continuing to recite the nineteenth century physics metaphor. In most cases, the agents they are talking about cannot be directly referred to nature people in real world⁴⁸.

Although there are similarities in the analysis of physics and economics, the explanatory power and the appropriateness of this economic-as physics metaphor must be re-evaluated before being seriously considered in practical uses. First, as Mirowski (1989, p. 200) once pointed out, the language and measurement tools of economics and physics are not shared. Both language and tools have to be compromised to fit in their new roles in economics. Natural geometry and a natural algebra provided good basis for

⁴⁸ Similar arguments can be found with Colander (2010, p422), “The economics profession is primarily an academic profession, which sees itself as predominantly concerned with the science of economics, not with hands-on applied policy advice.”

quantification and mathematical analysis for natural science, but did not fit economics as a social science. If economists would like to imitate the procedure of physics, they must begin with “a critical account of these quantitative notions and the means adopted for collecting and measuring them (Mirowski, 1989).” Second, human behaviors are usually stochastic while the motions of particles are deterministic. The stochasticity of human behavior derives from an uncertain environment and subjective perceptions (Barigozzi, 2007). There’s no one deterministic law that can govern people’s behaviors ⁴⁹. In contrast, the nineteenth century physics’ law of motion almost never changes with the object being studied. Finally, as Hoover (2010) has criticized: “Economics is an intentional science. Whereas physical and life sciences fear anthropomorphic, teleological, or intentional explanations, economics would be denatured without them. Given same condition, the outcome can be different. As a human science, it demands that observed behavior be connected to goals, choice, and other intentional states. Economists are skeptical of billiard-ball causation because it omits the human side of human agents and their behavior.”

With an unfitting metaphor that does not consider the unpredictable and human elements of economics, it is reasonable to argue that most macroeconomic models are, deep in their natures, mechanical models. For too long a time in history, by treating economics as an “engineering” subject and a “science” subject (Mankiw, 2006), the organic side and the humane part of the truth of the subject of economics was gradually forgotten.

⁴⁹ By quoting Keynes, Mirowski (2010) said: “However, it is striking the way that it could be taken for granted in the 1930s that the social position of economists might tend to lead them to exhibit biases in certain predictable directions, and that respected members of the profession could concede that those social structures would mount obstacles to serious analysis of economic breakdown.”

Without appropriate underpinnings for the subject, economists' efforts, no matter how diligent they are applied, will be misguided and only cause further confusion. For this reason, economists who are suspicious about economic research methodologies and, current mainstream macroeconomic theory, cannot focus merely on further honing of the precision and details of the model. All of work in the world will still not change the model's flawed nature.

Although critics of traditional macroeconomic methodologies usually do not have practical steps in mind on how to build the new economic theory, they are aware that changes within the current economic theory will not change the theory's flawed nature. These critics agree on certain aspects of new theory building. In terms research methodology, they all argue that the metaphysics burden must be abandoned. With a humane, practical mind, more methodological pluralism should be encouraged to bring more sources for intellectual cross-fertilization. For instance, Barigozzi (2007) suggested that "the evolutionary aspect of social systems and the heterogeneity of their constituents" made biological science a more appropriate methodological paradigm to follow. Similarly, Kaldor (1985, p. 12) once proposed viewing our economy as "a continually-evolving system whose path cannot be predicted any more than the evolution of an ecological system in biology." Biology is just one example of a field from which economics may borrow. In fact, due to its complex nature in dealing with social uncertainties and stochastic behaviors, all methodologies used in economics should be philosophically proven before they are seriously applied in research. This cannot be done without the return of philosophy and history back into economics classes (Mirowski, 2010).

The critics also suggest that the new economic theory must balance itself between studying economics as an organic subject and an inorganic subject. Economics is a science, but it also deals mainly with people, and therefore with uncertainties. For this reason, economic models should “shed light on the nature of that unpredictability” (Colander, 2010). If this goal cannot be realized by a single deterministic macroeconomic model⁵⁰, there is the possibility of a co-existence of several different models in hand, each with its own advantages and limitations as Colander (2009) advised institutions to “include a wider range of peers in the funding peer review process” while at the same time “granting labels” on economic models to remind users of their uses and limitations.

⁵⁰ Referring to Keynes, Barigozzi (2007) rejected the possibility to construct the subject of macroeconomics in one single, general deterministic theory. He argued that, “Keynes refused in all his works the use of general deterministic models, while he always preferred models aimed at explaining single, less general problems. This is often done by using simple non-analytic schemes of hierarchical relations of causes and effects to represent the relations between macroeconomic variables, which are generated by individual decisions taken in an uncertain environment.”

