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Abstract

The purpose of this paper is twofold: *first*, to discuss the theoretical foundations and policy implications of two of the offshoots of modern macroeconomics viz., supply-side economics and rational expectations; and *second* to evaluate the recent development of thinking in macroeconomics. Thereby it tries to bring forth the current state of macroeconomics, although the term "current" itself is a difficult term to define as the only constant thing is 'change', more so in case of an evolutionary science like economics. While highlighting the celebrated classical-Keynesian debate, it thoroughly examines the supply-side economics and rational expectations hypothesis with due importance to their practical application.

Keywords: Classical political economy; Keynesians; Laffer curve; Phillips curve; Rational Expectations; Reaganomics; Supply-side Economics; tax cuts.

JEL Classification: B12, B16, B22, E6, E11, E12

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1. Introduction

"Economics is a growing subject in which very much is left to be done", wrote Prof. Paul Anthony Samuelson. Economics has always exhibited its evolutionary character. From Adam Smith to Alan Blinder, economics has witnessed changes with regular intervals in the process of transformation. Economic ideas have life and growth. These ideas have spread across time and space. A keen student of economics has to undertake a journey of the evolution of economic thought. These ideas are both doctrines for dissertation and historical insights to the world of economics. It is when we trace the ideas developed by a large number of economists from time to time that we are able to interpret economic theories and models analytically with a touch of professional criticism. Such a study is highly rewarding.

As is well known, economic study has two approaches: micro economics and macro economics. Following the tradition of Keynes we may consider that macro economics itself has two branches, viz. Classical Macro economics and Keynesian Macro economics.

The foundation of classical macro economics was well laid by Smith in his treatise, *An Inquiry into the Nature and Causes of the Wealth of Nations*, published in 1776. Smith's followers later enriched the science of economics by their writings. The "classical economists" – a name invented by Karl Marx – covers Smith, Ricardo, Malthus, the Mills (James and John), Mc Culloh, Torrens, Cairns, Senior and others, popularly designated as the Classical School. The common interpretation of the classical theory is that it dealt with a system of production in which several factors co-terminus in their significance, were combined. The classical economists singled out labor as a factor, payment to which (wages)

entered as the chief constituent of the price of a commodity, the payment to other factors standing in fixed relation to wages. They believed that there was an automatic adjustment between supply and demand in the market giving no room for long run disequilibrium.¹ This was the essence of Say's Law of Market, popularized in five simple words: "Supply creates its own Demand". Thus, classical macro economics was essentially supply-based economics. This doctrine held sway for over hundred years. Keynes and the Keynesians² gave a new doctrine. Keynes' General Theory of Employment, Interest and Money, published in 1936 pointed out the possibility of general monetary disequilibrium in the economy. Keynes gave a coherent rationale for state intervention in spending and demand, leaving the supply-side of the economy largely open for the free play of market forces. Keynes and his followers suggested an activist or interventionist monetary policy to combat slumps. This was quite in contrast to the extreme *laissez faire* of Say. Keynesian macro economics was essentially a demand management economics with "Effective Demand" being its key concept.³ This doctrine came in handy as a remedy at the time of reconstructing the economies hit by the Great Depression. Thus, Keynesian macro economics was quite a revolution.

¹ This was with a serious note of dissent by another classicist, T.R. Malthus in his famous "theory of market gluts'. Malthus believed over-production to be a significant and serious exception to situation of general equilibrium.

² It would be a folly to treat all the Keynesians as the followers of Keynes in the sense that there weren't any difference in their economics. A few differences may be quoted here. While Keynes supported direct and indirect demand management, the Keynesians wanted only indirect demand management. Keynes was an advocate of active fiscal policy whereas the Keynesians favored fiscal policy plus price and incomes policy. (For a plain yet forceful discussion on these and other distinctions between Keynes and the Keynesians see Lejonhufvud, Axel *On Keynesian Economics and the Economics of Keynes*, Oxford University Press, 1968).

³ Effective demand is that level of aggregate demand (reflected in terms of the volume of total expenditure) which effectuates the aggregate supply (reflected in terms of the aggregate of consumption –saving). If effective demand increases, the level of income-employment –output will increased and vice versa.

Another revolution occurred in the early 50s that affected the foundation of economics. It came about with the publication of the Ricardo Volumes with the Introduction to Volume I by Pierro Sraffa (and Maurice Dobb). It marks the return of scholarly interest in the classical method of economic analysis. This is New Classical Economics, also termed as "revival of classical political economy". It has two main offshoots, viz. Supply-side Economics and Rational Expectations.

