Chapter VI. The Current Standard Theory: The Pre-Keynesian Legacy

I. Introduction

During the 1970's, an observer of the gyring and glimmer of American economists engaged in recent years might have been taken to believe that a serious controversy over fundamental issues was raging between "Keynesians" and "Monetarists." Newspapers and magazines, as well as the business and financial press, made it appear that a deep debate about important matters was taking place.

In truth, the differences were minor as that. It therefore may surprise many to learn that these presumably competing camps used the same economic theory and, furthermore, that the public policy prescriptions of the major rivals really do not differ, very much. The discipline's debate was largely academic nit-picking and the public controversy was largely press and political burbling. The members of the two schools differ mainly in minor empirical judgments as to the speed with which the economy reacts to different changes that might occur and in their views as to the appropriate use of a smattering of policy instruments. In this debate, Monetarists emphasized that changes in the money supply destabilize and stabilize the economy and Keynesians view fiscal policy manipulations as the primary policy tool to offset deviations from desired situations.

For both factions believe that if the authorities correctly set policy instruments, the economy could be fine tuned. They believe that virtually permanent full employment without inflation can be achieved in a capitalist framework that the business cycle can be banished from the capitalist world; neither school believes their economic theory does not allow for any dis-equilibrating forces that lead to phenomena such as financial booms and crises.

Neither establishment Keynesians nor monetarists are critical of capitalism as such; at most they are critical of some institutional or policy details.
However, both are conservative in that they accept the validity and viability of capitalist economic institutions. Neither the liberal Keynesian nor their more conservative Monetarist brethren are troubled by the possibility that there are serious essential flaws in a market economy that has private property and sophisticated financial usages. The proposition to the effect that the internal dynamics of a capitalist business cycle economy lead to periodic breakdowns of the economy is foreign to their economic theory of both protagonists.

The neo-classical synthesis is the label for the economic theory that is common to the "Keynesians" and the "Monetarists". It is the theory that is found in the standard textbooks and is taught in elementary and graduate economics. The theory combines strands of thought approximately derived from Leon Walras - a nineteenth century economist - with some insights and analytical apparatus derived from Keynes. Even though Keynes held that his new theory of 1936 marked a sharp break with the economic theory that then ruled, the perspective of the neo-classical synthesis is that what is important and relevant in Keynes can be assimilated into the older tradition of economic thinking, derived from Marshall and Walras. The dominant view among contemporary economists was expressed by Gardner Ackley - a member and then chairman of the Council of Economic Advisors in the Kennedy-Johnson era - when he held "that Keynes' work represents more an extension than a revolution of 'Classical' ideas ..."1

Although Ackley in his political role was at the opposite end of the spectrum of conventional economists from Friedman, his view, that what is essential in Keynes' new doctrines of 1936 is not much more than a minor

---

1 Ackley, G., Macroeconomic Theory, p. vii.
along desired paths. Neo-classical theory has broken down on three fronts — logically, with the outcome of the two-Cambridge debate, empirically, as financial and systemic instability emerged as dominant facts, and politically, as conventional economic policy proved incapable of handling the incoherence of stagflation.

The process of assimilating a portion of Keynes's work to the earlier tradition began with a number of the most famous reviews and early academic interpretations of Keynes. In this process important aspects of Keynes' theoretical structure were thrust aside and ignored. As a result of this selectivity, revolutionary insights into the functioning of a capitalist economy that are contained in Keynes' analysis were lost. Those who are called Keynesians in the public discussion accept the validity of the conventional interpretation which ignores those elements of Keynes' thinking which lead to a serious critique of capitalism. This is why Joan Robinson calls the standard Keynesian doctrine "Bastard Keynesianism". As far as an understanding of Keynes, by policy advising economists and their political patrons, is concerned, we still await a Keynesian Revolution.

The critically important elements of Keynes that were ignored in the development of the neo-classical synthesis deal with the pricing of capital- assets and the special properties of economies with capitalist financial institutions. Issues on which the neo-classical synthesis — foundered in the two Cambridge controversies. These "lost" portions of Keynes can serve as the foundation for an alternative economic theory that is a better guide to interpreting economic events and more relevant for economic policy than current standard theory. This Keynesian theory makes instability, such as has been evident since the middle 1960's, a
A consequence of institutional arrangements essential to a capitalist economy, is for the system to function... 

This result that instability is a systemic attribute, stands in sharp contrast to the inability of the neo-classical synthesis, whether in its "Keynesian" or "Monetarist" version, to explain instability except as the result of outside shocks. The key alternative theory makes instability... 

- both upward to accelerating inflation and downward to deep depressions: a result of the workings of a capitalist market mechanism, whereas the neo-classical synthesis, in both its Monetarist and its Keynesian version, explains instability as a result of external shocks or policy errors. The neo-classical synthesis makes a major attribute of our economy the result of some "devil" or "demon".

The theory of Keynes and the neo-classical synthesis are different because the neo-classical synthesis focuses on how a decentralized market economy achieves coherence and coordination in the production and distribution of a myriad of goods amongst a large number of units whereas Keynes focused upon the processes that determine the capital development of an economy. In developing the neo-classical synthesis equilibrium and equilibrating tendencies are emphasized whereas Keynes asked why we live out our lives in a transition, i.e. in disequilibrium. The neo-classical synthesis is rooted in trading at a Village Fair, whereas Keynes discussed an economy in which deal-making by bankers and business men in "the City" or on "Wall Street" is important. Whereas the neo-classical synthesis especially in its more sophisticated mathematical statements, ignores the capitalist nature of the economy, Keynes was at all times dealing with a capitalist economy.
In examining how a decentralized market process can achieve coherence, the economic theory derived from Walras assumes that there are no significant internal destabilizing forces in a capitalist economy.

The Walrasian input to the neo-classical synthesis is captured in the discussion of the hypothetical pure exchange economy. The neo-classical results are obtained by developing the implications of a model which does not allow for capital intensive production, capital-assets as we know them, and capitalist finance. Within the limitations of pure exchange, what relating the theory demonstrates will be called a trading game, it is possible to demonstrate that a decentralized market mechanism achieves a coherent and consistent result.

After demonstrating that a coherent result is obtained through trade, and showing that the coherence properties carry through for an economic model that encompasses production but only under heroic assumptions about the nature of production, capital, and time, the approach of the neo-classical synthesis is extended to cover the determination of income, money prices and economic growth. In particular, supply and demand relations for labor are "derived," and it is assumed that the price level deflated wage will adjust so that labor supply and demand are equal. The theory is set up so that any deviation from the labor supply-labor demand curve is removed, and the theory does not explain how the initial deviation is brought about. Unemployment is unexplained within the theory. The emphasis is upon the tensions that make for equilibrium, not upon disruption.
short run or transitory situation in which unemployment exists to a
long run situation in which full employment rates is detailed, but the
process by which a less than full employment situation is generated is
either left vague or ignored. The emphasis is upon the forces making for
equilibrium, not upon disruptive processes.

The neo-classical synthesis explanation of economic growth is simple:
accumulation and the rate of growth of the labor force determine the rate
of growth of output. The savings ratio yields the proportion of income that
is a demand for capital accumulation and thus determines the rate of growth. This
theory, which treats savings propensities as the tune caller in determining
investment and which makes investment the dominant determinant of growth,
has no room whatsoever for the speculative and financial relations that
Keynes emphasized and which are important in our economy.

The monetarists do short-run analysis - where inflation and unemployment
exist - on the basis of a theory which does not allow for inflation or
unemployment except as the result of outside forces. In order to do this
The monetarists identify an outside force, inept changes in the money
supply, as the cause of unemployment and inflation. The Keynesians of the-
neo-classical synthesis do not have a consistent explanation of the existence
of unemployment and inflation; they muddle up their short run theory as a
muddle! They believe that the economy will not stay at full employment by its own-
workings, but they are imprecise about the mechanism that leads to deviations
from full employment and inflation are not defined.

The critics of the neo-classical synthesis contend that the maintenance
of abstractions with regard to money and capital-assets which are useful
in explaining how a decentralized market can in principal achieve coherence
Abstrating from limited money financing relations and money as a useful analytic technique, where the problem that no "act" is to explain how a decentralized economy can in principle achieve coherence. However, economic theory based upon these abstractions fundamentally misspecify the relations that determine income, price levels and accumulation.

The new classical synthesis explaining business cycles so misspecified the relations at work that its results are most relevant for our economy.

In addition to demonstrating that decentralized market processes lead to coherent results, the tools and techniques of the new classical synthesis...
are applied to demonstrate that a decentralized competitive market mechanism achieves what is called an optimal result. The optimum that is derived is of a very special character: it rules out interpersonal comparisons of well-being and takes some initial distribution of resources (and thus of income) as given. The theory by its self denying restricted definition of an optimum rules out any judgments about the well-being implications of income redistribution policies. Furthermore the assumption of universal competition and the abstract treatment of time and choices over time that are needed for demonstrating the optimality of competitive equilibrium are so strict that leading neo-classical theorists recognize that a major virtue of recent research on sophisticated general equilibrium system is the demonstration that equilibrium and optimality cannot be expected to rule in fact. [Cite Hahn]

The optimality extension of neo-classical theory is not of importance for our purposes. Any economy which is subject to inflation, unemployment, investment booms, and near financial crises such as have taken place in our economy in the decade 1966-1973 obviously deviates markedly from any abstract optimum. Inasmuch as we need to do better than we have and we recognize that the best is often the enemy of the good we can easily forget about the optimum. Even though a tendency towards coherence exists in the details of production and consumption are determined in the capitalist market economy the processes of a market economy can tend to disrupt coherence. The systematic flaws that lead to instability make the discussion of the optimality of market mechanism irrelevant.

