ISBN: 978-605-9811-01-9

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"ENTREPRENEURSHIP FOR TECHNOLOGY AND INNOVATION - BASED SUSTAINABLE DEVELOPMENT"



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Graphic Design

Çatı Grafik Ltd. Şti.

Abbasağa Mah. Kasap Kamil Sk. No: 5 D: 1

Beşiktaş - İstanbul

Phone: +90 212 260 92 32 - Fax: +90 212 260 92 33

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Publication Services - Print

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Congress Organizing Secretariat

Figür Congress & Organization

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50 copies of the issue has been published.

Printing Date: 2015

In addition 500 CD's of the issue has been made.

The authors have the all the scientific and legal responsibilities of the articles.



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we develop a skill based matching approach for depersonalized applications. In order to improve the quality of the platform, a prototype is prepared and usability studies are accomplished for different stakeholders. Usability is defined as a quality attribute that assesses how easy user interfaces of as system is. There are five aspects of usability namely, learnability, efficiency, memorability, errors, and satisfaction. Usability tests are applied to individuals from different stakeholders, such as employers, employees and policy makers. In this study we present the results of the usability tests that can be used for improving better platforms.

OP-425

Energy, Innovations and Economic Development

Bilal Nawaz Kayani
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In this article we are going to study the Energy Crisis in Pakistan and its impacts on the economic development, more importantly the role of energy and innovations in economic development. Where the business and the financial economists pay major attention to the impact of oil and other energy prices on economic activity, the majority theory of economic Development pays little or no attention to the role of energy or other natural resources in promoting or enabling economic development. Resource and ecological economists have criticized this theory on a number of grounds, especially the implications of thermodynamics for economic production and the long-term prospects of the economy. While a fully worked out alternative model of the development process does not seem to exist, extensive empirical work has examined the role of energy in the development process. The principal finding is that energy used per unit of economic output has declined, but that this is to a large extent due to a shift in energy use from direct use of fossil fuels such as coal to the use of higher quality fuels, and specially electricity. When this shift in the composition of final energy use is taken into account energy use and the level of economic activity are found to be tightly coupled. When these and other trends are taken into account the prospects for further large reductions in the energy intensity of economic activity seem limited. The implications for environmental quality and economic sustainability are discussed.

OP-426

What it Means to be a New Classical Economist ❊

Özlen Hiç Birol
Istanbul University

The New Classical School works with rational expectations and full flexibility of prices and wages in all markets. The concept of rational expectations was first introduced by J.F. Muth (1961). Robert E.R. Lucas Jr. (1972) developed and popularized this hypothesis. Thomas Sargent, Neil Wallace, Robert Barro are other distinguished representatives of this school.
What is important in the New Classical School is first of all the assumption of full flexibility of prices and wages. As a result of this assumption, all markets will reach equilibrium, economy will automatically settle at the point of full-employment. Unemployment will be voluntary which will be denoted as "natural rate of unemployment".
According to Rational expectations hypothesis, on the other hand, all the economic agents have full knowledge and information about economic decisions – including government policies and their effects – and take into account their future expectations in a right way. In this case, the government policies which will be expected and known to everybody will be already taken into account and the decisions on prices and quantities are formed accordingly, thus prices are formed in a complex fashion. In this manner, efficiency of government policies neutralized. Hence, as much as Keynesian financial policies, monetarist monetary policies are ineffective as well. The only effective impact in economy seems to be "unexpected shocks" and accordingly "unexpected" or "shock". New-Classical School have had weight after '70s due to inflationary effects of the Vietnam War and the stagflation following 1973-1974 oil shock.