2. Theory and Practice of Supply-side Economics

Artin Feldstein states that the notion of supply-side economics is easily misused by its supporters, maligned by its opponents, and misinterpreted by the public at large. In the supply framework, we see all the economic "actors" as producers of goods and services. Producers are people who "supply," hence "supply-side." Consumers are peripheral in the supply model. The economic doctrine behind supply-side approach asserts that government expenditure and the resulting tax burden have acted as a drag on economic growth. By lowering tax rates and expenditure and by deregulating the economic mechanism, energies in the market place will be unleashed so as to bring about surging economic growth and new prosperity. New capital will be generated leading to new productive capacity, new and more jobs and wealth in an accelerating and self-sustaining cycle. Here the task of the government will no longer be that of merely responding to the demands of citizens. Instead, it will also be of inducing the citizens to unleash the supply of work effort and thereby goods and services. In short, supply-side economics is an approach in economics that emphasizes supply-side factors like capital accumulation, technical progress, improvement in the quality of work and workforce, deregulation and increase in personal incentives. As

an economic theory supply-side economics holds that reducing tax rates, especially for businesses and wealthy individuals, stimulates savings and investment for the benefit of everyone, also called trickle-down economics. The central idea of supply-side economics is that certain types of tax cuts can be expected to increased aggregate supply. Importance placed on economic incentives of this type is the most distinguishing characteristic of supply-side economics. Based on the Lafferite tax-revenue thesis, the supply-siders argue that adding to supply, unlike adding to demand, is not a zero-sum task.

The emphasis laid on supply-side economics, does not do away with the role of the government. Instead it redefines the role of the government along with price mechanism. In the light of changing standard of living in a society, with development as the goal of every individual and government, a proper understanding of the ingredients of supply-side economics helps in utilizing resources for social good. Supply-side economics would relate itself with all kinds of resources and economic activities – be it food, clothing, shelter or manufactured goods or health services. Understanding supply-side economics offers us methods of satisfying the goals of economic efficiency with social justice. Supply-side economics is a school of macroeconomic thought which emphasizes the importance of taxation and business incentives in encouraging economic growth, in the belief that businesses and individuals will use their improved terms of trade to create new businesses and expand old businesses, which in turn will increase productivity, employment, and general well-being. While all macroeconomics involves both supply and demand, supplyside economics emphasizes the importance of encouraging increases in supply. It was popularised in the 1970s by the ideas of Robert Mundell, Arthur Laffer, and Jude Wanniski. The term "supply-side" was coined by Wanniski in 1975. In 1978 Wanniski published The

Way the World Works in which he laid out the central thesis of supply-side economics and detailed the supposed merits of low taxation and a gold standard. In 1983, economist Victor Canto, a disciple of Arthur Laffer, published The Foundations of Supply-Side Economics. This theory focuses on the effects of marginal tax rates on the incentive to work and save, which affect the growth of the "supply-side" or what Keynesians call potential output. While the latter focus on changes in the rate of supply-side growth in the long run, the "new" supply-siders often promised short-term results.

Although the supply-side economics is a new one, supply-side economics was there even in Smith's Wealth of Nations.⁴ The old classical economists had advocated laissez faire as the best policy for economic management. They stressed on the need for deregulation, reduction in taxation, public spending and stimulating privatisation in areas hitherto reserved for the government⁵. But following Great Depression of the 1930s, Keynesian Economics (demand side economics) came to be used as an effective instrument to substitute the Invisible Hand of the Market. It was then suggested that state should supplant the market mechanism and the public sector should act as the leading sector, particularly for the pursuit of industrialization. This philosophy was imbibed to greater extent by the socialist countries and also – varying degrees – by the mixed economies of the world.

⁴ In fact, when the focus is put on the producer of goods, the study of the creation of wealth spans the work of all the classical economists. The production paradigm was at the centre of Adam Smith's *Wealth of Nations* and of Marx's *Capital*.

⁵ The optimism concerning public intervention engendered in the mid 1930s by Keynes' General Theory was replaced in the 1970s by a new found pessimism about the efficacy of public action, due partly to the simplicity of Milton Friedman's claim that Keynesianism had failed and was outdated. This claim has to be viewed in the light of the circumstances, inclusive of the oil price shocks of the 1970s. Due to the contraction policies, unemployment and debt crisis were worse than the 1930s.Globalisation of trade and investment added fuel to the fire by making the countries more interdependent. "Better-my-neighbor" policy gave place to "beggar-my-neighbor" policy. (See Friedman Milton, 'Role of Monetary Policy' *American Economic Review*, 58, 1968. This is an article about monetary policy and history of thinking. It has interesting explanation on how little things change, most current issues like inflation targeting, commitment rules etc).