It is worth noting before we go into an exposition of the neo-classical
synthesis that the basic theory has become extraordinarily abstract and mathematical. Society and social organization have disappeared. The aim of theorizing seems to be to find formal set ups whose solution conforms to the notion of efficiency that has been developed. These set ups seemingly make an economy the lifeless arena in which genetics, technology, and the initial endowments of depersonalized agents play abstract auctioning or recontracting games as they seek out an optimum. In our world of imperfect knowledge and imprecise actions standard theoretical analyses posit two perfect knowledge and perfect markets. Whereas these mathematical models are of interest because they show that coherence is possible, we really need to know the borders of the domain within which market processes can be used to achieve desired yield coherent results. In particular, the characteristics have markets in which endogenous disequilibrium processes will from time to time emerge in coherence upon the economy need to be known. The practical problem of economic policy is to identify the sources of instability and determine policy interventions that constrain the emergence of incoherence among policy actions from intervening in those markets whose internal operations threaten yield coherent results.
II. Coherence and Economic Policy

Coherence is the absence of chaos, more precisely, a system is coherent if there are connections among the variables within the system, so that if a system is coherent, then the reaction of the variables within the system to external changes is predictable. In economic terms, coherence implies that a close approximation to equality between quantities supplied and demanded of the various commodities and services almost always rules, and that such virtual equality is usually achieved by rather minor adjustment of either prices or quantities.

In order to explain the observations that markets lead to market clearing results, it is necessary to construct a theory in which market clearing prices and quantities are established. Furthermore in a coherent system, unless external changes are massive, variables should not change very much in a short period of time; tomorrow should be very much like today. Even though the system must allow for changes in detail, the typical situation in a coherent system is that after the fact the observed changes can be explained as an orderly response to identified external stimuli combined with the workings of internal mechanisms.

Decentralized market mechanisms do not usually result in chaos. However, from time to time unit behavior and market results occur that can be characterized as incoherent. One purpose of a theory that explains why markets are usually coherent is to make precise the limits to market structures, connections among units, and unit behavior that lead to coherence. An economic theory that reflects an awareness of the possibility of incoherence should aim to explain how the connections among units, external
stimuli, and economic policy affect the emergence of incoherence, the existence of coherence, and the details of the result that rules.

Because we know that from time to time the coherence of the market system breaks down, the Great Depression of the 1930's is one example, of a breakdown in the coherence of market outcomes. Useful theory must explain both the coherence of the pricing process as an attribute of the economy when a restricted domain of markets are relevant, and allow for the possibility of a breakdown in the coherence of the economy when an enlarged set of markets are important. One way to do this is to build a theory which does not allow incoherence to be a normal functioning attribute of the economy, but which explains breakdowns of the principle process as the result of unusual shocks or some institutional aberration. Occasional disorder is consistent with the existence of underlying coherence, if outside events or weaknesses in non-essential institutions are responsible for the disorder. The neo-classical synthesis explains observed incoherence as the result of external shocks. Because the neo-classical synthesis is rooted in the need to explain coherence, it does not allow for internal or endogenous forces to lead to instability. The neo-classical synthesis will serve as an adequate economic theory for epochs in which incoherence and instability are not strong features of the economy. Once instability becomes a prominent feature of our economy the neo-classical synthesis breaks down as a guide to policy for in these circumstances the most interesting phenomena that are taking place cannot be explained within the theory.

However, it is impossible to demonstrate that coherence is an attribute of an economy if there are market processes and connections among markets which lead to the appearance of excess supply or demand in some sectors of markets by increasing excess/supply or demand. Thus it is of vital
importance for the validity of the neo-classical synthesis that apparent incoherence, such as that of the Great Depression, must be explained by in terms of external factors, such as imperfect institutions that are not essential to a market economy or errors of human judgment. An overt intervenor in economic affairs, such as a Central Bank (Federal Reserve System) which must use judgment and has potent weapons is an obvious observed scapegoat to be responsible for incoherence, if a theory that asserts that incoherence can only result from outside forces is to be maintained. Other obvious scapegoats for observed incoherence are trade unions and giant firms that have market power, foreign controls and government. Many explanations of the Great Depression and the inflation of the 1970's are in terms of such "outside" influences.
However there are some markets - those in which the future effects are important - in which it is difficult to show that these reactions that are required if coherence is to take place. In an economy where such markets are important, the decentralized pricing process may lead to coherent reactions in some sets of markets even as internal disrupting processes are at work in other markets. To allow for this phenomena a distinction between weak or partial and strong or total coherence of the pricing process in decentralized markets is helpful. Weak or partial coherence exists if for a limited or prescribed set of markets, and usually but not necessarily always, a decentralized market process achieves an orderly result. Strong or total coherence exists if over the entire spectrum of markets, and in the absence of strong outside shocks or failures of non-essential institutions, the market mechanism achieves coherent results. A fundamental result of the neo-classical theory is that the internal workings of a market economy are such that any initially incoherent situation will be transformed into a coherent result by the workings of the market mechanism, i.e. the neo-classical synthesis asserts propositions that strong coherence exists in market economies.

Another way of phrasing the question of coherence is whether or not there are flaws in the market mechanism. The strong coherence proposition implies that there are no flaws. A weak coherence proposition allows that flaws exist when market relations are extended to cover a wide array of markets, but nevertheless holds that the market mechanism is not flawed for identified restricted sets of transactions and for limited sets of markets. Weak coherence also allows for market processes to
lead to a conditionally coherent result for the economy as a whole can be sustained. Policies are adopted or institutions are created where the "conditional" nature of the coherent result depends upon actions that constrain or offset tendencies towards incoherence. Any policy position which argues for the need for stabilizing interventions implicitly or explicitly assumes the economy is weakly coherent.

The proposition that the pricing mechanism of a decentralized capitalist economy can lead to coherent results if properly guided is important for policy analysis. This proposition implies that intervention is necessary to achieve overall coherence even though the market mechanism can be relied upon to take care of the details of the overall result. Once conditional coherence is accepted as characterizing a market economy and once the conditions which limit the domain of coherence are known, then it is possible to define the subset of markets over which the pricing process can be free to operate and to determine how institutional changes and policy interventions affect specific details within the domain where market processes are effective. With conditional coherence, blind faith in and acceptance of the results of market processes cannot be sustained even as the market is recognized as a powerful device that can be used to achieve policy objectives. Furthermore, once it is recognized that conditional coherence is a characteristic of a market economy, then it must be accepted that legislated and evolutionary institutional changes affect the policy actions that are needed to achieve overall coherence as well as the details of the coherent outcome. Policy cannot be a one and done.

A pervasive distrust of the price system exists among policy makers and the public. This distrust is valid, not because market mechanisms have no virtue but because excessive claims have been made for the
market mechanism. However as decentralized markets require a minimal input of bureaucratic personnel and judgment, it is desirable and efficient to use this device where it works. Thus an understanding of both how the price mechanism achieves coherence and the endogenous processes within the market mechanism that lead to incoherence are required.

For coherence to rule in a subset of markets it is necessary that a substitution principle apply. This principle has two facets. One is that if supply conditions change so that the price at which a commodity (or service) used in consumption or production rises (or falls) relative to other prices the quantity taken will decrease (or increase); this means that demand curves are usually negatively sloped. The second facet is that if the price of a commodity rises (falls), the quantities that will be taken of other commodities at a fixed price of the other commodities will tend to increase (decrease). That is the quantities demanded of the commodities whose relative prices rise tends to decrease whereas the quantities demanded of those commodities whose relative prices fall tends to increase. The principle of substitution leads to the proposition that higher relative prices tends to discourage use of a commodity or service.

Of course the strength of these substitution relations is a question of fact. Any believer in the market mechanism or in free enterprise must believe that this principle of substitution is sufficiently strong for commodities that enter into the budgets of households and in the choice of production processes, both with given capital assets and with capital assets as an item of choice, so that decentralized markets are reliable tools for allocating output to households and input to businesses.
In this view, if intervention is necessary, it is, only because monopoly of some form exists. However, intervention because of monopolies is not needed to achieve coherence but is required because of inequity or efficiency adversely affected by monopoly.

In financial and capital-asset markets, where speculative and conjectural elements are strong, the principle of substitution does not always apply. A rise in the relative prices of some set of financial instruments or capital-assets may very well increase the quantity demanded of such financial or capital assets. Thus a rise in price may breed conditions conducive to a further rise in price.

The demonstration that an exchange economy is coherent and stable does not carry over to an economy with capitalist financial institutions, for the rise in prices brought about by unemployment does not always lead to the increase in investment that is needed to eliminate unemployment.

Thus external controls and coordinating mechanisms are needed in a capitalist economy, even as there is no need for such intervention in those markets in which an excess supply sets in. Actions which would tend to eliminate the excess supply

Central banks and other financial control devices developed early in the capitalist epoch, even as the theories that led to Laissez-Faire were dominant, because the facts of instability indicated. The emergence of Central Banking is a response to the embarrassing incoherence of financial markets, an incoherence that indicates that "free markets" won't do as a universal policy prescription for economies that have capitalist financial institutions.
III. Roots of the Neo-classical Synthesis

Even though Keynes' intellectual capital was inherited from Marshall, the neo-classical synthesis is a melding of Walras and Keynes, with the Walrasian influence dominant. One reason why the full power of Keynes' revolutionary insights were never realized in modern economics was that Keynes was integrated with Walras. Keynes - like Marshall - worked with a different view of equilibrium than Walras, whereas today's standard theory is dominated by a Walrasian conception of equilibrium. Forcing Keynes' ideas about equilibrating and disequilibrating market processes into the Walrasian mode of thinking in terms of achieved and sustained equilibrium means that valid and vital insights are lost. Although the post-war era has been called the age of Keynes, the radical reconstruction of economic theory that Keynes believed he was starting still has to occur. As Keynes' ideas were forced into a Walrasian mode, the powerful theory of investment under capitalist conditions that is the core of Keynes' General Theory was lost.