OP-427

Bayesian Expectations and Strategic Complementarity: Implications for Macroeconomic Stability ❊

Volkan Hacıoğlu
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This paper examines the heterogeneous market in which economic agents of different information-processing abilities interact. In the theoretical framework, the market is composed of three different types of agents, "sophisticated" agents with rational expectations, "naive" agents with adaptive expectations, and Bayesian agents endowed with learning abilities. The behavior of these agents in the context of an important economic problem of nominal price adjustment after a fully anticipated one-time negative monetary shock is examined. If sophisticated agents with their perfect foresight find it profitable to imitate the biased behavior of naive agents, then the interaction of agents exhibits strategic complementarity. Thus the naive agents will have a disproportionately large effect on sluggish price adjustment towards equilibrium. However, the introduction of Bayesian agents with learning abilities into the market will have a compensatory effect by mitigating the price rigidity. Since Bayesian learning is allowed in heterogeneous market, Bayesian agents that first start as naive will undergo a learning process to become sophisticated after a certain period. In conclusion, the proportion of naive agents decreases in favor of sophisticated agents as depicted in the simulation model. As a result, the price adaptation towards equilibrium is accellerated.

OP-428

Determination of the Regional Impact on Innovation with an Ordinal Logit and a Multilevel Analysis ❊

Mouna Khiari, Jeleleddine Ben Rejeb
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Although innovation is considered as an engine for the economic growth of the firm, it remains a risky and complex process. However, in the current context of international competition, firms can't survive without innovating. The identification of the main determinants of an innovation effort by a firm is a subject that has been much discussed in recent studies. This research aims to identify the main determinants of the innovation decision of Tunisian companies. It evaluates the contribution of R&D efforts and other factors summarized in the company's ability to cooperate on the result of product, process, organizational and marketing innovation. As well, we will check up whether the 24 governorates of Tunisia contribute equally to innovation within companies. To do this, we use data on a sample of 620 firms observed by the Ministry of Scientific Research and Development Competency in Tunisia in 2008 spread over 24 governorates. Methodologically, we propose in the first place a logistic regression in which the endogenous variable expresses the output of the firm number's of innovation (one type, two types, three types or four types of innovation). The exogenous variables selected are the activities of R&D of the company, cooperation with research centers, foreign companies and universities, the qualifications of the employee, the foreign capital share, the turnover, etc… The results of estimating a multi-level model show that innovation differs from one governorate to another. The results of the estimation of an ordinal logit and a multi-level model show that expending on research and development is a key determinant of innovation (odds ratio equal to 5.3) and that it differs from one governorate to another (the variance of weights assigned to Level 2 (governorates) equal to 27.7%).

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28 - 30 May 2015 ISTANBUL - TURKEY

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Procedia - Social and Behavioral Sciences 195 (2015) 574 – 579

Procedia
Social and Behavioral Sciences

World Conference on Technology, Innovation and Entrepreneurship

What it means to be A New Classical Economist

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Abstract

The New Classical School works with rational expectations and full flexibility of prices and wages in all markets. The concept of rational expectations hypothesis (REH) was first introduced by J.F. Muth (1961). Robert E.R. Lucas Jr. (1972) developed and popularized this hypothesis. Thomas Sargent, Neil Wallace, Robert Barro are other distinguished representatives of this school.
What is important in the New Classical School is first of all the assumption of full flexibility of prices and wages. As a result of this assumption, all markets will reach perfect equilibrium, economy will automatically settle at the point of full-employment. Unemployment will be voluntary which will be denoted as "natural rate of unemployment". According to REH, on the other hand, all the economic agents have full knowledge and information about economic decisions – including government policies and their effects – and take into account their future expectations in a right way. In this case, the government policies which will be expected and known to everybody will be already taken into account and the decisions on prices and quantities are formed accordingly, thus prices are formed in a complex fashion. In this manner, efficiency of government policies neutralized. Hence, as much as Keynesian financial policies, monetarist monetary policies are ineffective as well. The only effective impact in economy seems to be "unexpected shocks" and accordingly "unexpected" or "shock". New Classical School have had weight after 70s due to inflationary effects of the Vietnam War and the stagflation following 1973-1974 oil shock. Hence the economic conservatism both during Regan era in the United States and Thatcher era in Britain effected the policy implementations for a while. However, it was not possible to prevent inflation; on the contrary, unemployment reached a new and higher dimension. Therefore, once more but this time with more cautious approach, a mix Keynesian and Monetarist policy implementation was adopted.

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Peer-review under responsibility of Istanbul Univeristy.