But people and governments – the world over – did not fail to understand some of the mistakes of applying Keynesianism to the core.⁶ The enormous growth of democracy was one such mistake. Another mistake took place in the monetary management in America during 1930s. The US Federal Reserve System took actions that (on the whole) reinforced rather than combated the contraction. Yet another mistake was during the Vietnam War. The Federal Reserve System instead of decreasing the money supply or at least holding it constant boosted it. The result was a dismal record. So the monetarists concluded that instead of relying on activist management of the money supply law, it would be better for the government to rely on market forces to restore equilibrium following macro economic disturbances.

By the 1960s and 1970s, it had become clear that it was wrong to focus exclusively on demand and to ignore supply-side factors. Sraffa's "Production of Commodities by Means of Commodities" appeared in 1960. Sraffa presents a model of general economics system.⁷ We can begin with the model of van Neumann. A general production model is envisaged in which every industry is indispensable for itself and for every other industry, directly or indirectly. There are mutually balanced capital stocks, a volume of labor adjusted to the above, too. There is a single efficient technique of production in each industry. Labor

⁶ For instance, like the old classical economists the supply-siders also believe in saving-investment relationship and the crucial role played by the rate of interest.

⁷ The starting point of Sraffa's research was the formulation of his cost-price equations. The main device that Sraffa used in his attempts to bring to light the existence of solutions to his system and their properties, which basically meant building a consistent wage–profit–price relationship, was that of somehow cutting out the prices from this relationship. Different routes were attempted by Sraffa to achieve this end, and the main influences on these attempts were Ricardo and Marx, in particular Ricardo's corn-ratio theory of profits, and the related conception of a maximum rate of profits.

subsistence is advanced as inputs like fuel and oil required for machines etc. The economy replaces capital stocks used up during the year and machines worn out. The economy is expanding at its maximum joint rate of growth and labor supply is deemed to expand at the above rate. In this mechanism, each industry can obtain a rate of profit equal to the rate of growth of the system after replacing stocks used up. The system goes on expanding through time at a proportional rate equal to the maximum growth rate and values remain steady throughout. In his model consumption demand as such plays no role.

The Sraffa book rejects the identity simultaneously between value and the aggregate of distribution components which is central the Walrasian theory and the notion of general equilibrium. In the later years of 1970s and 1980s more questions came to be raised about demand side economics and attempts were made to answer them.

The policy menu of the supply-siders includes: (i) higher depreciation allowance; (ii) lower corporation tax; (iii) reduction in rates on capital gains; (iv) reduction in taxes on income from savings; and (v) lower personal income tax.

In the US economic policy took a shift towards supply-side in the later 1970s with deregulation in the transportation industry, significant reduction in tax on capital gains and the partial taxation of unemployment compensation.

Supply-side economics came to be identified as Reaganomics⁸. Reagan's economics was an influence of Robert Mundell, the mentor of Arthur Laffer. At the Annual Meeting of The

⁸ Ronald Reagan, a Democrat in his youth, studied classical economics at Eureka College, Illinois, where he got a B.A. in economics in 1932.

National Alliance of Business held on October 5,1981, the then President Regan stated that his administration's private sector initiative is a primary example of its supply-side management approach. He said:

"Isn't it time to take a fresh look at the way we provide public services? Not just because they cost so much but because too many of them don't work I never found an agency, a programme, and a piece of legislation or a budget that was adequate to meet the total needs of human beings. Something is missing from the equation. I believe that 'something' is private initiative and community involvement".

Indeed the Reagan administration tried to bring a distinctive philosophy to economic management.⁹ This philosophy embraced all vital sectors of the economy such as finance, personnel, procurement etc. In 1981 the US Congress enacted a major tax bill viz., the Recovery Tax Act which is considered as the centre piece of supply-side economics. The Act contained extensive tax reductions to strengthen incentives to work, save and invest.¹⁰

⁹ In a sense, even President John F. Kennedy was a "supply-sider," arguing for lower tax rates on incomes and capital gains. In presenting his tax package in 1962, he argued "a rising tide lifts all boats." By contrast, his brother Edward "Ted" Kennedy, the Senator from Massachusetts, rejects those supply-side arguments and insists on government spending as the route to greater economic welfare. Tax the rich and spend the revenues on the non-rich.