Walrasian dominance in the neo-classical synthesis is shown by the way equilibrium is viewed as an achieved position. Marshall and Keynes defined equilibrium in terms of market processes which took historic time for their realization; Walras and most of modern economics treats equilibrium as a set of values of economic variables which in fact is achieved outside of calendar time. In Walras all economic action takes place in equilibrium, whereas in Marshall economic action takes place as market processes seek an equilibrium. In Marshall's process analysis many details of the situation are imprecise, in Walras the ruling situation is precise and defined. The Marshallian concept of equilibrium is much more like the concept of coherence as we use it than is true of the Walrasian conception of equilibrium. Furthermore, the
Marshallian conception allows for the equilibrium of markets to be transient and conditional, whereas the idea of an ongoing accumulation of disequilibrating forces even as a system state that is characterized as an equilibrium rules is alien to the Walrasian view.

Although the differences between the economic analysis based upon the Marshall and the Walras views of equilibrium and equilibrating processes and Walras's view of achieved equilibrium are not of vital importance when it comes to the analysis of markets in which the prices and quantities of output produced with existing capital assets are determined, the differences become significant when the production and financing of capital-assets are considered. In today's standard theory the disequilibrium exists, analysis of growth and stability of the economy is subsumed into the analysis of price determination. The economics of price determination is called microeconomics and the analysis of growth and stability of the economy is called macroeconomics. A standard research effort in neo-classical economics has been to generate a macroeconomics that is consistent with micro-economic foundations. Underlying this research strategy is an assumption that the logical foundations of micro-economics are strong whereas those of macro-economics are weak. In truth the strength of the logical foundations of current micro-economics is more apparent than real, and in particular the current microeconomics is incapable of absorbing concepts of time, capital-assets, history, institutional evolution, finance, and uncertainty which are basic to view of the world that is required by the problems that an investing capitalist economy must confront. Furthermore standard microeconomics abstracts from the financial institutions and usages of capitalism.
In all disciplines, theory is based upon constructs and behavioral assumptions. Constructs select and define the basic variables of the theory and state how the variables are related. Behavioral assumptions specify how the units of the theory interact. The constructs and the behavioral assumptions are derived by acts of creative imagination from the problem that is set for theory.

The basic constructs of the neo-classical synthesis are the preference systems of households and the production functions of plants. The units of the theory are households and business firms. We usually note that there is an inconsistency here, which is glossed over in the neo-classical presentations. in that the production functions refer to plants and the behavioral unit that corresponds to the production functions are firms. Plants are technological units, whereas firms are financial and managerial units. Plants exist in all economies, whereas the firm is a concept that is special to a capitalist economy. for a firm is a financial and a managerial unit.

The behavioral assumptions are that households try to maximize their "well-being" as defined by their preference systems under a budget or total spending constraint and firms try to maximize profits with production possibilities given.

The essential task of neo-classical theory therefore is to demonstrate that in a system in which profit maximizing firms that are characterized by production functions and "utility maximizing" households that are characterized be preference systems interact in markets so that coherence results. In order to do this restrictions have to be imposed upon the "shape" of the production functions and preference systems and how units interact has to be made precise. We must note that the theory works back from the proposition that
IV. Preference Systems

In standard economic theory the psychology of households, insofar as their purchase of commodities, sale of labor and financial operations are concerned, is fully characterized by preference systems which are independent of variations in social and economic circumstances. The preference systems are used to partition all possible bundles of commodities, labor supplied and financial positions into three sets relative to an initial particular bundle. These three sets of bundles are those that are superior, inferior and equivalent to the initial bundle.

A household is said to be indifferent as to which of the bundles it deems equivalent it actually achieves. All commodity bundles not included in this equivalent set are either better than or inferior to each and every combination in the equivalent set. A household is assumed to be able to rank any two commodity bundles and unambiguously determine which it prefers or if the bundles are equivalent. In our complex world this means that households are assumed to have considerable computational skills.

The set of commodities and services that are ranked by a preference system are economic goods and services — those which are scarce, require resources for either production or maintenance, and which could be traded in markets. In truth life includes more than commodities which are traded.

Economists should be humble and recognize that there are important dimensions of well-being that are foreign to the preference systems used in economic theory.
spent. The elimination of economic poverty for the United States does not require much if anything in the way of additional production. An overhaul of the income distributing system so that income is almost always received with the dignity that comes from fair exchange (i.e., from work) and the creation of a public environment which delivers a larger and better bundle of public goods such as safety of persons and possessions are what is needed.

In economic theory the existence of a preference system for each household which states the subjective valuation of alternatives is postulated. If we begin with any bundle of goods, a bundle that is equivalent to the initial bundle can be derived by substituting additions of one commodity for decreases of another commodity. Furthermore as the units of one commodity are decreased, the offsetting additions of a particular other commodity are assumed to increase in order to sustain the equivalence. Thus the equivalence sets are characterized by substitution ratios among commodities such that increasing relative scarcity of a commodity implies that larger quantities of other commodities are required to offset further decreases in the relatively scarce commodity, i.e., as a commodity's scarcity increases so does its price. The notion that relative scarcity implies a high price and that high prices will restrict demand are built into the preference systems.

In the preference system perspective, an increase of one commodity in a bundle without a reduction in another commodity is assumed to make a unit better off. Similarly, exchanges which make a unit better or worse off can be defined. Thus the preferences system ranks all possible exchanges so that some make a unit, in its own view, better off, others
leave its well being unchanged, and still others leave it worse off.

Presumably a unit will voluntarily and knowingly take part only in those exchanges which make it better off. If we assume that only exchanges which make us better off are consummated, then we implicitly postulate that households have very precise knowledge extending over time as to the outcome of their behavior. This assumption also implies an absence of error and experimentation. The preference system scaling of alternatives, and the requirement that trades take place only if in the mind of the trader the result of the trade makes the unit at least not worse off, completely defines the psychology of the households as viewed in neo-classical theory. For the purposes of neo-classical theory the preference systems are the households.

The preference system perspective is extended in neo-classical economics to include the supply of labor. Labor is viewed as a negative good - the injunction to the effect that "By the sweat of thy brow you shall earn your daily bread" is embodied in the way in which labor - or work - is viewed. Thus the equivalent bundles of the preference system require that more labor be offset by more goods, and that the ratio of goods to labor time in any equivalent bundles increase as more labor time is expended. In this view it is leisure that is being given up as goods are acquired.

The treatment of labor as a "negative good" so that increasing supplies of labor are available only in exchange for more goods is a critical ingredient to the neo-classical synthesis. It leads to the view that supply employment is governed by the ratio of money wages to money prices, what
is called the "real" wage, and that unemployment is somehow due to real wage demands by the unemployed workers being too high. It is also critical to the view that high taxes on labor income will seriously affect the supply of effort. Nowhere in the abstract treatment of labor supply is the possibility of joy from work, from tasks done, examined. Furthermore money income is not viewed as something that may be needed because of commitments to make payments, so that the supply of effort may increase as money wages decrease.

In many ways the treatment of choices among commodity bundles and the treatment of the supply of labor that is built into standard theory reflects a postulate that the world is poor; that binding poverty defines the human lot and that work is physically debilitating. What happens when work no longer is associated with pain and to choices among commodity bundles when an error in choice does not imply extreme want is not discussed. Economists know that there are occupations in which workers received "pleasure" from work, and that there are some who can consume frivolously. What happens to labor supply conditions when jobs are no longer degrading and what happens to choice patterns when poverty no longer dominates choices are important questions which determine how an economy works that cannot be examined within the construct of standard theory.

The economist's way of looking at choice is aimed at defining an efficient set of outcomes. But if poverty is no longer the rule, if work no longer implies pain then efficiency is not an overriding objective. The way standard theory looks at choice may be apt for a poor world even though it may be inept for a rich economy.

The preference systems that exist in any economy reflect the—
The economy's culture, which we know can evolve. Furthermore advertising (and education, etc.) involves the use of resources (an economic phenomena) to affect preferences. However, the genesis of the preference systems, how the history and culture of a society, individual experience, and artful persuaders affects the preference systems that exist at any time are ignored in neo-classical economic theory. The preference systems are taken as given; as far as the analysis is concerned they might as well be genetic.

How experience affects preference systems will be of special significance when behavior with respect to uncertainty is examined. It may be analytically appropriate to abstract from preference system changes when dealing with commodities such as food stuffs, however, it is heroic to abstract from the effect of experience upon preference systems when speculative choices such as portfolio compositions and the technique by which investment is financed are considered. In speculative choices standards of what is acceptable and permissible change quickly and in ways that cannot be explained by difference in the terms of contracts. If preference systems are to be used in the analysis of finance it is necessary to consider what determines preferences systems.