Keywords: New Classical School; New Classical Macroeconomics, New Classical Asuumptions, New Classical Policy Recommendations

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Peer-review under responsibility of Istanbul Univeristy.
doi:10.1016/j.sbspro.2015.06.136

1. Introduction

During the '70s the New Classical School become widespread particularly between the younger generations at the time in academy circles. So much so that it was called the "Counter Revolution". Note that many economist who lean towards Monetarism also called it the "Monetarist Counter Revolution", but in fact, the counter revolution should be reserved for New Classicals which were more radical compared to Monetarism and more widespread. Also note that, although the discussion went on mostly within the academic circles and many younger academicians became New Classical, still the practitioners of economics, consultants to firms, financial institutions etc. remained Keynesian during that time.

The New Classical economists, as will be explained shortly, were thoroughly conservative in their views and they were against any economic policy to be followed by the government. They all adhered to microeconomics and to macroeconomic theory and Walrasian equilibrium based on the assumption of the prevalence of perfect competition in both the commodity and the labor markets. They also assumed that all economic agents had access to full information and could make accurate predictions or expectations. This is called "Rational Expectations (RE)". Although the assumption of the RE and building economic models based on RE assumption was first pioneered by J.F. Muth, "RE and the Theory of Price Movements, Econometrica, July 1961", this was taken up within a general macroeconomic model only during the early '70s by Robert E. Lucas,Jr.Lucas was the pioneer in formulating the New Classical system and other notable New Classicals were Thomas Sargent, Robert M. Townsend, Robert Barro, etc.

2. The New Classical School and the Counter-Revolution of the '70s

There are several reasons why Keynesianism fell from grace during the 70's while both Monetarism and particularly New Classical macroeconomic thought become in vogue.

- As A Blinder, a notable New Keynesian economist, points out, the first reason was "the tumultuous economies of the '70s which witnessed the oil shock". This had been preceded in the US by the adverse inflationary period caused by the Vietnam War which had given rise to both balance of payments (BOP) deficits and budgetary deficits. The evolving stagflation following the oil shock had played havoc with the Phillips Curve (PC), a powerful tool used by Keynesians. This was mistakenly taken as the proof that the Keynesian Macroeconomics was not valid, at least not in the Keynesian sense. M. Friedman explained it in terms of a vertical long-run (LR) PC is a succession of negatively sloping short-run (SR) PC's. But the New Classicals refuted the concept of PC all together.

- A second reason why Keynesianism fell from grace and New Classical School become widespread concerns the question of "consistency of macroeconomic analysis with microeconomic foundations". Indeed, the traditional microeconomics assumed perfect competition in all the markets and Walrasian Equilibrium. In contrast, any reference to microeconomic foundation of Keynes and Keynesians was not thorough and Keynesian macroeconomics was comprised of relationships between macro variables without going much deeper into how they are derived. In fact, as New Classicals rightly pointed out, if we accept perfect competition in all markets and Walrasian equilibrium, this should lead us to perfect equilibrium in all the markets including the labor market and Keynesian less-than-full-employment equilibrium due to lack of effective demand should not arise. Therefore, as New Classicals argued correctly that the Keynesian macroeconomics lacked microeconomic foundations and was, in fact, inconsistent with the main body of traditional micro economics based on perfect competition and Walrasian Equilibrium.

This is a theoretically correct criticism, but what is wrong with the argument of the New Classicals is that perfect competition assumption is not a realistic assumption representing the modern economies. Therefore, the New Keynesians, who accepted the Keynesian unemployment (un-N) proposition and also accepted the criticism of the New Classicals that Keynesian macroeconomics lacked microeconomic foundations, tried to lay down the micro

foundations for Keynes, but not by accepting perfect competition and Walrasian equilibrium but by pointing out to diverse reasons of imperfect competition, inflexibility of wages and prices, lack of coordination between markets, etc.

- The third reason why New Classical macroeconomics become vogue during the '70s, and particularly among the younger generation of academicians is its elegant mathematics which is not quite the case in the Keynesian macroeconomics. Furthermore, the new macroeconomic analysis of New Classicals meant that those who accepted it, did not have to go back to all the old economic literature, but simply build on the new macroeconomic system.