¹⁰ Ronald Reagan made supply-side economics a household phrase, and promised an "across the board" reduction in income tax. During the summer of 1981 the central focus of policy debate was on the Economic Recovery Tax Act (ERTA) of 1981, the Reagan tax cuts. The core of this proposal was a version of the Kemp-Roth bill providing a 25% across-the-board cut in personal marginal tax rates. By reducing marginal tax rates and improving economic incentives, ERTA would increase the flow of resources into production, boosting economic growth. Opponents used static revenue projections to argue that ERTA would be a give away to the rich because their tax payments would fall. But data show that after the high marginal tax rates of 1981 were cut, tax payments and the share of the tax burden borne by the top 1% climbed sharply. For example, in 1981 the top 1% paid 17.6% of all personal income taxes, but by 1988 their share had jumped to 27.5%, a 10 percentage point increase. The share of the income tax burden borne by the top 10% of taxpayers increased from 48.0% in 1981 to 57.2% in 1988. Meanwhile, the share of income taxes paid by the bottom 50% of taxpayers dropped from 7.5 per cent in 1981 to 5.7 per cent in 1988. Several conclusions follow from these data. First of all, reduction in high marginal tax rates can induce taxpayers to lessen their reliance on tax shelters and tax avoidance, and expose more of their income to taxation. The result in this case was a 51% increase in real tax payments by the top one per cent. Meanwhile, the tax rate reduction reduced the tax payments of middle class and poor taxpayers. The net effect was a marked shift in the tax burden toward the

Also the share of GNP absorbed by non-defense spending was reduced from 15.1 per cent in 1980 to 14.1 per cent in 1984. So, it was easy to finance tax reductions. In his book Liberty, Market and State: Political Economy in the 1980s James Buchanan opined that the public choice theory may help to persuade collectivists to change their views about the importance of the role of the state.

Supply-side economics spread far and wide. Two parallel developments appeared. In the command economies various economic reforms were introduced and the trend reached the level of glasnost and perestroika. Reformers in the socialist countries and mixed economies have increased the role of markets combined with economic planning. In some cases it was market planning. Russia, China and India have been experiencing the spirit of supply-side economics. Economic development became their number one priority. While government protection and subsidies to the poor were not abandoned, more incentives for investment, production in the form of tax concessions, deregulation, devaluation and deli censing were offered by concerned governments. And there emerged one more branch of political economy viz. Privatization. Ever since the New Economic Policy of 1991, privatization, internationalization (or globalization) and liberalization have become the watchwords of Indian economic development, although there is much debate on the subject of "privatization" as such. In India broad-branding, tax concessions for 100 per cent Export Oriented Units, privatization of some industries and services (e.g. telecommunications) are

top 1% amounting to about 10 percentage points. Lower top marginal tax rates had encouraged these taxpayers to generate more taxable income.

some the examples of the trend towards privatization of the economy.¹¹ Supply-side or Voodoo economics have been discussed and critiqued in books, songs and films. The social activist and cartoonist Dan Perkins (who writes under the penname Tom Tomorrow) has repeatedly criticized the theory in his weekly cartoon, "World". The band Radiohead have alluded to their opposition to such policies in the song "Electioneering". One of the supplyside critiques is "The Gospel of Supply-side Jesus"

A Critique of Supply-side Economics

Though miraculous efforts as anticipated and predicted by the new supply-siders and the so-called Reaganomists did not materialize, one aspect of it – privatization – came to be held in high esteem.

While the traditional supply-siders were content in claiming that the pursuit of liberal policies would, over the long-run lead to increased real incomes and higher standards of living, the new supply-siders had extravagant claims. They projected rapid growth, dramatic increase in tax revenue, sharp rise in savings, and a relatively painless reduction in inflation. They relied on the "Laffer Curve"¹² saying that the tax cut would increase tax revenue because it would unleash enormously depressed budget deficit. Also, the increased

¹¹ For a discussion of the implication of Reaganomics for developing countries like India see 'Supply-side Economics and Third World' by S.M. Khan Naru, *Link*, December 6, 1981.

¹² The curve is named after Dr. Arthur B. Laffer, a California economist. It is a hill-shaped diagram with the curve illustrating that the tax revenue both at zero or 100 per cent tax rate is zero. At intermediate rate the revenue reaches a maximum. In short at very high rates of taxation revenue yields are less due to tax avoidance; and cut in tax rates increases tax yields. There are many takers to this argument, even today. The argument assumes much significance in India today, in the context of the debate over the Exempt-Exempt-Taxed (E-E-T) regime likely to be brought in. (See *The Economics Times* dated 13.12.2005 page 7, for a debate on the topic.)

incentives to work would slow down the rate of inflation without the need for a rise in unemployment because the increased supply of goods and services could absorb the rising nominal demand. However, most of these claims were not fulfilled in reality. The following are some examples to prove the point.

1. The growth of labor force has been markedly slow since 1980 reflecting a slowdown in the rate of growth in workforce participation rate.

2. The US economy's competitive position in the world market with respect to several commodities has been at its worst level in many decades.