It is not currently fashionable to state the theory of choice and trading in terms of utility, even though the psychological foundations that underlies the neo-classical view of households is that of the utilitarians (Bentham et al.) of the nineteenth century. The work of Walras (and Marshall) was heavily based upon a wedding of utilitarian philosophy and a knowledge of elementary calculus. Later day economists have modified the utilitarian foundations by abstracting from the need to measure utility by substituting
a non-measurable ordering concept, the preference systems, for measurable utility and by ruling that any interpersonal comparisons of utility are out of order.

Developments in psychology and cultural anthropology of the last century are completely foreign to the way economists view households. The social derivation of preferences, the determination of human goals, and the nature of motivation are foreign to the discipline. Arguments to the effect that preference systems are socially determined and are changeable are outside the self-imposed limits of neo-classical theory. As a result a view to the effect that what exists in the way of demand patterns (which are derived from preference systems) is natural and that alternative demand patterns that may arise by modifying political or historical influence are unnatural permeates the policy arguments of neo-classical economists.

Because what is produced is in the whole purchased and after the fact investment is reflected in the acquisition of financial assets, the view that preference systems are autonomous and not created by experience and education leads to the view that what happens is determined by consumer preferences; i.e. the consumer (and the ultimate saver) are sovereign. Production is in this view a servant of the autonomous consumer. How tastes are created, why large scale efforts to guide tastes in the direction of ever increasing relative needs are undertaken, and the circumstances in which a cultural shift takes place so that "what is new is good" replaces the view that "what is tried and true is good" are foreign to the concerns of a neo-classical economist. The analysis starts and ends with a

* /Cite Scitovsky.
set of immutable preference systems.

Once preference systems are accepted as the essential characterization of households it is desirable to know or postulate something about their form. In this way propositions about household reactions can be derived. A general assumption of the theory is that as a particular commodity is substituted for another commodity in the bundle of goods a household uses, increasing doses of a commodity that is added to the bundle are necessary to compensate for each unit of a commodity that is deleted from the bundle of goods, if the exchanges are to leave well being unchanged. In technical language the sets of equivalent commodity bundles are convex. The convexity assumption is important, for if its inverse is valid (decreasing doses of the commodity that is added are required to compensate for fixed doses of a commodity deleted) then the deleted commodity is driven from the consumption bundle. Increasing subjective valuation of a commodity in a bundle of commodities as it becomes relatively scarce is a condition for the commodity remaining in the consumption bundle.

The convex set of preference systems that are postulated as the basis for consumer behavior are used in the demonstration that a decentralized market mechanism can achieve a coherent result. However the demonstration that coherence can result from decentralized markets is possible without assuming the preference systems of neo-classical theory. All that is really needed is that each commodity or service has a negatively sloped demand curve as a function of its own price and that the impacts upon other demand curves from a movement along some particular curve are "damped out". Such an objective view of household demand, which does not impute "welfare" notions to demand, is more flexible
than the neo-classical theory's view of demand as being derived from an all encompassing system of preference systems for it enables us to view the system of commodity demand curves that exist as being imbedded in an economic environment which is determined by historical developments and policy decisions. This "commodity demand subsystem" tends to seek out a coherent result for those commodities for which demand and supply are related to the spending of given incomes and the use of given production facilities, even as the market processes centering around borrowing and lending and investing allow for incoherent behavior. Whereas the preference system construct looks towards a regime of universal coherence, the use of a system of demand curves looks for coherent subsets within the economy and thus allows for the existence of other subsets in which incoherence is possible.

As we look ahead toward the design of a theory for our economy we recognize that the preference system approach to the theory of household behavior is, in principle, dispensable and that if the preference system approach is to be retained then preferences have to be opened up to include historical and social variables.
V. The Trading Game, the essence of Neo-Classical Theory

As a result of the identification of a unit with its preference system and the definition of acceptable and non-acceptable trades it is possible to set up a trading game among households. The rules of the game are each household starts with a bundle of goods, trades among households of goods (i.e. barter) are possible, and such trading does not use resources. The image in the theorist's mind is that of a market at a Village Fair. At this Fair traders appear with bundles of commodities, the genesis of which are unexplained, and proceed to make exchanges. Presumably for each participant mixes of commodities different from the initial bundle exist that makes the market participant better off; participants trade in the market because they can achieve some preferred bundle.

The story that is implicit in the analysis is of farmers and artisans bringing their output to a market. Production is ignored in this argument.

The argument could proceed by allowing trading to take place as various market participants meet and haggle. But anyone who has circulated among stalls at a Village Market knows, different stalls are likely to have different prices and prices change as the market day proceeds. But if trades are allowed to take place at varying exchange ratios then participants are aware whenever a trade is made that the deal being struck might not be the best possible deal. This uncertainty will influence behavior. The possibility that trading will take place at different prices introduces speculation and uncertainty, which are anathema to the game that is being set up.

Furthermore, if trades are allowed to take place at varying exchange
ratios then the valuation of the initial bundle of goods for each participant is different at each exchange ratio. Trades reflect not only exchanges of market equivalents, but also reflect gains by some at the expense of others when price-ratios change. As each initial bundle of goods represents the income of a market's participants, income transfers occur when exchange ratios vary. As the outcome depends upon the initial endowments, the exchange ratios, and the underlying preference systems, if trading at prices other than a final market clearing price is allowed, the implicit equilibrium of the market changes as the market day proceeds; the market result becomes dependent upon the history of the market day rather than being an invariant result of the initial conditions. To avoid such an historical result, an artificial convention that rules out false trading, as trading in all but a final price that rules in the market is called, is introduced in the theory.

One way of ruling out false trading is to posit an auctioneer who "calls out" trade ratios amongst goods and determines these trade ratios at which the amount offered of each commodity just equals the amount desired. If preference systems are convex it can be shown that a set of exchange ratios exist, so that for each commodity the amount offered will equal the amount desired. We can think of all the offered amounts being put into various piles, and each trader tossing in what he offers and taking out what he is allowed. Markets clear when prices are such that the offered amounts equal the entitlements to each commodity; each pile so to speak is exhausted.

An alternative to an "auctioneer" calling out exchange ratios is to allow 'recontracting' - so that no trades are finally consummated until
the exchange ratios are such that all markets clear.

Thus the trading game, by introducing the artifact of an auctioneer or by allowing recontracting, allows exchanges to take place only at market clearing ratios. In setting the trading game up, exchange rates are posted for each pair of commodities. Another way to proceed would be to post each commodity's exchange rate in terms of a common commodity: wampum, tobacco, marks, or dollars. At each price in terms of the standard unit the amount offered or sought by each trader could be determined by some market official. When the prices in the standard commodity at which the amount that will be offered is equal to the amount that will be taken is found by the auctioneer or by the recontracting process, for all commodities, the ruling price system is determined and trades will be consummated.

The introduction of a common commodity in which all exchange ratios are denominated is the way in which 'money' is introduced into the neo-classical argument. Such money allows a consistent valuation of all initial commodity bundles, and it defines all other commodity bundles that have the same value as any existing commodity bundle, given the exchange ratio of the commodities held in terms of the standard commodity.

This set of all commodity bundles which have an equal valuation in the standard commodity is called a "budget line" in standard theory. It is immediately evident that the budget line for a unit with an initial bundle of commodities changes with every change in the price ratios.

The money artifact enables the trading game to eliminate the need for a double coincidence of wants as a prerequisite for trade, to take place. Each unit sells what it wants for the standard commodity and buys
what it desires and can afford, with the standard commodity. The
'money' of this trading game however only determines relative prices.
It is a convenient way of stating the exchange ratio amongst shoes and
eggs, but it does not at this stage determine the absolute price level.
Money as first introduced into the neo-classical argument yields no satis-
faction in itself! And it represents an ability to consummate trans-
actions in a trading market. In fact sometimes the trading game story is
told in such a way that the money of the market is created at the start
of the day and "cleared" out of existence at the end of the day.

In the trading game no offer to trade is binding except at the set
of prices at which offers and takings are equal for all commodities and all
participants.

Given the initial endowments of commodities, the budget lines for
alternative price ratios combined with the preference system yields the
individual offers to supply or to demand commodities in the market as
a function of their price. The assumption that prices will be the same
for all participants enables us to add the quantities that each will supply
or demand at each price to generate supply and demand curves for the various
commodities as a function of their price. The aggregation of quantities at
varying prices for all traders gives us a set of market supply and demand curves.
These curves are a function of the price of the commodity in the standard
commodity. Supply curves are assumed to at least eventually slope upwards
and the demand curves are assumed to be generally negatively sloped.

This argument is at least a rough approximation to the way in which
supply and demand are formulated in an actual trading market. If at any
particular price, in terms of the standard commodity, offers to supply a
particular commodity exceed demand, then the price in the standard commodity of the commodity at issue will fall, if quantity demanded exceeds quantity supplied the price will rise. This behavior of commodity price when there is an excess or a deficiency of supply or demand is what is meant by the law of supply and demand. The theorem established in the formal analysis of the theorem assumes that if the basic preference relations are well behaved — with all the desired convexity assumptions and if no false trading is allowed, there will exist a set of relative prices that will simultaneously clear all markets. Furthermore, given the preference systems assumed invariant over this process and the initial commodity bundles assigned to the participants, the price ratios that will simultaneously clear all markets and the quantities of commodities traded are unique. The argument from the formal game may not do very much violence to reality when each trade is a small part of the total trading that a unit engages in, when for each item traded there are both large numbers of buyers and sellers, and where time and speculation are not significant influences. Thus for unimportant trades the abstract analysis of how supply and demand interact to determine prices and quantities traded may be an adequate approximation to reality.

