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## Diversity and uniformity in economic theory as an explanation of the recent economic crisis

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## Working Paper No. 730

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### **Diversity and Uniformity in Economic Theory as an Explanation of the Recent Economic Crisis**

by

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Levy Economics Institute of Bard College

**August 2012**

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## **ABSTRACT**

Market economies and command economies have long been differentiated by the presence of alternative choice in the form of diversity. Yet most mainstream economic theory is premised on the existence of uniformity. This paper develops the implications of this contradiction for the theory of prices, income creation, and the analysis of the recent financial crisis, and provides a critique of traditional theory from an institutionalist perspective developed by J. Fagg Foster.

**Keywords:** Financial Crisis; W. Petty; Markets; Equilibrium Prices; Financial Crisis

**JEL Classifications:** B0, D01, D41, E01, E31, P00

## INTRODUCTION

I am honored to be able to speak to you today in honor of J. Fagg Foster. This is not only out of my admiration for the critical aspects of his contribution to institutional economics, but also because of the relevance of his work in a period where many economists have come to question the utility of market fundamentalism or the efficient market hypothesis.

I am not going to enter into a discussion of Foster's approach to the theory of value.<sup>1</sup> Instead, I am going to focus on his criticism of the supply and demand tradition in economics, and then use it to provide an explanation of why the current attempt to provide mortgage financing to a wider group of borrowers went so wrong.

In a way, we may characterize Foster's work as providing a complement to Sraffa's "Prelude to a Critique of Economic Theory." As you know, Sraffa's basic criticism of traditional supply and demand analysis focused on the supply side. He argued that it represented an illogical extension of the use of marginal utility on the demand side to the description of disutility on the supply side. The lack of logic was in the attempt to combine two completely different theories to explain the behavior of supply—that of diminishing returns to fixed factors and economies of scale in the expansion of production. I think Foster implicitly recognized this difficulty when he noted that classical theory managed to combine both utility and disutility on the same axis to create supply and demand. Since there was no difference between the two, this eroded any claim to independence of the curves.

But the point of Foster's criticism that I want to evaluate is a methodological one. What should be the data or the givens of the economic problem of value? Foster considered the assumption of given individual preferences as the basis for utility as the foundation of demand determination of price, and then price as determined by supply and demand as the determinant of value, independent of technology and institutions as a basic source of error. Rather, he believed that wants and preferences could not be considered independently of changing technology and the institutions that emerged in response to the disruptions caused by those technological changes. To paraphrase his apt rendering of this criticism, maximizing satisfaction is not a sufficient condition for the viability of an economy. Rather than being the unverifiable givens, he argued that tastes and preferences could only be institutionally determined.

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<sup>1</sup> It is not easy! In preparation, I have gone back and read the bulk of Foster's written work as it appeared in the special JEI issue (Foster 1981) and in Baldwin Ranson's compilation (Ranson 2010). It is much easier to grasp as a whole and in sequence than when read piecemeal.

Now, this criticism also applies to the sources of individual utility, and Foster notes that the definition of what are considered “commodities” is also determined by human invention and the response of institutions to technological disruptions. My discussion today will focus on another internal contradiction with the definition of the commodities that are traded in markets linked to the schizophrenic use by economists of diversity and uniformity in economic theory.

Before entering into a deep theoretical discussion of this point, let’s do what Foster would have told us to do. Look at the way the world actually works.

### **LOOKING FOR CORRELATIVE DATA**

How many of you have purchased an airplane ticket recently? Have you noticed any changes? When I started flying, an airline ticket purchased a service: transport by air by an airline company from point A to point B. And a meal. And you also received transport for you baggage. And you also received the right to sit down in a seat. If you buy a ticket today, you may have to pay separately for the air transport, the baggage transport, the meal, and even the seat! (European airlines are reported to be contemplating selling standing room on their budget flights!) The point that I am trying to make is that if we try to define the "market" in which supply and demand determines price, in this context we first have to define the "commodity" that is being purchased. And the example makes clear that we have no ability to define that commodity independently of institutions and technology.

Now, the question is, was there any rational economic basis for charging separately for these separate commodities, and more importantly, was there any economic basis for defining these separate services as commodities? And could we argue that each one was traded in a separate market? Or were they, as Sraffa suggested in one of the most overlooked parts of his book, "joint products" which may be identified, but for which there may be no separate production and thus no separate supply curve and no "market" or market price.

### **COMMODITIES, PRICES, AND MARKETS: THEORY AND HISTORY FROM SMITH TO SCHUMPETER VIA PETTY**

With this real world example as background, consider the theoretical and historical background to this problem. For proponents of the market economy, its major benefit is in what we may summarize as "diversity." A free market economy is characterized as the expression of diverse

individual preferences to determine the quantities and prices of a diverse range of commodities. These preferences and individual endowments are the given data that form the basis for the supply and demand functions that determine equilibrium prices which provide all the information required to provide adjustments that yield the maximum economic utility. Yet, beneath this façade of diversity, its general application requires a presumption of uniformity or homogeneity. Thus, just as the diverse individual preferences are taken as the data of the economic landscape, the existence of uniform categories, such as the definition of a commodity, requires the presumption of the existence of product uniformity.