Chapter 5: Conclusion

This thesis has shown the formation of mainstream macroeconomic theory from both a critical and a historical perspective and has outlined the theory's current state in the Great Recession and its possible path into the future. This paper makes multiple contributions. First, it contrasts the convergence of two major schools of economic thought before the Great Recession with divergence after the Great Recession to show the fragility of the so called New Consensus Theory. Second, by summarizing deficiencies of the New Consensus model, as revealed by the Great Recession and its methodological challenges, the thesis shows a crisis in macroeconomic theory. The thesis further explains that the root of the crisis in macroeconomics lies in some of its methodological doctrines. These methodologies, originally applied to facilitate research, now rather seem like an obstacle for further theoretical improvement. The future macroeconomic theory must first release itself from the burden of inappropriate methodologies before making any significant improvement to the theory.

The macroeconomic theory that has dominated policy-making has run a full cycle during the last eighty years. After the Great Depression, the macroeconomic field, once dominated by Classical doctrines was replaced by Keynes' revolutionary ideas. The idea of self-balance between supply and demand through the "invisible hand" was abandoned. However, this ideological shift did not last long. Several decades later during the Great Inflation, Keynes' proposal about the importance of active government intervention to

counter aggregate demand deficiencies was heavily challenged by the New Classicals, who were equipped with rational expectation theory and backed up by Friedman's monetarist ideas. Aggregate demand management gradually gave way to aggregate supply management that focused mainly on productivity growth through economic liberalization. The dominance of supply-side economics came back to the profession. The role of government in our economy was downgraded; fiscal policies were abandoned and certain government sectors were privatized. However, neoliberalism backed up by the New Consensus Theory, didn't perform any better than it did eighty years ago before the Great Depression. Finally in 2007, the economy encountered a major crisis that matched the size of the Great Depression. Fortunately this time, with prompt government intervention and regulation inspired by Keynes' ideas eighty years ago, things did not get worse. By the time of 2011, the economy already saw mild growth. Although the prospect of the economy is still unsure, Keynes' contribution resolving economic crises was once again recognized. His followers also started to get a wider influence over policy-makings.

Now it seems reasonable to argue that *laissez-faire*, despite its beautiful promise, is prone to failure. It is interesting that it took economists nearly a century to recognize its vulnerability. Perhaps, Krugman (2009) is right when he criticized that economists have for decades mistook "mathematical beauty for truth." The elaborate graphs and delicate equations in macroeconomic text books are now approached critically and suspiciously, a response prompted by their irrelevance during the collapse of the New Consensus Theory in the Great Recession. The famous term, "animal spirits" originally used by Keynes to describe unstable business investment, now re-appears in the title of Robert Shiller's

recent publications. Similarly, “irrational exuberance”, a new phrase that was first used by Greenspan in 1996 to warn against the large amounts of speculative behaviors during the dot-com bubble upswing, regained popularity in 2000 after it appeared on George Akerlof and Robert Shillers’ book that tries to incorporate social-psychology changes in economic models after the dot-com bubble. Now it appears again in their second version of the book after the Great Recession.

Although the New Consensus tried hard to incorporate both the New Classicals and the New Keynesians into one system through a mutual compromise of the two, the collapse of the New Consensus Theory in the Great Recession cast doubt on whether these two ideologies can be reasonably reconciled. In the case of the Great Recession, the micro foundation of the New Classical theory was not capable of providing a reasonable guide for short-term government intervention. Asset bubbles were more than just nominal rigidities. Mainstream Models do not incorporate irrational behaviors and their effects on social welfare losses through boom-bust cycles. But including these elements indicated the necessity of government regulation and the denial of the long run efficiency of the market. Goodhart’s model in associating financial instability with central bank monetary policy has temporarily filled the policy needs for engaging in financial crisis *ex ante*.

However, its long-run effectiveness needs time to be vindicated.

The macroeconomic bouncing from the Classicals and the Keynesians was also signaling a bottleneck in the development of macroeconomics dialogues. As have been argued in the paper, the bottleneck most likely lies in the methodologies that were employed in doing researches. The representative agent model and the general equilibrium approach, both originally used as an analytical convenience, became

accepted as reality. In doing so, these tools actually became obstacles for further theoretical development. When these two methodologies are applied without careful evaluation, economists' vision is largely limited. This inevitably causes group blindness to some of the problems in our economy that can go wrong.

Future changes in macroeconomics can be expected mainly coming from four possibilities. First, we may see the return of the orthodox Keynesians' influence on macroeconomic policy settings. When the private sectors do not seem to be efficient in allocating scarce economic resources into the right places during past decade, for instance in the cases of the dot-com bubble and the housing bubble, government-lead growth becomes necessary. In addition, fiscal spending, despite its historical critique made by Friedman, turned out to be effective in the case of the recent recession when monetary policy reached zero bound. Compared to the Great Depression, the huge government spending bills and stimulus plans in the 2008-2010 had no doubt cut short the Great Recession (see Exhibit 6 for a comparison of Dow Jones Industrial Average performance during the two collapses).