The market clearing set of prices is called an equilibrium set of prices. The objective of neo-classical theory is to establish the existence of equilibrium prices and quantities and to show that market trading processes — derived from the way in which units are assumed to behave — tend to establish and sustain such an equilibrium set. The effort to establish that market processes are coherent leads to such an equilibrium and equilibrating process perspective. Just as naturally if the dominant
vision is of growth and cycles — of change — the emphasis in theorizing will be upon the disturbing or disequilibrating factors that move the economy from one trading equilibrium to another. One basic logical flaw in the extension of neo-classical price theory to problems of economic growth and business cycles is that the Walrasian concept of equilibrium really cannot allow for uncertainty, i.e., time and change. The way in which false trading is eliminated assures that uncertainty is not relevant whereas the essence of growth and instability of an economy center around uncertainty, time and change—and a history of mistakes and false trades.

Trading games — with or without the artifact of money — generate a theory of an exchange economy and demonstrate that if things are proper, coherence will be achieved. The analysis of exchange or trading economies shows that if the demand curves of commodities are negatively sloped which is usual—and if commodities are usually substitutes coherent results can be obtained. This implies that there are domains within which market processes can be relied upon as the control mechanism. The question that is vital is to define the domain within which market processes can be relied upon.

In principle decentralized processes yield order in coherence not chaos as a powerful result which explains much about economic life.
VI. Production and Supply

In the trading game, i.e., in the economics of a Village Fair, the participants start with bundles of commodities. These commodities are like "manna" from heaven; their origin is unexplained. Neo-classical theory goes behind the Village Fair and allows for production, albeit in a highly stylized manner. Neo-classical economics never really comes to grips with the significance of the use of complex and sophisticated capital-assets in production.

The parables that are told as production is introduced into the theory are either that increments of labor are applied to a given plot of land in raising some crop or that a recipe lists the ingredients, facilities, and labor required to produce some "dish". The recipes state how output varies as the composition of inputs change. A relation that is usually posited is that substitution among inputs is possible, so that a particular output can be produced by varying combinations of inputs. From this it follows that an increase in one input, others remaining fixed, will result in an increase of output. It is assumed that as substitution among inputs takes place or as increments of one type of input are added to fixed amounts of other inputs, either increasing dosages are required to compensate for units of the input withdrawn or decreasing increments of output result per increment of input. This "law of diminishing returns" is built into models of production. Inputs and outputs are related in production in a manner that is analogous to the way commodities and welfare are related in household theory.

The proposition that the conditions of production can be encapsulated by a production function which embodies "the law of diminishing returns" in
the appropriate form of a law of variable factor proportions, even though it may not show "diminishing returns" with scale, is critical in the development of neo-classical theory. Preference systems and production functions enter symmetrically in the logic of neo-classical theory, but in the extensions of neo-classical theory to income determination and growth the production function becomes the dominant concept. The neo-classical synthesis rests upon the acceptance of the characterization of production possibilities by means of a well-behaved production function. The use of the production function to derive both the supply conditions of output and the demand functions for the several inputs, is critical to the logic of neo-classical theory.

In the simple exercises, that explain how the supplies with which the various tradesman, craftsman, and peasants show up at the trading market are produced, the production function is used to generate output supplies as inputs of typically labor and the services from wholly owned and not very sophisticated capital assets are applied to some raw material or nature. As the parables are told the artisans, who participate in the Village Fair, own their tools of production so that raw materials are the only purchased input. In this case the division of the increment of value or of output between the returns to labor and to capital is blurred.

In more complicated analyses, outputs are related to inputs of differentiated capital and labor in such a way that various combinations of capital and labor can produce the same output and output can increase by increasing any subset of the inputs. Because it is assumed that outputs can vary continuously with inputs...
Marginal, or incremental, output per unit of input relates can be derived. One the theory of input, it is known that marginal productivity can be transformed into a marginal cost per unit of output.

The neo-classical view of the system of production functions that make for individual outputs can be transformed into a substitution relation among different outputs in production. Thus a relationship in which the terms of which a larger production of "wheat" can be obtained by a smaller production of "automobiles" is derived. These commodity relations yield supply curves of commodities in terms of commodities that are sacrificed.

These trade-offs in production are essentially impossible to trade "w" in consumption as stated in the preference systems. The preference function of neo-classical theory is designed to enable an equilibrium to be derived from underlying production and preference systems.
without recourse to market supply and demand functions. However, this new production and exchange theory is not the way the neo-classical Synthesis handles supply for purposes of market analysis. Although where there are I about the logical consistency of their theory neo-classical theorists retreat to the preference system of production functions constraints.
The Neo-classical economists recognize that the flow of capital-asset services into production might not be as nicely and as quickly variable as the flows of labor and material inputs. Thus a distinction is made between the fixed factors (the services of capital assets, land, management, and other overhead labor) and the variable factors (labor, material flows) that are required by production. Once fixed factors are introduced, an out of pocket total cost curve, relating the cost of output to the cost of variable factors (labor, etc.) can be derived. From these costs what are called short run average and marginal cost curves can be derived.

Because the relation between variable inputs and output involve changing ratios of labor to flows of capital services into production and because of the law of diminishing returns is assumed to rule as the ratio increases the average and marginal cost curves eventually rise. For some ranges of output marginal costs exceed the average variable costs. When this is so, competitive market processes will lead to profits, which depend upon the costs of labor and other purchased inputs relative to the level of demand.
labor and thus wage income enters directly into the costs of supplying output. Wage income is a cost of production. The income that capital receives (after the fact of production and sales) is not a determinant of the supply conditions of output but is derived from the difference between the value of output and the out of pocket costs of production.

The supply curve of output is well defined only if producers of the product are price takers, in both product markets and the markets where inputs that enter into short run cost curves are priced. In these cases the horizontal summation of the quantities that each producer is willing to supply at each price yields a market supply quantity as a function of price of output. In the case where units are not price takers, i.e., where the units are free to vary their price, supply conditions depend upon power relations in markets.

The neo-classical theory of production and supply rests upon the production function and the transformation of the production function into both supply curves for output and demand curves for inputs. The analysis focuses on market power and markets in which units have power to be assigned to the essential core of the neo-classical theory.
VII. Prices as Parameters

In the neo-classical synthesis supply and demand curves are determined by entering underlying preference systems and production functions with known prices of commodities and productive inputs. In competitive markets each individual decision maker is assumed to take the price of all he sells and buys as given. For a conditional optimum label to be assigned to the outcome of a trading game it is necessary for all firms and households to be price takers in every market in which they appear. The welfare economics implications that are often claimed for the results of market processes only hold if all decision makers behave as if the prices of everything they purchase and everything they sell are given to them. Each and every participant is powerless; the market is in this situation a thoroughly imperial and majestic instrument of control.

This is an impressive and beautiful result. Each person is powerless before the impersonal market yet the prices that control individual decisions are determined by the behavior of individuals in markets. The impersonal prices that control behavior in the market are in turn market determined. As each individual votes with his income and his preferences dictate the prices that control individual decisions and determine individual incomes are determined.

In the neo-classical synthesis the market is an effective control and coordination apparatus. If one set of prices leads to individual behavior such that supplies are not equal to demand in all markets then prices will change: Some prices, those of output with excess supply, will fall and other, those with excess demand, will rise. Each new set of prices will affect demands, supplies, and incomes in such a way as to improve the
coordination of the system: Excess supplies and demands are transient phenomena, the market mechanism is an efficient self-correcting mechanism. The laws of supply and demand are all the 'planning' that a market economy requires.

If, with each unit behaving as if the prices that now rule have always ruled and will always rule, the system of markets is not fully coordinated, then prices will change. If units, in spite of price changes, continue to behave as if the now transitory prices always ruled and will continue to rule - changes are never extrapolated - then the market price, output and income adjustments will be such that coordination of the system will improve. No one calls signals, no one runs drills, nevertheless each unit behaves as if it were a perfectly disciplined and extraordinarily well trained member of a team. Any economy in which each individual unit has no option but to act in its own best interest, on the assumption that existing prices will always rule, will achieve a well coordinated set of outcomes; unit powerlessness and unit behaving with prices as parameters not only guarantees coherence, but also implies that, if one is willing to abstain from questioning the virtue of the distribution of income, one can assert that that which results cannot be improved upon.

Any deviation from powerless situations, in which every participant must take current prices as parameters and every unit cannot remember or forecast, means that the conditional welfare proposition of standard theory can no longer be asserted, but it does not imply that the market cannot remain the coordinator and controller of the economy. A monopolist is not powerless - nevertheless the existence of a subset of monopolists does not imply that the market is unable to yield a coherent result.
Too much monopoly, and monopolies confronting each other, can lead to a breakdown of the ability of the market to achieve consistent and thus coherent results. Furthermore, if units that have power of decision learn that today's prices need not be tomorrow's prices, so decisions have to take into account what may happen in the future, then the market can and does break down as an effective coordinating device.

By their very nature, capital-asset and financing decisions involve action over calendar time; yesterday, today, and tomorrow exist. Of necessity capital-asset decisions need to take into account what can rule over the life of projects; present decisions must allow for future prices and future quantities. It is impossible to sustain the naive fiction that all such decisions are made on the expectations that what is will rule forever. Present prices, which constrain present behavior, no longer become the only way in which prices enter into decisions.

Thus in two types of cases, where monopoly power exists and where finance and investment decisions are undertaken, decision cannot be assumed to be made by using present prices as parameters. In these cases where prices vary with respect to the units' own decisions and where the future enters in a significant way in determining behavior, the market can fail to be an effective control and coordinating mechanisms.