3. Growth rate has dipped sharply since mid-1984 to about 2.5% per year despite enormous deficits.

Further, it is pointed that the sharp declaration in inflation during the last seven to ten years was due to decline in energy prices, lingering effects of extremely high unemployment, effects of over-valued dollar and deregulation and the glut of industrial and food commodities.⁹ Critics argue that the supply-siders exaggerate the beneficial effects of tax cuts. For instance, if a tax cut can raise the return on savings, this in turn, may induce people to save less. And as far as inflation is concerned, critics point out that supply-side policies make only a small dent on the inflation rate. When vying for the Republican Party presidential nomination for the 1980 election, George H.W. Bush derided Reagan's supply-side policies as "voodoo economics".¹³Supply-side economics was critiqued from the right as well, for example hard gold standard advocates, such as the Ludwig von Mises Institute, have argued that there is no such thing as a dollar, merely a specific quantity of gold.

¹³ However, later he seemed to give lip service to these policies to secure the Republican nomination in 1988, and is speculated by some to have lost in his re-election bid in 1992 by allowing tax increases.

Therefore, according to this view, the entire central bank mechanism which supply-side economics advocates is a needless fiction which creates anomalies in the pric*e* of commodities.¹⁴ Paul Krugman, a professor of economics at Stanford, made painstaking efforts to argue that voodoo economics is not only bad economics but also not good politics.¹⁵ Daniel J. Mitchell of the Heritage Foundation critiques the current tax system and finds it wanting.

Though critics found a number of holes in the claims of supply-side economics, it has not been altogether as an alternative way of looking at macroeconomic behavior. Today the debate on the efficiency of government/public sector has attracted more popular attention. When critics of supply-side economics pointed to the lack of academic credentials by movement leaders such as Jude Wanniski and Robert Bartley to imply that the theories were bankrupt, Mundell in his Nobel Prize lecture countered that the success of price stability was proof that the supply-side revolution had worked.¹⁶Any improvement or

¹⁴ Critics of supply-side economics, such as Paul Krugman, quote one-time Reagan aide, David Stockman, who argued that this rhetoric was merely "a trojan horse for upper bracket tax cuts without economic justification." They point out that demand is crucial to both Marx and Smith, and that Keynes formulated demand side ideas because there had been a demand side failure in the late 1920s and early 1930s.

¹⁵ Krugman, however, has been heavily criticized by conservative supply-side enthusiast Lawrence Kudlow, who like Krugman worked for the Reagan administration, and Kudlow's TV colleague James Cramer, a Democrat supporter, on their CNBC TV programs *Kudlow & Cramer, Kudlow & Company* and *Mad Money*, because of Krugman's anti-supply-side views, and Cramer voodooed Krugman as a "bubble head", by bursting a helium-inflated bubble, for hypothesizing about a possible supply-driven "housing bubble".

¹⁶ Jude Wanniski noted that Mundell was "on everyone's short list to be a recipient the year 1998 or next of a Nobel Prize." It finally did happen in October 1999, when the Swedish Academy named Mundell its Nobel Laureate in economics, recognizing his contribution to supply theory, but mainly celebrating his work in "money," i.e., "optimal currency areas." Mundell not only is the "godfather" of modern supply theory, but also the inspiration for the monetary integration of Europe and its new common currency, the "euro."

reform for development is welcome. But reforms should be grounded strongly. A strong nation can benefit when its policies are made on strong theoretical premises. So a better management (or 'governance' if one would like to call it) is a must. The general feeling among most thinkers is that a happy blending of the use of market mechanism and a radical public sector – both sans flaws – can deliver the goods.

3. Rational Expectations – theory and policy

The notion of Rational Expectations (hereinafter, RE) comes from a 1961 seminal paper by John Muth in which he showed that if agents behaved rationally and derived the maximum information possible from the economic environment, their mean expectation with respect to a phenomenon such as price would be equal to the predictions made by a relevant and correct economic theory to explain the same phenomenon.¹⁷

Muth's insight had important implications for analysis of a range of economic phenomenon besides, business cycle analysis. It has found useful applications in the study of commodity price stabilization and speculative behavior. Muth is generally recognized as the father of RE. We find writings on RE by the new classical economists like Robert E. Lucas Jr. (the 1995 Nobel Laureate), Thomas S. Sargent, Robert M.Townsend and others. These theorists argue that if agents were rational and systematically used information derived from the market, government intervention could only be effective as long as implications in the holding of expectations relating to economic behavior of variables such as output and employment persisted. In a "rational expectations equilibrium" government policy changes

¹⁷ For a detailed exposition see Muth, John A. "Rational Expectations and the Theory of Price Movements." *Econometrica*, Vol. 29, No. 6, 1961 pp. 315-35.

could have no impact on real variables (like output, employment etc.), because rational agents and thereby the private sector as a whole would correctly anticipate the effects of policy changes and take pre-emptive action. This notion embodies the famous "policy neutrality proposition" associated with the RE school.