Tight regulations of the global financial market are replacing the once-widely accepted regime of self-regulation. On July 21st, 2010, the Dodd–Frank Wall Street Reform and Consumer Protection Act was signed into law by President Obama. The Act is a direct response to the Great Recession that brought huge welfare losses by excess risk-taking and unethical conducts of the financial institutions⁵¹. The Act aims to warn against systematic risks in the financial sector, improving transparency, corporate

⁵¹ The brief summary can be found: http://banking.senate.gov/public/files/070110_Dodd_Frank_Wall_Street_Reform_comprehensive_summary_Final.pdf

governance and avoiding “too big to fail” moral hazards. For example, companies that sell mortgage backed securities to other parties are now required to hold at least certain proportion of the securities that they sell. Also, the Act has ended “tax-payer-funded-bailouts.” The costs of failing financial institutions liquidations will have to be paid back by the owners in the future. Financial institutions are now required to submit their “funeral plans” periodically, demonstrating how rapid and orderly shutdown would be conducted should the company go under.

Of course, the economics of Keynes is more than just a collection of rigidities, government spending and regulations that it is often misrepresented to be. Keynes’ legacy includes also his revolutionary vision and social responsibility to the economy (Leijonhufvud, 2008). Economics of Keynes is more about substance, focused on solving practical matters more than improving mathematical techniques. Faced with a crisis, Keynes would probably have proposed critical thinking instead of just being logical in some preconceived framework (as cited in Leijonhufvud, 2008). With the intellectual collapse of the mainstream, pragmatic changes of attitudes can be seen as economists start to release the burden from the modern macroeconomics framework. Skott (2010) criticized the micro-founded macroeconomics as a wasteful detour, arguing with Dutt (2005, p.26) that the traditional aggregate demand-aggregate supply approach is internally consistent and its approach is eclectic since the so-called microeconomics optimization is neither necessary nor sufficient for understanding aggregated behavior rules. Gordon (2009, p.26) also recognized: “Empirical success and common sense have triumphed over the endless search for deep micro foundations in a world in which macroeconomic interactions triumph over individual choice. Modern macro needs to go

back to the drawing board and recognize that the integrated world view of 1970-era macro has been established and tested for more than 30 years and can no longer remain ignored.”

The second possibility could be the rise of behavioral economics. Traditional neoclassical economics which determines an individual’s behavior rule by maximizing the individual’s Cobb-Douglas utility function has been proven to be deeply flawed in many circumstances. Its simple vision also constrained the development of policy responses to economic crisis. In the recent financial crisis, behavioral economics which aims to incorporate social and psychological factors into neoclassical microeconomics turned out to be capable of providing more useful insights than its neoclassical predecessor. Even in the New Classical frictionless market, the behavioral economics can provide far better models to understand the role of “noise traders” (sometimes rational ones) and these traders’ effect on price abnormality (Krugman, 2009). For example, portfolio managers will be influenced by herd effect in their decision makings. This will cause market prices to exhibit certain biases. In addition, historical literature concerning capital constraint in times of large asset price volatilities directly sheds light on policy changes (e.g., regulations on margin buying, wider lender of last resort facility and better liquidation procedures) in the financial market.

Since behavioral economics does not deny neoclassical economics, the theory complements rather than overthrows the current mainstream theory. Therefore, it is more likely to be accepted by most mainstream economists and granted more attention. With the popularity of a wide range of new economics books that incorporate the “social and psychological realms” into macroeconomic topics (e.g, *Nudge*, *Freakonomics*, *Animal*

Spirits) going popular in recent years, we can expect the subject of behavioral economics to be more actively discussed in economic classes than ever before. There are even reports claiming that the Obama administration is applying behavior models in his political campaigns (Grunwald, 2009). The trend in the rise of behavioral economics is certainly going obvious.

The third possibility could be major changes in research methodologies. As we have explored in this paper, the methodologies employed to conduct economic research suffer from serious logical flaws and are much to blame for economists' group blindness to many problems. The metaphysics methodology brings research convenience to the subject at the cost of philosophical consistency and realism without which the subject of economics is largely denatured.