We are left with a split attitude towards the market. The market is an effective control and coordinating device in those situations in which units are forced to take prices as parameters and to behave as if current prices will exist forever. The market is ineffective as a control and coordinating device in situations in which units know either that their actions will have an appreciable effect upon prices or
that current prices will not necessarily rule forever.

The economists* who participated in the debate about the economic theory of socialism in the 1930's well understood the strengths and weaknesses of the market mechanism. Therefore in drawing blueprints for a socialist economy they allowed, nay forced, the market for current outputs to follow the competitive market rules in which prices are parameters even as they removed income distribution and investment from market "control and determination".

The proposition of neo-classical price theory, to the effect that an optimum is achieved in an economy that consists of competitive markets when all prices equal the marginal cost of production was transformed into a rule for the management of socialist enterprises. The pricing rule as stated by Lange and Lerner calls for the central planning authority of a socialist economy to post prices and to order all producers to produce that quantity at which marginal costs equal price. Simultaneously all households are free to spend their given money income as they will on these commodities at the posted prices. Excess supplies and demands are expected to appear but the price change rule-excess supply implies prices fall and excess demand implies prices rise - will lead to a haggling of prices so that the excess supply or demand tends to disappear. In this formulation which is known as Lange-Lerner socialism, socialist planning is a device to assure that the market mechanism functions as it "should". It may very well be that only under conditions of a socialist economy can the purity of the pricing process be revealed - and only a socialist society can hope to enforce a

* Cite O. Lange, A. Lerner.
universal 'prices are parameters' rule. This is so because a socialist economy can separate the decisions as to how to utilize given production capacities from the decisions as to how to change production capacities.

In conditions of a competitive market prices are taken as parameters by households and firms. Under these circumstances prices perform two functions: they distribute the outputs produced among households, and they allocate those productive resources, which have alternative uses, to the production of various outputs. Thus the price system has distributional and allocational functions in the world of the neo-classical price theorists.

In a world with capitalist institutions, the ruling system of prices must also validate past financing and capital investment decisions as well as and distribute income not only to workers but to owners of capital-assets. In our discussion of supply curves, total revenue normally exceeded total out of pocket costs if price equals marginal cost in all productions, and the residual - the difference between total revenue and total out of pocket costs - was available for overhead costs and capital income. In the discussion of longer-run cost and supply conditions the minimal total costs of production for each output needs be derived.

Whereas labor and material costs enter as 'price determining' prices in the derivation of both short and long run cost curves, capital-assets only fully enter as determinants of supply price in the long run. In the short run the compensation of and income imputed to capital/assets depends upon system performance. The relation between capital asset compensation and the allocation of capital-asset services to various outputs is not as direct and simple minded as the true relation between labor compensation and the allocation of labor services to various productions.
The neo-classical theory assumes symmetry between labor and capital-services in production whereas in fact they are quite different. Labor not used now is lost forever, capital assets can serve tomorrow in lieu of today. Time, investment, and finance form a set of phenomena that "embarrass" neo-classical theory. But time, investment, and finance are essential to any explanation of relative richness of economies and the path of richness within an economy. The neo-classical theory breaks down because of the problems and phenomena in nature that are associated with questions of accumulation.
is evidence that decentralized markets in themselves do not guarantee that the propositions of neo-classical theory apply. However in good part the monopoly that exists in a capitalist economy cannot be divorced from the existence of capital assets, and in particular capital intensive techniques of production. Thus the limited domain of relevance of the results of neo-classical theorizing largely follow from the inability of neo-classical theory to handle investment and the inherited stock of capital assets.

Fundamentally, the valid part of neo-classical theory boils down to visualizing the economy as an interrelated set of supply and demand curves. For each commodity a supply and demand curve is defined. These supply and demand curves link the quantity of the commodity to the price of the commodity and to other prices; price in the neo-classical theory is the signal that determines the form of variations in quantity offered or taken. This visualization of the economy is good enough for consumer spending out of a budget derived from income where the purchase is not only a repetitive act but also is not an overwhelming part of the total budget. This visualization of the economy breaks down where the purchase is a unique act, that has consequences over a period of time, and which involves large scale financing that carries future commitments, i.e., where the budget constraint on spending is not independent of financial market decisions.

The interdependent supply and demand curves (interdependent because not only own but also other prices enter into the market relation) combined with the dynamic assumption that the system will "move around" until it reaches the sets of prices that simultaneously has supply equal demand.
for all markets is the law of supply and demand that is so beloved of conservationists and conventional textbookists. The validity of the law of supply and demand is restricted to a domain of markets in which the ability to spend on the market is given by some predetermined budget. Once the budget equations which enter into the determination of demand curves are positioned by financing and expectational relations then the assumption that the interrelated supply and demand curves wiggle around until the simultaneous equality of supply and demand for all markets is achieved is no longer valid. The markets cannot set off on a quest for asset prices and quantities which cannot be sustained by future demand or future profits. Anytime a reference is made to the laws of supply and demand and if anything more is meant by the proposition that unless other things change a rise in (relative) price tends to construct demand and a fall in (relative) price tends to increase supply the skeptical have a right to raise an eyebrow and intone "really".

Even in pure theory the sets of supply and demand curves for all commodities yields one fewer relative price than identified markets which need prices. The neo-classical price theory yields terms on which alternatives can be exchanged, not the price in a unit of account. The full neo-classical theory has to transform the relative prices into prices in the money of the economy.

The vision, the constructs and the results of neo-classical price theory are all pre-Keynesians in the sense that the special problems and the insights that Keynes introduced in his General Theory are nowhere evident. What we have sketched as the neo-classical price theory could-
be what it is today even if Keynes had never written; the criticisms that were advanced borrowed heavily from Keynes. However the neo-classical synthesis is an amalgam of the pre-Keynesian theory with ideas and constructs derived from Keynes' great work. The amalgamation does not take place in price theory; it takes place when the domain of economic analysis is extended to include the determination of employment, money wages, and prices in money terms: today's aggregate theory is different than the pre-Keynesian aggregate theory.

Neo-classical price theory achieves its success in explaining coherence of individual markets by setting up the problem of output and price determination as problems of supply and demand in interrelated markets. Neo-classical theory determines the aggregate performance characteristics of an economy by setting the problem as the interaction of supply and demand in interrelated markets. In order to set up the problem in terms of supply and demand in interrelated markets, neo-classical aggregate theory extends the concepts of production functions, which may have a limited validity for particular products (in the sense that any particular output does have a recipe) to output as a whole. It also extends the concepts of preference systems to economies as a whole. However, an article of faith in neo-classical theory is that the formal analysis of individual behavior is on stronger logical ground than the analysis of aggregate behavior. Thus the aggregate production and preference systems must be built up as "summation" or "aggregation" of individual production or preference system. Many "interesting" theoretical exercises of the kind that make academic reputations, arise out this problem for not all particular types of production and preference systems can in fact be
added up to well defined aggregate relations.

Given the dominance of mathematical tractability over practical relevance in the selection of problems for analysis, the forms of aggregate cost, supply and demand relations have been limited to those that are consistent with underlying production and utility functions that have been derived by aggregation from simple constructs for households and plants. Thus the building up of supply conditions on the basis of costs that do not easily enter into production function considerations are ignored: user costs in the hands of a neo-classical economist become costs that lead to a choice of capital assets rather than revenue relations that determine the use of existing capital assets.

In particular, as a result of the dominance of price theoretic arguments in the determination of the structure of neo-classical aggregate theory, the neo-classical treatment of investment does not allow for the treatment of investment as a basic money today - money tomorrow deal. The financial speculative aspects of investment cannot enter any theory which attempts to determine investment by starting from an aggregate production function. Thus even as we sketch neo-classical aggregate theory we recognize that the basic constructs of this theory do violence to any perception of the economic problem that allows for financial interrelations.
VIII. Neo-classical Aggregate Theory: The Pre-Keynesian Basis

Neo-classical aggregate theory is an extension of price theory and the constructs and methods of analysis to the determination of employment, output, accumulation, and the price level. The foundation of neo-classical aggregate theory is the heroic assumption that the market mechanism determines the relative prices and quantities of all outputs and inputs in the manner described in the analysis of markets where time, uncertainty, capital assets, money, and finance are ignored. If the relative prices and quantities are determined by the price theory apparatus, then output and employment are all determined, the only special problem for neo-classical aggregate theory is the determination of prices denominated in money as well as the split between current and investment output.

Before Keynes' General Theory appeared, problems of the overall performance of the economy were largely treated in the context of the behavior of money and thus of banking. The emphasis upon money and the banking mechanism characterized both analytical economics and policy. The analytical approach to the determination of prices as a function of the money supply rests on the assumption that the other characteristics of the economy are determined in markets where behavior is independent of the money supply.

If the composition of output is ignored and aggregates such as total output, employment, real wages, and accumulation are assumed to be determined independently of the monetary mechanism, then the theory treats the economy as a split system: the so-called real variables are treated in one set of markets and another set of markets deals with the determination of money prices.

There is another aspect to this split or dichotomized system
that is worth noting. Recall that in neo-classical price theory the strong view is that if competitive markets rule, then a decentralized market mechanism will yield an optimum result: the best possible. In particular it will be a coherent result. However non-optimal and non-coherent situations are observed.