It is interesting that, as noted above, the practitioners remained Keynesian even throughout the '70s because as A. Blinder points out, the Keynesian System still worked reasonably well for predicting where the economy goes, and for policy recommendations. This was why practitioners of economic profession did not want to go into all the theoretical discussions which had little predictive value (i.e. use) for them. In A. Blinder's words, for the practitioners of the economic profession it was the case of "if it ain't broke, don't fix it".

3. The New Classical Methodology

3.1. The Basic Assumptions of the New Classicals

The basic assumptions of the New Classicals can be collected in two groups. The first is rational expectations, and the second is full-flexibility of all prices and wages (born nominal and relative) in all the markets, and Walrasian equilibrium.

- *Rational Expectation Hypothesis*

According to New Classicals, all economic agents are rational and they maximize, they make maximizing decision with full access to knowledge (information) which will enable them to make accurate predictions. At least, there should be no systematic errors in their decisions. This goes not only for entrepreneurs but also for workers. Keynes and Keynesians always maintained the idea that because of their position entrepreneurs make investment-, production- and employment decisions and have better aspect to information and can make accurate predictions about, say, future prices, and price expectations. But Keynesians believed this was not the case for workers who made systematic errors in underestimating future inflation.

This is not the case in traditional classical macroeconomics; neither in Neo-Classical Economics, and certainly neither in the New Classicals School. In fact, according to New Classicals, when making decisions, the economic agents not only try to predict accurately with access to full or adequate information but they also predict accurately what government policies would be pursued in future under the economic circumstances and hence they include the effects of those government policies in their predictions and estimates. This makes such policy measures to be followed by the government totally in effective.

Therefore, the New Classicals are skeptical not only about the policy recommendations of Keynesians as futile but also about the policy recommendation of Monetarists that we should have a money stock growing at a constant rate because these policies to be followed by the government would be completely incorporated into the expectations and estimates or predictions to be made by all the economic agents. Of course, the exception would be the implementation of a "shock policy" which is a policy to be implemented by the government which could not be predicted beforehand by the economic agents.

If we look at these assumptions deeper, we find out that New Classicals believe that all economic agents could have access to past time series and cross-sectional data and make accurate predictions and extrapolate the future

course of events. This is termed "ergodicity" (in short, it means, history repeats itself), in addition to "universality" (which is valid for all economic agents). Note that under these circumstances, the entrepreneurs, for instance, can arrive to a set of probabilities and can make rational calculations about risk.

This is not the case in Keynes because according to Keynes, we cannot predict "future from past" data; there would always be an element of "uncertainty" as opposed to "risk"; that is why investment is, in Keynes words, a psychological matter which can be explained by "animal spirits" and very much depends on the psychological estimates of entrepreneurs as to whether the future is going to be stable and growing or the reverse.

Of course, as the New Classicals would point out, not all the entrepreneurs would be capable of making accurate future predictions and estimates of risk, and those who won't will be wiped out by the market eventually. And this is good for the economy because these entrepreneurs are unproductive and inefficient. Thus, we may see this event of "elimination of the inefficient entrepreneurs" as a social Darwinism.

Still another assumption of the New Classicals is that as in microeconomic analysis they take up a typical maximizing agent - be it the entrepreneur, the worker, the consumer or the saver- and they analyze this typical agent and his equilibrium and then all the macroeconomic parameters are derived simply by a mere aggregation or summation of the equilibria of this representative agent.

- *Perfect Competition in All Markets and Full-Flexibility of Prices and Wages*

The second major assumption of New Classicals was the acceptance of perfect competition an all the commodity and labor markets and full flexibility of nominal prices and wages implying full downward-movement in a simultaneous and immediate fashion as implied in the Walrasian Equilibrium by the auctioneer of the prices and wages. The Walrasian Equilibrium system leads to perfect equilibrium in all the commodity and labor markets. This means that there would be no excess supply or demand for any commodity. This is valid for the labor market as well which means that for the labor market, the equilibrium would be automatic at that income level which would give us the natural-rate-of-unemployment (nru). Note that New Classicals have accepted the nru-concept first pioneered by Friedman in their analysis and assert that automatic equilibrium of the labor market would be at such a point instead of the concept full-N equilibrium that we encounter in the Traditional and the Neo-Classicals Systems. In such a case of perfect equilibrium in all markets and automatic equilibrium at nru, there is no scope for un-N due to lack of effective demand, so the Keynesian conclusion is simply inconsistent and will not hold under the traditional micro assumptions of perfect competition in all markets as accepted by the New Classicals.