Unfortunately, the sad truth is, even though some of these methodological critiques were proposed far before the hit of the Great Recession, very little effort can be seen from the field trying to correct these mistakes as soon as possible. In fact, most modern economists have hardly paid any attention to the fundamental problems posed by flawed methodologies. Applying these methodologies in economic research has been simply taken for granted. Institutions are partly to blame for their inaction. On one hand, history and philosophy has been gradually chased out of most economic classes, both graduate and undergraduate, resulting in a general ignorance to the origin of economic thought. Mirowski (2010, p.31) argued that after expelling history and philosophy from economic classes "the brainwashing" in the profession lead to Mirowski's observation that "by the 1990s there was no longer any call for offering courses in philosophy or history of doctrine any longer, since there were no economists with sufficient training

(not to mention interest) left in order to staff the courses.” Based on this implication, methodological innovations, in spite of their necessity, seem highly unlikely. This is also reflected in the fact that when the profession was hit unprepared by the Great Recession, the field of macroeconomics started to be full of desperate, scattered responses⁵² grasping randomly for new paradigms but with hardly any positive outcomes (Mirowski, 2010).

Further evolution of methodology is compromised by institutions’ way of reviewing papers, which has discouraged discussions about some most basic methodological problems⁵³, even though these methodologies can largely affect the usefulness of the final outcomes. Mirowski (2010, p.30) argued that, “High-ranking journals, such as the American Economic Review, the Quarterly Journal of Economics, and the Journal of Political Economy, declared they would cease publication of any articles whatsoever in these areas, after a long history of acceptance.” A similar view can be found with Colander (2010) who said that if institutions don’t change their way of reviewing papers, a considerable number of “outcome maximizing” economists will return to their comfort zones “dotting ‘i’s and crossing ‘t’s on the DSGE model,” despite all of the flaws they are already aware of, simply because it is easier to get paper published and get advanced in academic career.

⁵² Mirowski (2010) wrote that, “Prior to the crisis, economics was something that the average person had gone out of their way to avoid. Suddenly, it seemed like everyone with a web browser harbored a quick opinion about what had gone wrong with economics, and was not at all shy about broadcasting it to the world. Consequently, the question of the content and significance of modern economics for the crisis collapsed into an unseemly free-for-all, only intermittently abated, pitched somewhere between a barroom brawl and a roller derby, a scrum which summoned forth the current paper.”

⁵³ Colander (2010) argued that, “too many macroeconomists felt that if they did not toe the DSGE line, they were unlikely to be published in journals that would lead to their advancement... The institutional structure of the academic economics profession is not structured to reward economists for the correctness of their real-world predictions, nor for their understanding of the real economy.”

The fourth possibility could be “business as usual.” Although it may sound absurd after the *laissez-faire* ideology being widely blamed for the Great Recession, there is still a possibility that the current flawed view on macroeconomics will continue to reign after the economy walks out of the shadow of the Great Recession. In an article named “Teaching Macro Principles after the Financial Crisis”, Blinder (2010) actually supplements the current economic text books with new terminologies of the financial products from financial innovation rather than correcting some obvious flaws that leads to the total irrelevance of today’s mainstream. This reflects the general attitude of some die hard economists. In simple words, they are still trying to avoid the recognition of their intellectual collapse. Another example is Robert Lucas’ presentation about the Great Recession in University of Washington on May 19th, 2011. Robert Lucas (as cited in White, 2011) showed that the U.S. economy was suffering a sub-par growth after the Great Recession. The main reason for this slow growth, Lucas argued, was the larger role played by the government in the economy. He further explained that following the European-style government-led growth, the U.S. economy also suffered from a similar slow growth rate as most European economy had, implying that a more liberal economy, i.e. an economy that was in the style of the economy pre-Great Recession would be better for the U.S.

It’s reasonable to argue the third and the fourth possibilities are less likely to happen than the first two ones. The future of macroeconomics in the next few years will probably be either the return of orthodox Keynesian ideas, or the rise of the behavioral economics. The future may also hold both. It is hard to see any possibility that these two theories can find a proper way to converge with one another, in the way that, the New

Keynesians and the New Classicals once did. On one hand, the orthodox Keynesian ideas, which generally follow a top-down approach to macroeconomics do not see the necessity or sufficiency for a micro foundation to support its macro implications. This is subject to Lucas' critique that changing social environments will require economists to model "deep parameters" such as productivity and preferences. On the other hand, behavioral economics, which sees itself mainly an improvement to the traditional neoclassical microeconomics, is subject to Hoover's critique which argues that the aggregation from individuals damage the ontology of macroeconomics. Therefore, the orthodox Keynesians and the behavioral economics are conflict in methodologies. Unless a proper "intermediate level" satisfies both Lucas' and Hoover's critique and links microeconomics and macroeconomics, there is little chance in the future for the two veins to converge.

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Appendix:

Exhibit 1 The New Keynesian DSGE Model

Frank Smets and Raf Wouters (2002) further developed Christiano, Eichenbaum and Evans (CEE)'s model (2001) to demonstrate a New Keynesian DSGE Model that is widely cited and studied.

This thesis presents some important structures of the model. Readers can refer to Smets and Wouters (2002) or CEE (2001) for more details.