If in a two part system one part leads to an optimum and coherence, then the deviations from "perfection" must be due to the operations of the other part of the split system. In this view imperfections of the monetary mechanism are responsible for what ails the economy. Inasmuch as different groups find different things wrong with the economy they will have different prescriptions of what monetary mechanism will enable markets to work their pristine glory to their advantage. Neo-classical aggregate theory leads directly to various types of monetary crankism and "money is all" views of policy. Although they differ in their prescriptions and their ideology W. J. Bryan, W. McKinley and M. Friedman are brothers under the skin.

Aggregate production functions and collective preference systems are the key construct of neo-classical aggregate theory. Three relations are derived from the aggregate production function—the relation between employment and output, the demand curve for labor, and a demand curve for increments to the stock of capital assets, i.e., a demand curve for investment. Two relations are derived from the collective preference systems yields the supply curve for labor and a supply curve for savings.

The demand curve for labor is derived by determining the increment of output associated with successive increments of labor along a fixed capital-assets stock aggregate production function and then assuming that
employers will carry their demand for labor to the point where the value of the increment of output equals the wages paid to the increment of labor. Thus the demand curve for labor will have the money wage divided by the price level on one axis and the quantity of labor demanded on the other. This demand curve is negatively sloped, for it incorporates the law of variable proportions.

The supply curve of labor incorporates the view that working involves increasing disutility, so that increments of labor will be forthcoming only if the incremental wage in terms of goods and services that the money wage can buy is higher. Thus both the demand and the supply curve of labor are functions of a price deflated money wage - what is called the real wage, in the literature. The intersection of the supply and demand curves for labor determine this real wage and the quantity of labor employed.

Almost by assumption - for it is assumed that the way in which isolated individual markets seek out the equality of quantities supplied and demanded is relevant for the analysis of how total employment is derived - the economy is placed at full employment, for that is what the situation determined by the intersection of labor demand and supply curves signifies. In the short run the quantity of capital assets used in production is given. From the production function the output is also known.

Thus the neo-classical price theory, when used as a basis for aggregate analysis leads to a labor market domination of the determination of aggregate output. As the neo-classical theory assimilated Keynes' ideas in the evolution to the neo-classical synthesis, the "situation" given by the intersection of these demand and supply curves for labor became the
"goal" or "objective" of market processes. If a situation exists in which labor demanded is less than labor supplied, then either there are some external barriers which prevent the attainment of the intersection or some process is under way which will in time lead to an equilibrium at the intersection. Thus if unemployment exists and persists it must be because the real wage of labor is too high and there are barriers due to union pressures or legislation which prevent the real wage from falling. These barriers are either trade union pressures or legislation that prevent the real wage from falling.

After we examine Keynesian aggregate theory we will be able to see and appreciate the roundabout ways the neo-classical synthesis adopted to assure that equilibrium conformed to the intersection of the labor demand and supply curves.

The supply curve of savings reflects an assumption that consumption will be foregone only if there is a promise that a larger future consumption will be forthcoming. Inasmuch as in the neo-classical view all decisions are carried to a point of marginal "equality" the increment to larger future consumption is "discounted" back to today at a discount rate which makes that which is foregone equal to that which is attained. The preference system tells us how much future consumption is needed for incremental sacrifices of current consumption. In this way the "savings" out of current income are made a function, presumably rising, of the interest rate.

Investment is much like savings in that it involves a present sacrifice for a future benefit. Investor exchanges the present costs of the capital-asset for a future income that will accrue as the capital-asset is used in production. The production function presumably tells us the
product attributable to capital assets. Once again the present cost of the capital asset has to be equated to future incomes. If the present cost and future incomes are known for investment projects a discount or interest rate can be calculated for each project. Presumably for reasons of diminishing productivity, the returns to capital-assets decrease as more are produced for particular processes. Thus a negatively sloped curve relating the aggregate capital stock to the interest rate is derived.

By assuming that savings is a function of interest rate, investment is a function of the interest rate, and that the interest rate varies so that savings equals investment the amount of savings-investment that takes place and the interest rate are determined. Savings, investment and interest rate determination are no different than the determination of any other price.

The rate of accumulation that rules depends upon thrift, as a characteristic of preference systems, and productivity as revealed by production functions. Furthermore, the rate of interest measures subjective preferences and productivity. Money, bonds and other financial instruments – and financial markets – do not enter into the determination of interest rates. In the neo-classical theory the connection between the fluctuating interest rates as observed in bond and stock markets, and the obviously slowly moving – if it moves at all – productivity of capital assets as revealed by production functions is not explored. In the neo-classical model if investment decreases rapidly – as it did between 1929 and 1933 – it must be because of either a sudden exhaustion of the technical ability of increments to the stock of capital assets to aid production or a sudden increase in the future payoff required
to compensate for foregone consumption. Speculation, financing conditions, and the fluctuating behavior of aggregate demand have nothing whatsoever to do with the savings, investment, and interest rate determination in the neo-classical view.

To summarize - the fundamental constructs of the pre-Keynesian neo-classical aggregate model are production functions and preference systems. From these, the supply and demand functions for labor - where supply and demand are a function of the real wage - are derived and used to determine employment. Once employment is determined, output is also determined from the production function. Savings splits demand for output (equal to the supply of output) into current consumption and future consumption. But in neo-classical theory the only way in which future consumption can be realized is by storing some of the current output, not only in the form of the commodities to be consumed, but mainly in the form of future production capacity. The supply of savings funds becomes a demand for inventories and additional capital assets. Investment goods production is carried out in response to savings demand; as indicated earlier the supply function of savings is a positively sloped function of the interest rate and the demand curve for investment is a negatively sloped function; the interest rate is the price that adjusts so that savings equals investment. Note that the provision of capital assets depends upon their returns as given by the production function, not upon present expectations with respect to future profits that may depend upon how the economy functions.

Money and finance do not enter into the determination of what is called the real variables - output, employment, and the division of output between current consumption and investment. The interest rate also
is independent of money, reflecting thriftiness and productivity. But money exists and is an economic phenomenon; furthermore the prices we pay are money prices. Neo-classical economics must come to grips with money, even though the subject is distasteful and foreign to the Village Fair perspective.

Money is distasteful to a neo-classical theorist for with money institutional detail intrudes upon the purity of generalized abstract reasoning. What money is, and what money does, depends upon institutional arrangements and differs in a peasant/commercial capitalism from a capital-intensive/corporate society.
The Quantity Theory of Money: The Pre-Keynesian Basis

Money enters into neo-classical theory because of the need to transform real wages and the relative prices of commodities into the wages and prices we observe; i.e., wages and prices denominated in money. In neo-classical theory, money does not have any significant relation to finance and the financing of activity. Even though money becomes the fixed point, in that its price is always 1 and other prices, as well as index numbers of prices, move relative to the value of the money unit, money in the neo-classical theory is by definition sterile. Money yields no income, and in the neo-classical view it only yields benefits in terms of facilitating transactions which involve goods and services. Inasmuch as there is no uncertainty of significance in the neo-classical world, the possession of money does not yield any subjective benefit because it offers protection against uncertainty.

Money is sometimes called a store of value because it is a way of carrying command over goods and services from one time to another. However in neo-classical arguments which equate savings and investment, capital-assets, which are the end product of investment, are the only way in which consumption can be carried from today into the future. Money as a store of value is inconsistent with the proposition that the interest rate is the variable that adjusts to assure that investment equals full employment savings.

For short-period trading, money has an advantage in that it obviates the need for a double coincidence of wants if a trade is to be consummated. The quantity of money required to facilitate a given volume of transactions depends upon the rate at which money turns over and the price
level of the transactions. The turnover rate is called velocity. The transactions that enter into the relation are usually not precisely defined in today's standard expositions of pre-Keynesian monetary theory.

In an economy in which money is used, the value of money paid equals the value of money received, the value of commodities and services bought equals that of those sold. These identities state that the two sides of any exchange are equal in dollar terms: the money turned over equals the value of goods, services, or assets bought and therefore sold. In order to utilize an identity in the construction of a theory, behavioral identity relations have to be established for the variables in the identity.

The identity is the equation of exchange, which following Irving Fisher is conventionally written as

\[ MV = PT \]

where \( M \) is the money supply, \( V \) is the velocity or turnover rate of money, \( P \) is the price level and \( T \) are the transactions. The relations that are assumed in transforming the identity into the quantity theory are:

1) \( M \) is assumed given from outside by the "authorities"

2) \( V \) is institutionally determined by the extent of integration of production, payment conventions, etc.

3) \( P \) is the price level, which is to be determined by the quantity theory

4) \( T \) is the output as determined by the supply and demand for labor and the production function; when so defined \( 0 \) replaces \( T \) in the equation.

When the quantity theory of money as written above is added to the labor market determination of income and the saving-investment
determination of the interest rate and the composition of output, a
precise theory emerges in which the quantity of money, and by extension
to a growing economy increases in the quantity of money, determines the
price level and its change over time. "Money is neutral" is a conven-
tional phrase: it is an assertion that money does not matter, except
for the determination of the price level. The quantity theory of money
formally completes the pre-Keynesian neo-classical model by making the
general level of wages and prices a function of an exogenously determined
money supply.

No matter how many modifications are introduced into the quantity
theory, the basic quantity theory approach requires the price level to
be fundamentally independent of any variables but those introduced via
the equation of exchange. The independent determination of the money
price of anything - such as the wages of labor or interest terms on
contracts - upsets the apple cart of the quantity theory.

The equation of exchange version of the quantity theory does not
set up a market for money. The general approach of neo-classical theory
is that commodities can be defined and a market can be set up for each
commodity, i.e., that economic problems are best analyzed by setting up
supply and demand curves for each commodity. The approach to the inte-
gration of money into economic theory adopted by Marshall formulated
the quantity theory of money in terms of a demand function for money
and an exogenous supply.