Muth suggested that in the context of a model, expectations of individuals are rational when they are identical with the predictions of that model. It took nearly ten years before economists began to use Muth's idea. Lucas unearthed it. He gave a decisive (and quantitative) approach¹⁸ to a research of the implications of RE and thus to the new classical approach to macro economics.¹⁹

Leonard Rapping, E Prescott, Thomas Sargent, Neil Wallace, Bennet Mc Callun, Robert $Barro^{20}$ – all prominent new classical economists – used various techniques including econometrics, at various levels to demonstrate the effectiveness of active fiscal and monetary policy in a standard Keynesian model. These theoretical innovations became

¹⁸ This highly mathematical theory dominated all economic thought in the 70s and early 80s, so much so that Lucas attracted a broad following of disciples who raised to him to cult-leader status. By 1982, Lucas' views were so entrenched that Edward Prescott of Carnegie-Mellon University would boast that his students had never heard Keynes' name. Lucas won the Nobel Prize in 1995 for the core aspect of his theory, that rational businessmen adjust their behavior to the government's announced economic policies. However, history has not been kind to the rest of his theory. Lucas himself has abandoned work on rational expectations, devoting himself nowadays to other problems, like economic growth. His once broad following has dissipated. And Lucas himself would admit upon receiving his Nobel Prize: "The Keynesian orthodoxy hasn't been replaced by anything yet."

¹⁹ This is quite interesting. Rational expectations build all macroeconomic theories on microeconomic foundations, i.e., utility maximization, profit maximization and equilibrium. Herein lies the essential complementarity of microeconomics and macroeconomics. In more than one way, as rightly remarked by Samuelson, the two branches, microeconomics and macroeconomics converge to form the core *modern* economics. (Emphasis mine).

²⁰ Robert Barro states that rational economic actors will buy bonds in sufficient quantities to reduce long term interest rates.

strong arguments of new classical economics.²¹ Before these writers Milton Friedman in 1968 had attacked the conventional macroeconomic wisdom embodied in the Phillips curve²² and had argued that once the Phillips relation had been correctly specified with real wages as opposed to money wages, there would be no long term trade off between inflation and unemployment. Friedman's critique of the conventional Phillips curve reasoning became highly influential. However, one aspect of his argument on which a number of subsequent debates hinged was the postulate of "adaptive expectations", viz., that expectations regarding the future price adapt over time and can be less than optimal over initial periods as workers initially mistake nominal wage increases for real wage increases.²³

The RE school argued that when expectations are formed rationally errors between actual and expected inflation rate are random and are serially correlated and independent over time. The RE hypotheses is examined below.

²³ Friedman, the monetarist laid much emphasis on adaptive expectations. The monetarist arguments were presented in the framework of expectation-augmented Phillips Curve. This curve provided the potential for an uneasy truce between monetarists and Keynesians. This innovation offers a new classical synthesis.

²¹ It is not unusual to find that rational expectations and the new classical school are treated almost synonymously. This, however, is mistake. Rational expectation with an important element of efficient markets is essential for new classical results. The RE school emphasized the proposition that there existed no macroeconomic policy that would reduce the variability of real output.

²² One of the knotty questions in the post-Keynesian literature is "is a trade-off possible between unemployment and inflation, and if so, on what terms?" Prof. A. W. Phillips pioneered in the investigation of the relationship between change in money wages and the level of employment. In his article, "The relationship between unemployment and the rate of change in money wage rates in the United Kingdom, 1862-1957" (*Economica* Vol.25. November 1958, pp.283-299) Phillips identified stable relationship between the rate of wage increases and percentage of unemployment. The relationship was translated to a curve christened after him. Based on the British data, Phillips says that given productivity increases of 2 per cent per year, stable price can be maintained with unemployment of about 2.5 per cent. Stable wage rate s can be maintained only with unemployment rate of 5.5 per cent. Even then a stable price level would lean heavily on the assumption of stable import prices and there is no deterioration in the terms of trade and there is no devaluation. It means some trade-off between unemployment and inflation sis possible, and that the economy gradually moves from "unemployment with price stability" to full employment with inflation". The short-run Phillips curve is drawn as a left-to-right downward sloping curve (showing an inverse relationship between money wage rate and unemployment rate. In the long-run the Phillips curve is said to be vertical, which means there is no trade-off.

The key suppositions which underlie the predictions of the RE school are as follows.

- a) economic agents optimize
- b) markets clear
- c) expectations are formed rationally
- d) aggregate supply depends on relative prices

It will be seen that there is a clear interrelationship amongst these points. Agents optimizing on the use of information would form expectations rationally. It is held that optimizing behavior would rationally lead to markets clearing (so that the Keynesian assumption of sticky wages is dismissed as *adhoc*). Finally it follows that the labor responds exclusively to relative price signals.