The model starts with a representative household's maximizing behavior through equation (1):

$$E_0 \sum_{t=0}^{\infty} \beta^t U_t^r$$

In this equation, β is the discount factor. U is the utility function which can be expressed through equation (2):

$$U_t^r = \varepsilon_t^B \left[\frac{1}{1 - \sigma_c} (C_t^r - H_t)^{1 - \sigma_c} - \frac{\varepsilon_t^L}{1 + \sigma_l} (e_r^r)^{1 + \sigma_1} + \frac{\varepsilon_t^M}{1 - \sigma_m} \left(\frac{M_t^r}{P_t} \right)^{1 - \sigma_m} \right]$$

In equation (2), ε_t^B represents general shock to preferences. ε_t^L represents a shock to labor supply. ε_t^M represents a money shock. σ_c is the coefficient of relative risk aversion of households or the inverse of the intertemporal elasticity of substitution. H_t is the past consumption function which can be denoted as equation (3). σ_l represents the

inverse of the elasticity of work effort with respect to the real wage. σ_m represents the inverse of the elasticity of money holdings with respect to the interest rate.

Equation (3):

$$H_t = hC_{t-1}$$

Equation (4) is the budget constraint:

$$\frac{M_t^\tau}{P_t} + b_t \frac{B_t^\tau}{P_t} = \frac{M_{t-1}^\tau}{P_t} + \frac{B_{t-1}^\tau}{P_t} + Y_t^\tau - C_t^\tau - I_t^\tau$$

In this equation (4), b_t is the price of bonds. Y_t^τ is the income, which can be expanded as equation (5):

$$Y_t^\tau = (w_t^\tau l_t^\tau + A_t^\tau) + (r_t^k z_t^\tau K_{t-1}^\tau - \psi(z_t^\tau) K_{t-1}^\tau) + Div_t^\tau$$

In this equation (5), $w_t^\tau l_t^\tau$ is the wage times the labor hour. A_t^τ is the cash flow from participating in state contingent securities (that insure against variations in labor income). $r_t^k z_t^\tau K_{t-1}^\tau$ is the return on real capital stock. $\psi(z_t^\tau) K_{t-1}^\tau$ is the cost associated with variations in the degree of capital utilization. Div_t^τ is the dividends derived from the imperfect competitive intermediate firms.

Consumption and savings are determined with the utility maximizing behavior of the individual within budget constraint. The demand for cash can be expressed as equation (6):

$$\varepsilon_t^M \left(\frac{M_t}{P_t} \right)^{-\sigma_m} = (C_t - H_t)^{-\sigma_c} - \frac{1}{1 + i_t}$$

Aggregate labor demand and aggregate nominal wage is given by the following two equations (7) and (8):

$$L_t = \left[\int_0^1 (l_t^\tau)^{1/\lambda_{w,t}} d\tau \right]^{1+\lambda_{w,t}}$$

$$W_t = \left[\int_0^1 (W_t^\tau)^{-1/(1+\lambda_{w,t})} d\tau \right]^{-\lambda_{w,t}}$$

Capital accumulation is can be expressed as equation (9):

$$K_t = K_{t-1}[1 - \tau] + \left[1 - S \left(\varepsilon_t^I \frac{I_t}{I_{t-1}} \right) \right] I_t$$

When it comes to technologies and firms, the final goods producing equation (10):

$$Y_t = \left[\int_0^1 (Y_t^j)^{1/(1+\lambda_{p,t})} dj \right]^{1+\lambda_{p,t}}$$

In this equation (10), Y_t^j is the quantity of intermediate goods used in the financial goods production. $\lambda_{p,t}$ is a stochastic parameter.

Due to the perfect competition market structure, the cost minimization condition in the final goods sector can be written as equation (11):

$$Y_t^j = \left(\frac{P_t^j}{P_t} \right)^{-\frac{1+\lambda_{p,t}}{\lambda_{p,t}}} Y_t$$

Where (12) $P_t = \left[\int_0^1 (P_t^j)^{-1/\lambda_{p,t}} dj \right]^{-\lambda_{p,t}}$

The intermediate goods producer follows a constant return to scale. Its production function can be written as (13):

$$y_t^j = \varepsilon_t^a K_{j,t}^a L_{j,t}^{1-a} - \Phi$$

In this equation, ε_t^a is the productivity shock. Φ denotes a fixed cost.

By maximizing profit and minimizing cost, the price of the intermediate goods can be expressed as (14):

$$P_{t+k} = \frac{\lambda_{t+k}}{\lambda_t} \frac{1}{P_{t+k}}$$

General equilibrium is reached when equation (15) satisfies:

$$Y_t = C_t + G_t + I_t + \psi(z_t)K_{t-1}$$

By solving these equations and estimating parameters can get the linear relationships among output, nominal wages, price levels, labor supply, consumption and investments.