In this version, the demand for money is viewed as some ratio k to
the income - and expenditures - of a unit. If O is the quantity of output
and P its price level, then the Cambridge or Marshallian version of the
quantity theory is

$$M_d = kPO,$$

money demanded is some proportion $k$ of the money value of the output.

Once again the physical quantity of output is given by the real production
system as set out in the neo-classical aggregate model and $P$ is functionally
independent of all variables except those introduced through the quantity
theory equation.

Although the Fisher equation of exchange formulation $MV = PO$ and
the Cambridge demand for money equation $M = kPO$ can be transformed one
into the other (by having $k = 1/v$), conceptually they are different.
Whereas $v$ is often related to the mechanics of the payment process, $k$ is
a behavioral relation which tells us the proportion of income or expen-
ditures that a household or a business desires to hold in the form of
money. Such a behavioral relation can quite readily be related to
economic variables; in particular the $k$ in the Cambridge formulation can
be made a function of the interest rate. This ability of the Cambridge $k$
to absorb economic variables, such as the interest rate, is of importance
in the development of monetary theory, for it is quite natural to make
$k$ a function of $r$, the interest rate. Of course, introducing the interest
rate into the demand for money equation.

$$M_d = k(r)PO$$
gives a pause to the neo-classical theorist, because the relation between
the $r$ in the holding of money equation and the $r$ in the productivity -
thriftiness relation needs to be considered. In the neo-classical for-
mulation that allows the interest rate to affect the demand for money, it
is assumed that the interest rate is determined in the productivity-thrift
related, and the coefficient relating quantity of money demanded to
income - the inverse of velocity - as a variable whose value is given
once the interest rate is determined. Any relation in which \( r \) is affected
by the supply and demand for money, so that realized savings and investment
are affected by monetary conditions is incompatible with the neo-classical
formulation.

One way of looking at the quantity theory of money is to investigate
whether a money demand equation, of a type that can be used to determine
a price level, is stable, i.e., whether a reliable prediction of the
price level can be obtained by feeding the quantity of money and other
variables, none of which reflects money prices, into a demand curve for
money. In a world with debts and money contracts, it may well be impos-
sible to give meaning to a demand for money that ignores the payment com-
mitments denominated in money which are due to outstanding debts; if this
is true the validity of the neo-classical theory becomes questionable.

One element in the quantity theory of money is the absence of any
consideration of the institutional arrangements by which money is created. In a world in which money is mainly demand deposits at commercial banks, the financing of business takes the form of the creation of money as
debts are entered upon the books of banks and the destruction of money
as debts to banks are repaid. The effect of money upon the behavior of
the economy might conceivably have some connection with the processes
by which money is created and destroyed. In the quantity theory of money
what follows after an increase in the quantity of money is independent
of whether the money enters the economy by means of "loot" from the Inca's,
or a pirate's raid, the financing of business activity, or the purchase
of government bonds by banks from prior holders. Such in fact consi-
derations are deemed to be irrelevant; a dichotomy between monetary and
credit theories is erected, so that considerations of how money is
created and the complex nature of money in a sophisticated capitalist
economy are ignored in neo-classical monetary theory.
XI. Neo-Classical Aggregate Theory: A Summing Up.

The pre-Keynesian neo-classical theory as we have stated it is a hierarchical system: labor demand and supply determines employment, the real wage, and, by entering employment into the production function, output. The savings and investment allocation out of this output reflects the reconciliation of productivity and thriftiness by means of the interest rate, which is determined in the savings and investment process. The quantity theory of money determines prices. The determination of the real variables - production, employment, techniques of productions, investment, etc. is independent of monetary influences.

Fundamentally, Neo-classical aggregate theory is an extension of the model that is used to determine relative prices and output. The "aggregation" problem can be avoided. Each commodity and its market can be treated as a separate entity and the system can be required to simultaneously satisfy the clearing conditions for each commodity market as well as for the money-commodity market. In this formulation money enters as a substitute or a complement with other specific commodities, however, in the aggregate an excess supply of money needs to generate an excess demand for commodities. But an excess demand for commodities lead to a rise in the market clearing money price of commodities. Higher prices in general reduces real or price deflated wages for a given money wage. According to neo-classical theory, this leads to an excess demand for labor, and thus to a rise in money wages. In this way a general interdependent model can be set up in which a quantity theory of money is added to the relative price determining system; it is not necessary to treat the problem of aggregation.
The neo-classical model is a full employment model, for employment is presumed to be on the supply curve of labor. All who want to work at the prevailing price deflated wage will be employed. The dynamics of the aggregate model is predominantly particular market dynamics. Disequilibrium in a particular market - be it for underarm deodorants, labor, or savings-investment - is presumed to be resolved mainly by own market dynamics. There is no effort within the model to explain unemployment and thus business cycles by means of endogenous processes. How an equilibrium is attained if the initial condition is not an equilibrium point is discussed, but how the economy through its own processes would get to such a non-equilibrium initial condition is foreign to the analysis.

Out of equilibrium positions are explained by means of exogenous shocks. Labor force growth because population increases, investment increasing the ratio of available capital-asset services to labor services, technical changes, quantity of money changes, and new government programs or changed tax schedules are some "outside" shocks that may impinge upon and disturb the equilibrium or coherence of the decentralized market mechanism. In neo-classical theory the market mechanism absorbs disturbances from outside and transforms them into displacements from equilibrium and determinants of a new equilibrium. Market processes them efficiently and quickly moves the economy to its new equilibrium. True an economy that is regularly shocked will never be quite in equilibrium, but, if the shocks received over a relatively short period of time are small and not systematically related, the economy will not be far from its equilibrium. The theory maintains that but for new and quite recent shocks the system will soon achieve equilibrium.

Perhaps the fundamental difference between the viewpoint of the neo-
classical synthesis and the financial instability hypothesis that will be
the core of what follows centers around the notion of disequilibria and
how they are generated. To the neo-classical synthesis, deviations from
a full employment-stable price level equilibrium have to be explained by
shocks, and strong deviations, such as the great depression of the 1930's
or the chronic inflation of the mid 1960's to date, have to be
explained by strong shocks. Thus in the neo-classical view strong
"outside" disturbances are responsible whenever the performance of the
economy is unsatisfactory. The usual villains that are responsible for
unsatisfactory performance of the economy in the neo-classical view are
the monetary system and the government. Depressions and inflations are not
due to normal functioning processes of the economy but to flaws in some
combination of the structure of monetary institutions, the operations of
monetary policy, and government policies which affect institutions or
change the level of government activity. In particular as the neo-classical
approach to money is based upon the quantity theory of money, the inquiry
into what goes wrong in the monetary system need look no further than the
behavior of the quantity of money. No differential effects of monetary
changes depending upon the behavior and evolution of money institutions and
markets is allowed - in particular the causation always runs from money to
economic disturbances rather than the economic institutions and disturbances
to monetary changes.

If what goes wrong is due to outside shocks, and if what goes wrong is
often or even usually due to the behavior of the quantity of money, then a
mechanism or path from monetary disturbances or changes to real sectors has
to be developed. In the classical model, as between positions of equilibrium,
money is neutral. The classical theory has to develop special short run theories – often of an ad hoc basis – that enables monetary changes to lead to transitory non neutral real system behavior. Thus the classical theory leads to a strange dichotomization between the short run and long run theory: the long run theory is of a system that is always in equilibrium, the short run theory is of the adjustment of the system to shocks and disturbances which assure us that the system is never in equilibrium.

Paul Samuelson (in an article in the Canadian Journal of Economics (reprinted in Clower) recalled the split "personality" of the teaching about money and the overall behavior of the economy that ruled when he was a graduate student. In the course on pure theory, the quantity theory, which abstracted from institutions and which put the economy in perpetual equilibrium, was taught; in courses on money and banking and business cycles the institutional detail as well as the disequilibrium behavior of economic agents were examined. As a result of this pre-Keynesian split the respectable academic economists had nothing much to offer during the great depression, their advice based upon a model which could be construed as asserting that that which was happening just couldn't happen.

It is clear that the neo-classical model is a weak intellectual and logical reed to lean on in explaining the behavior of and in formulating policy for the economy in which we live our lives. Too much is either ignored or posited out of consideration. The neo-classical theory – as well as the neo-classical synthesis that is built upon it – does have one important and valid contribution to make to economic policy. The demonstration, albeit under strict conditions, that a competitive market mechanism can do the job of guiding production to conform to consumer's demands means that for those subsystems of the economy where conditions are apt the market can be relied upon. This is especially true if we do not rely upon the market for 1) the
over all stability of the economy, 2) the determination of the pace and 
the direction of investment, 3) income distribution, and 4) the 
determination of price and outputs in those portions of the economy which 
use large amounts of capital assets per unit of output or per worker. 
The last point follows from the peculiar way in which capital asset 
pricing and returns enters into the neo-classical theory when compared 
with the actual way returns to capital assets are determined in our 
economy.

Thus a major - the proof of the possibility of coherence - of the 
classical theory remains relevant. This means we can consider that the 
demand curves of the economy reflect consumer preferences - once income 
distributions are taken for granted and once we allow for the "cultural" 
determination of preference systems. This means that excise taxes and 
subsidies can be used to both constrain and expand various outputs. 
Laissez-faire is not resurrected by the realization that coherence can 
rule; what is valid is that once the game is rigged there may be no need 
for detailed intervention.