The formal representation of Muth's RE hypothesis is as follows.

$$p_t^* = E_{t-1}(p/I_{t-1})$$

which reads: p_t^* equals the optimal expectation of p_t at time t-1 (E_{t-1}), given all available information at t-1(I_{t-1}). The commonsense interpretation of this expression is that people use all available information and their knowledge of the way the economy works to determine their expectations. For example, if people have the information that the money supply will increase and know that this will result in higher prices, then they will increase their price expectations and alter their behavior. RE is consistent with the attempt to derive the macroeconomic relationships from neo classical microeconomics.²⁴ To adopt rational expectations is an extension of the new classical idea of optimality; it is assumed that individuals do not leave any opportunity unused to improve their decisions. The postulate of rational behavior is fundamental to the new classical economics. In its models consumers and workers not only form rational expectations, they also maximize utility. Similarly firms maximize profits. This is clear from the Lucas-Rapping model. Another feature of this model is the assumption of market-clearing or equilibrium prices. In a macro model, marker clearing is obtained when the general price is determined at the intersection of aggregate demand (AD) and aggregate supply (AS). The conventional view is that such an equilibrium price makes a long-run position to which the actual price is moving. According to this interpretation, the economy is in a continuous disequilibrium. New classical economists defy the conventions, and interpret the equilibrium price as actual price. Their models, therefore, are equilibrium models. Sargent calls RE as an equilibrium concept.

The RE hypothesis imputes to individual agents a startling poise; they watch government actions, know the values of all kinds of variables and even solve complicated economic models to calculate optimal predictions.

Policy Implications of RE Hypothesis

The idea of rational expectations has been a workhorse in developing prescriptions for optimally choosing monetary policy. Rational expectations has been a working assumption

²⁴ The convergence of microeconomics and macroeconomics (ala Samuelson-Nordhaus), in this context is noteworthy.

in recent studies that try to explain how monetary and fiscal authorities can retain (or lose) "good reputations" for their conduct of policy. This literature is beginning to help economists understand the multiplicity of government policy strategies followed. All the new classical arguments tend toward the conclusion that the government should ascertain from an active stabilization policy. The basic claim is that systematic changes in policy variables have no effect on real variables. When workers know what the government is doing they anticipate the effects; their price expectations will correspond with the actual price level ($p_t = p_t^*$) and real output will be unaffected by the policy. Only when workers are surprised and make mistakes $(p_t > p_t^*)$ there will be a change in real output. Some may take this latter result as an encouragement for economic policy that sets out to surprise. But new classical economists counter that even if such a policy were effective, it is undesirable because of the additional uncertainty that it generates. Thus, they counter the new Keynesian policy advice of which students and policy-makers had grown accustomed during the 1960s. The RE hypothesis has three important implications for macroeconomic analysis and policy:

1. Econometric models have limited use in evaluating alternative economic policies. The estimates of the effects of any new policy are based on the original set of parameters. Therefore, econometric models are considered not so helpful in selecting an appropriate policy option.

2. Trade-off between inflation (or money wage rate) and unemployment rate as the one explained with the help of Phillips curve does not exist, even in the short-run. Assuming full employment in the economy, money wages, and prices increase proportionately, leaving the real wage and unemployment unaffected. Thus, even though inflation has

increased, the unemployment rate remains the same. Further, the Freidmanite view is that a natural rate of unemployment consistent with price stability is possible.

3. Discretionary monetary and fiscal policy cannot be used as stabilizers in the economy. Consumers and producers anticipate the implications of change in monetary and fiscal policies.

4. Evaluation

Critics have pointed out certain limitations of the theory of rational expectations.

- 1. If policy makers have more information about the economy or their own actions than does the general public, policies can be derived that will alter output and employment. Of course, if the rational expectations view is correct, output and employment will return to their original levels after the public learns of the new policy. Consequently, the new policy is effective only during the learning process, which may be short-lived.²⁵. In such a case, it might be easier for the policy makers to disseminate the information and let the public act on it rather than going for new policy options.
- 2. Under the RE theory, money wages and prices are assumed flexible. On the contrary, due to various reasons, they may be "sticky". As a consequence, even if expectations are formed rationally, money wages and prices may adjust slowly. The result: changes in output and employment.

²⁵ Note that according to Mundell, "Fiscal discipline is a learned behavior." To put it another way, eventually the unfavorable effects of running persistent budget deficits will force governments to reduce spending in line with their levels of revenue. This view is also promoted by Victor Canto.