Exhibit 2 New Consensus Macroeconomic Theory

Based on the methodology similar to the DSGE model, the conclusions of the New Consensus macroeconomic theory can be mathematically expressed as (Meyer, 2001):

$$1) Y_t^g = a_0 + a_1(Y_{t-1}^g) + a_2E(Y_{t+1}^g) - a_3[R_t - E_t(P_{t+1})] + s_1$$

$$2) P_t = b_1Y_t^g + b_2(P_{t-1}) + b_3E_t(P_{t+1}) + s_2$$

Where, $b_2 + b_3 = 1$

$$3) R_t = RR^* + E_t(P_{t+1}) + c_1Y_{t-1}^g + c_2(P_{t-1} - P^T)$$

Where Y_t^g means output gap between current GDP and potential full employment GDP, P^t means inflation, RR^* means natural rate of interest, p^T means targeted inflation rate, S_1 and S_2 are random shocks.

Equation (1) is the aggregate demand function. It describes the linear relationship among current output gap, real interest rate and expected future output gap. Equation (2) is the Philips Curve function. It describes that inflation is determined by previous inflation, output gap and expected future inflation. Equation (3) is the Taylor rule. It

describes that an optimal monetary policy should set interest rate according to output gap and inflation gap (the difference between previous inflation and targeted inflation).

Exhibit 3 US household leverage ratio from Ned Davis Research

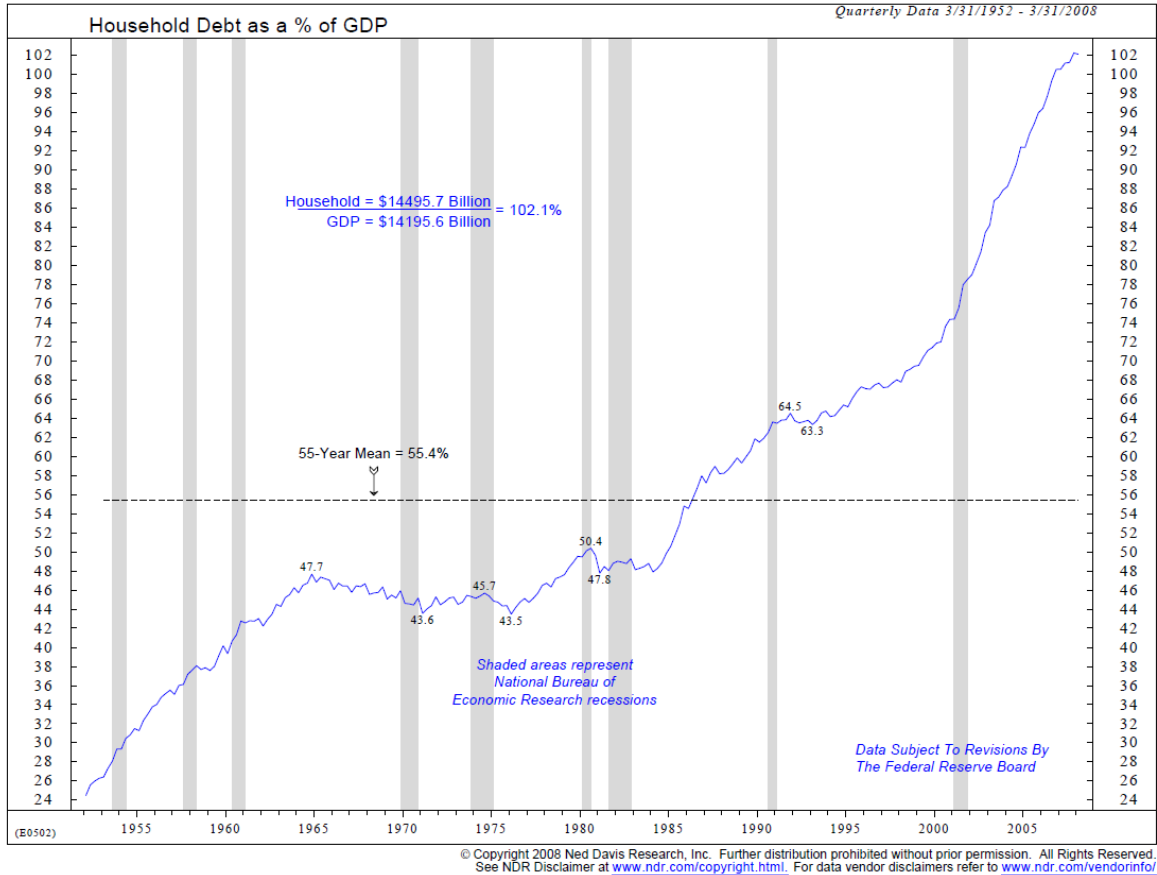


Exhibit 4 Austrian explanation to the Great Recession

Under loanable funds theory, Austrian school of economics presumes a positive “natural interest rate” that will balance investment and savings (Snowdon and Vane, p.501). Besides, instead of seeing all business as the same, the Austrians introduced derived demand theory and “entrepreneurship” behavior that will automatically balance the inner boom-bust cycles of different sectors in an economy. Hayek specified the production process in different stages. The last stage of production leads directly to the