In fact, while Friedman argues that the economy would arrive at nru and y_{nru} with a lag due to adaptive expectations, according to the New Classicals, the economy will come to equilibrium at nru immediately. Thus, while Say's Law and neutrality of money will hold only in the long-run in Monetarism, in the New Classical School, neutrality of money and Say's Law will hold immediately. In this respect and also in the argument that no policy implementation is going to be effective, New Classicals are more radical than Monetarists and they contradict Monetarists as well as Keynesians.

3.2. The Significance of These Assumptions

Which assumption is a more crucial assumption that leads to the conclusion of perfect equilibrium (i.e., equilibrium at nru)? The REH or full flexibility of wages and prices and Walrasian Equilibrium.This question has been answered by New Keynesians. For many New Keynesians like Stanley Fischer, John Taylor, etc., constructed models which retained the RE hypothesis but worked with the assumption of inflexible prices and wages and imperfect competition. The result was, under these assumptions we would still have Keynesian less-than-full-N equilibrium or un-N due to lack of effective demand and hence, under these conditions, Keynesian policy recommendations were even more effective. Thus, in short, full flexibility of prices and wages and Walrasian

equilibrium is the more critical assumption compared to REH in leading the New Classical macroeconomics to automatic perfect equilibrium at nru.

This is presumably one reason why most of the New Keynesians were willing to accept and work with REH but concentrate on various reasons of lapses from perfect competition or various forms of imperfect competition or lack of coordination between markets.

3.3. The Equilibrium in the New Classicals

We may visualize the equilibrium in the New Classical School by means of AD and AS Curves with the aid of the diagram below. We owe this diagram to Arjo Klamer, "The New Classical Macroeconomics, Conversations with the New Classical Economists and their Opponents, 1984".

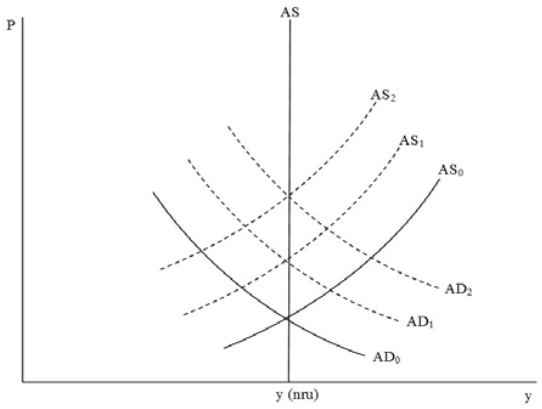


Fig. 1.

3.4. Explanation of the Business Fluctuations by the New Classicals

There are two different reasons were offered by New Classicals to explain business cycles, that is, the presence of un-N met in certain years.

- One explanation was offered by Lucas who explained the presence of business fluctuations with SR deviations from REH and accurate predictions on the part of economic agents.

- The second explanation is more radical. It explains business cycles still as Pareto optimal adjustments to the adverse effects on the economy of technological changes, by T. Sargent.

4. Conclusion

A. Blinder, when giving out the reasons why Keynesianism fell from grace and New Classical School ad Monetarism become wide-spread during the '70s, pointed out that an important factor was rising economic conservatism during these years. In general, politicians, intellectuals and masses of people had become more conservative during the '70s in the US compared to the decades '50s and '60s. Thus, they supported any theory that was basically conservative compared to Keynes, this was an important reason why, for instance, although Monetarism was first formulated during the '50s and '60s, it became wide spread only during the 70's and was

basically implemented in the US by R. Reagan and in UK by M. Thatcher. But the results of this implementation were adverse and Monetarism seized to be implemented after a brief period.

There was of course, no way of policy implementation of the New Classicals School, except that any lessening of government intervention can be interpreted as an indirect result of New Classicals. The only problem here is that a small government and balanced budget is not only recommended by Monetarists as well. But given the prevailing conditions in our time Keynesians and New Keynesians may also advocate similar measures stemming however, from basically Keynesian macroeconomic system.

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