3. It is not easy to explain through rational expectations, the prolonged periods of unemployment that we sometimes experience. If expectations are formed rationally the deviations from the equilibrium levels of output and employment should be short-lived. But this implication appears to be inconsistent with actual experience.²⁶

The new classical economists have conducted empirical and econometric tests to prove their argument. In what is called the "new econometrics" there are two components:

- Showing how RE hypothesis improves constraints on the parameters in reduced of the equation (or the solution of the model), to compare the estimates of the model 'with' restrictions and 'without' restrictions. Sargent's results from such a test support the new classical theory.
- 2. Exploring the time series without much *a priori* theory, the so-called "innovation technique applied by Sargent to determine the exogenity of wages with respect to employment. Sargent finds that the real wage rate is exogenous indeed.

Barro applies the innovation technique in a somewhat different form to test the neutrality proposition. His findings confirm the new classical claim that only the innovations have real effects. His tests, however, are not free from theoretical assumptions, the results are sensitive to the specification of the equations for money and real output.

²⁶ In response to this criticism, the proponents of the RE hypothesis have constructed theories of the business cycle based on rational expectations. These theories are said to be capable of explaining the observed movements in output and employment.

New classical economists see ample support for their position in their empirical results. Neo-Keynesians remain sceptical. Blinder, Robert Gordon, among others, severely criticize Barro's test by questioning his assumptions and techniques.

Karl Brunner, a monetarist said that the interpretation of equilibrium analysis by the new classical economists seemed dubious to him. Gordon, the Marxist economist thinks that the strand of recent macroeconomic analysis represented by the RE school is obviously only a part of the broader traditions and tendencies within neoclassical economics. He says that the RE insight represents a natural extension of an effort to treat as much as possible through the choice theoretic perspective. Sheri Markose says that it has been claimed that market equilibrium and many diverse institutions in society such as language, labor, monetary exchange etc., are unintended consequences of individuals' rather than those borne of rational calculation and design. The "Keynes" in the neo-Keynesians makes the latter believe that prolonged and deep depression such as in 1930s can take place.²⁷

Modern neoclassical economists²⁸ have developed models of expectations formation in an attempt to store up their collapsing analytic structure. But Laidler opines that these models are, even as their advocates have admitted, "naive", "arbitrary" or "inconsistent". He concedes that we have a lesson to learn from consideration of the RE hypothesis, that is, there is likely to be far more to the formation of expectations of expectations than the blind

²⁷ The new Keynesians argue that markets sometime do not clear when individuals are looking out for their own interest (ala Smithian self-interest?). There may be information problem.

²⁸ The new Keynesians of the 1980s include George Akerlof, Janet Yellen, David Romer, and Olivier Blanchard.

application of some mechanical formula to a body of data. We must face the implication that heterogeneity of expectations at any moment is more likely to be the rule than homogeneity. Identity and loyalties are still national or even local.

5. Conclusion

So, economics is passing through in phases. There are some who would go further back and re-establish economics as a subordinate branch of political philosophy and their venture is described as the latest version of "new economics".²⁹ Whatever be the school, whatever be the idea, economic theory lives on, serving all the unreasonable or supra reasonable demand that are made on it.

One type of meta argument used by economists or at least by others about economists and their work is the distinction between alternative programmes in economics through the attachment of labels. Economists speak of the "new Keynesian", "monetarist", "new classical", "post Keynesian" and "Marxian" economics to suggest differences in vision and approach. A label is significant in persuasion. Brunner maintains an independent position by rejecting the label "new classical". Tobin, Modigliani, Solow and Blinder have no qualms with the label "neo Keynesian", but Taylor does. Townsend resists a label. Lamer says that each community needs awareness of its place in history; economists included. Economics is a process which is at the same time personal and social. In the "process" we understand not only economic "principles" but also economic "reality" and derive the happiness which that economic reality can give.

²⁹ In Wanniski's view economics is not a mathematical science, but a behavioral science. The mathematical approach requires that human beings be treated as if each were as identical to one another as hydrogen molecules. The problem with that is hydrogen molecules never change. They are the same now as they were a billion years ago. Humanity, though, changes every minute of every day, never quite repeating the same motions as they did a day ago or a millennium ago. This is why "economics" cannot be separated from "politics," and why you will learn "political economics" at Supply-side University, says Wanniski.

The recent global recession shows the significance of market management and good governance – of globalization too. Wanniski opined that John Kenneth Galbraith's reigning hypothesis, that the Crash was an irrational puncturing of an irrational bubble only perpetuates the idea that markets are inefficient and therefore have to be managed by governments. That needs to be justified with today's needs and circumstances. It is also time to reflect upon frugality – avoiding waste of public money, saving energy and reducing materials use. This is the time not only to test theories but also to find practical solutions (Hans, 2009).

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