consumers. The second last stage provides production inputs to the previous stage and so on until the very first stage. Through a derived demand mechanism, the demand shock in the last stage will be reduced exponentially when it comes to the first stage. For example, if retailers found they are facing a reduced demand for bicycles, the companies that produce bicycle parts may face a secondary reduced demand. Accordingly, when the production finally goes back to the first stage, companies that collect rubber may experience a demand shock much smaller than the last stage retailers. Following this logic, if the last stage retailer found an insufficient aggregate demand where consumers allocate their income more to savings, the first stage producers may find that this results in low interest rates which are pushed down by excess savings, and provides an excellent chance to invest in production. Besides, since excess saving, according to the Austrians, is always an effective demand for future products, the entrepreneurs of the first stage will be optimistic about the demand for his future outputs through a time discount.

For the Austrians, the economy is balanced by “natural rate of interest.” An increase in saving only moves the equilibrium point along the production possibility frontier. Resources will not be idled as they will simply be relocated to a different stage of production and therefore the aggregate demand for the economy remains stable. If interest rates were allowed to manipulate by monetary authorizes, for example the Federal Reserve, the information embedded in interest rates would be distorted. Entrepreneurs’ investment behavior could be misled as their estimation of future demand would be based on wrong information. When such an investment is later proved to be uneconomical, there has to be a liquidation process to reverse the investment. The reverse

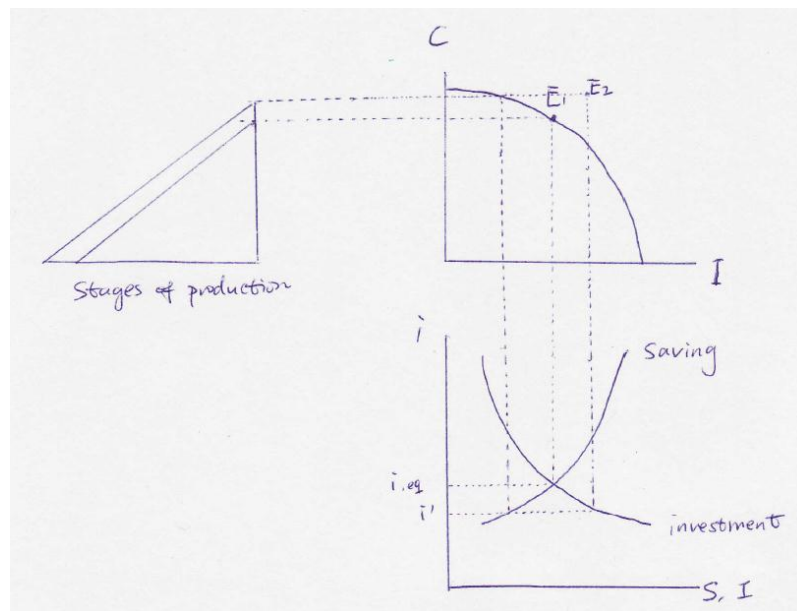
process is always accompanied by large scale business failures and high unemployment rates.

For the Austrians, the subprime mortgage crisis was no more than a typical Austrian overinvestment story. They believed that the subprime bomb was undermined during the first several years of the decade when the Federal Reserve lowered interest rate and maintained them to relieve deflationary pressure in the market. At the end of the Great Moderation, there was the bursting of the dot-com bubble and the 911 Terrorist Attack. Losses in the stock market, poor company performance, pessimistic business outlook and deflation were pretty much implying a recession. The Federal Reserve of the United States under the governance of Alan Greenspan then applied expansionary monetary policy trying to save the economy from potential recession. The federal funds rate was cut from 6.25% to 1.75% during the period between 2001 and 2003, a historical low level since the Great Depression. This stimulated both investment and consumption. However, it also put business and individuals further into debt because only by borrowing can an economy experience both an increase in investment without saving more. Such an artificial boom, as argued by Austrian economists, is doomed to bust. Therefore, instead of jump starting the economy from recession, the injection of federal funds into the market actually built another bubble soon after the burst of the dot-com bubble.⁵⁴ As expansionary monetary policy kept interest rates at low levels, the information embedded in the interest rates were distorted and then misperceived by

⁵⁴ This view is also recognized by some Keynesian economists, but not usually presented with a full model. In an article named "Intimations of a Recession" 2006 in The New York Times, Paul Krugman argued that "A snarky but accurate description of monetary policy over the past five years is that the Federal Reserve successfully replaced the technology bubble with a housing bubble." <http://select.nytimes.com/2006/08/07/opinion/07krugman.html>.

individuals, entrepreneurs and other decision makers. The rise in aggregate demand that was accompanied by a rise in both consumption and investment sustained the economy boom for quite a few years. The extra high return by extra risk taking in asset market provided positive feedback to self-fulfill the bubble even longer. However, the boom which requires saver to save less, but borrowers to borrow more, cannot be sustained for long.

Here, we have a graphic demonstration to show an Austrian way of explaining the crisis.



Through the graphs, we see that the manipulation of interest rates has pushed the optimal balance of output from E_1 to E_2 . Compared to E_1 , E_2 implies a state that both investment and consumption to rise. From the production possibility frontier, we shall see that the new investment-saving point E_2 was beyond that production possibility frontier, meaning that the economy was overheated. The new virtual point outside the production possibility frontier then returned two shapes of Hayekian Triangles, meaning both the

early stage of production and the late stage of production were investing. In other words, the economy will soon face constraint in consumption and investment.

According to the Austrians, the Federal Reserve shouldn't have lowered interest rates and sustained them for that long. Such an artificial stimulation on consumption and investment made the economy produce outside its production possibility frontier at a "virtual" equilibrium point. However, the real constraint on resources was still there. When both consumer debt and business investment loans exceed total savings, the failure for businesses to profit will have to liquidate their investments. Without a solid savings to backup consumption, the credit fueled demand can only be transitory. Such theory is consistent with ever increasing household debt to GDP ratio and asset price bubbles⁵⁵ in the United States. The Austrians further pointed out that, since "artificial temporary booms" which bring temporary rise in employment and output are so politically welcome, that government regulators can hardly see the potential risks that are hidden under the boom. The later they see problems, the more severe will be the final bust.

Exhibit 5 The Dollar Crisis

Richard Duncan (2005) specified a "vendor financing" scenario in current international economics. Emerging economies, especially manufacturing countries, like China, Japan, and Korea have a significant trade surplus with U.S. in international trade. These trade surpluses, through reinvestment, have returned to U.S. domestic market to

⁵⁵ Phillip Bagus (2008) pointed out that "First, the credit expansion has an effect on capital goods prices and therefore, on asset prices. As already mentioned, the credit expansion leads to a reduction of the interest rate in the loan market. Entrepreneurs will use this lowered interest rate to discount the expected returns of the capital goods, which results in a higher net present value of the capital goods. The net present value of stocks, bonds, and real estate, which represent capital goods, is increased by the lowered interest rate as well. As a result, entrepreneurs will bid up the prices of stocks, bonds, and real estate to their new, higher net present value.

help financing U.S. consumptions on these exports. “Vendor financing” in international trade market can have serious outcomes. On one hand, the U.S. consumers are ever dependent on credit increase to sustain their current standard of life. On the other hand, these exporting countries are becoming more dependent on foreign demand to maintain its current level of aggregate demand to avoid depression. Both will cause the self-fulfilling effects to make “vender financing” a loop as it is to the best interest of both parties to sustain its current situation. Emerging economies would like to see their currency exchange rate stayed low to maintain its competitiveness in international exporting market, while U.S. consumers would also prefer cheap imports to maintain current level of consumption and cheap credit to push up asset prices. However, the loop is doomed to burst. The ever increasing gap between trade balances simply cannot sustain forever. It’s only a matter of time when the bomb busts.

Besides, it is unlikely that the scenario will be reversed under our current international monetary system without serious market intervention. The U.S. dollar has two roles as a domestic currency and an international reserve currency. These two roles can be conflicting as a Belgian-American economist, Robert Triffin has identified in the 1960s. As a reserve currency, the U.S. dollar has to be deficit position to enable international transaction. As a domestic currency, the U.S. dollar has to balance or be in surplus position to be considered safe. Through the evolution of “Bretton Woods system” and the abandoning of gold standard, today’s international monetary system has evolved into a one sided situation, where the U.S. has the special position to be able to be in huge deficit positions while maintaining its exchange rate against other currencies. This, according to Duncan, is what has been sustaining “vender financing loop.” He further

argued that since the “vender financing loop” will bring asset bubble in the U.S. and overcapacity in exporting nations, it is a potential “nuclear weapon” endangering the stability of world economics.

Exhibit 6 The Great Depression vs. the Great Recession

Dow Jones Industrial Average historical data (as a percentage of first month)

Data Source: Yahoo Finance

Data Range: (1937-1943 monthly and 2008 to Jun 2011 monthly)