Let us start with the question of how choice is exercised through free market exchange. Adam Smith provided the classic response to this question. In his *Theory of Moral Sentiments*, he noted that, our senses being limited “they never did, they never can carry us beyond our own person, and it is by imagination only that we can form any conception of what are [others'] sensations” (Smith 1976, 9). “How selfish so every man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it” (Ibid.) We might call this the “Existential Diversity of Individuals.” We may all be the same and have similar preferences, but we cannot know this. The result, which Smith put forward in the *Wealth of Nations*, is that exchange takes place by means of each individual trying to please the imagined needs of others: altruistic hedonism. When Smith argues that “it is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest” he is simply stating what he considered to be an incontrovertible fact that no individual could possibly act benevolently, since it is impossible to know the tastes and preferences of other individuals. It is in his own interest to imagine and try to discover the preferences of others. He then goes on to note that “though it may be true, therefore, that every individual even in his own breast, naturally prefers himself to all mankind, yet he dares not look mankind in the face, and avow that he acts according to this principle,” rather, “he must ... humble the arrogance of his self-love, and bring it down to something which other men can go along with” (Ibid., 83). Thus, Existential Diversity leads to Existential Uncertainty about how one can best satisfy his own needs by trying to seek out the unknowable needs of others. And these needs can only be discovered through diversity and exchange. The implication is that there will be multiple bilateral exchanges between diverse individuals with diverse preferences, each

seeking to serve his own needs by imaging and seeking to discover and satisfy the needs of others.

Now let us ask the question, what is exchanged between these self-interested individuals? Economists often speak of “commodity exchange,” but if each individual has a different appreciation of what is exchanged, and if what is exchanged satisfies unknown wants, then each thing exchanged must be composed of different characteristics—each of which would appeal to one of the diverse needs of individual consumers. This means that there will be as many diverse “commodities” involved in each of the millions of exchanges that take place in the market, since each person evaluates them differently and considers them a different commodity since each satisfies a different need or preference. We thus have bilateral exchange of a multitude of unique products identified by their different characteristics.

Now, if all exchange is bilateral, what is the counterpart in these exchanges? The answer is usually other commodities, but traditional theory suggests that in a market economy, efficiency considerations should lead to the creation of an intermediary good, usually called a “money commodity.” But what commodity will serve as money?

The traditional answer is that it is a commodity that becomes uniformly accepted as a means of reducing transactions costs, that is, has a common property. Thus, the first condition for the existence of exchange is the existence of a commodity that does not represent diverse characteristics to each individual, but satisfies a common need of all in exchange. Here we start to see the need of the market economy to eliminate diversity and introduce homogeneity.

Historically, precious metals, even though they have diverse characteristics, have been the commodity that served this purpose—but only when they are minted by a sovereign into coin to guarantee the required uniformity. But even in the case of minted coin, most economies that used metallic currency experienced the circulation of many different types of coinage, with different metallic content and different weight due to wear and tear and clipping. Thus, coins were in fact highly diverse, and reduced to the underlying metal content by the application of a uniform market price.

And the same thing can be applied to debt-based means of payment. In the US, until the creation of the National Banking System, various state banks issued their own bank notes that served as the basic means of payment, but each had an exchange value that was different from their face value, depending on the creditworthiness and location of the bank. Indeed, the first

credit rating agencies started by providing broadsheets providing the discounted prices of the notes of the thousands of individual banks that issued notes.

Thus, the version of market exchange providing diversity of choice is one in which many diverse individuals with diverse tastes engage in bilateral exchange of many different products which represent different characteristics for each individual and exchanged for a multitude of diverse means of exchange with diverse values.

## **THE TEXTBOOK DEFINITION OF THE PERFECT COMPETITIVE MARKET**

Now, let us consider the theoretical definition of a market. A textbook definition would have the following characteristics:

1. A public gathering held for buying and selling merchandise.
2. A defined location where “commodities” are offered for sale.
3. Where the purchase and sale of a specified “commodity” takes place, e.g., the soybean market.
4. The institution that produces an equilibrium market price.

Thus, what we usually mean by a “market” is homogeneous geographical location, where buyers and sellers meet to exchange a single, uniform “commodity,” for a common uniform means of payment called money at specific periods of time. Indeed, the first markets were held at the pleasure of the sovereign in specified locations on specific days of the week. The diversity of continuous, bilateral free market exchange seems to have been encompassed by uniformity, at least on the spatial and temporal level. Exchange can only take place at specific times and specific places for well-defined commodities with uniform characteristics. Thus, while the benefits of free markets depend on diversity, the operation of these markets depends on uniformity.

The interesting point is that this problem is not new in economics. Indeed, it concerned one of the founders of modern Political Economy, William Petty, who was the first to confront this conundrum between diversity and uniformity. In *The Wealth of Ideas*, Alessandro Roncaglia notes that Petty recognizes that “the commodity is not the smallest existing unit of matter of which the economic universe is composed, but it is itself an abstraction” (Roncaglia 2005, 64). Petty dealt with the “notions of commodity and market ... [in] a brief essay written in the form of a dialogue, the Dialogue of diamonds ...



The protagonists of the dialogue are two: Mr. A, representing Petty himself, and Mr. B, an inexperienced buyer of a diamond. The latter sees the act of exchange as a chance occurrence, a direct encounter producing a bilateral relationship of bargaining conflict between buyer and seller, rather than a routine episode in an interconnected network of relationships, each contributing to the establishment of stable behavioural regularities. The problem is a difficult one because the specific individual goods included in the same category of marketable goods—diamonds in our case—differ the one from the other on account of a series of quantitative and qualitative elements, even leaving aside differing circumstances (of time and place) of each individual act of exchange. Thus, in the absence of a norm which might allow the establishment of a unique reference point for the price of diamonds, Mr. B considers exchange as a risky act, since it appears impossible for the buyer to avoid being cheated, in what for him is a unique event, by the merchant who has a more extensive knowledge of the market. In the absence of a web of regular exchanges, that is of a market, the characteristics and circumstances of differentiation mentioned above operate in such a way as to make each act of exchange a unique episode, where the price essentially stems from the greater or lesser bargaining ability of seller and buyer. (See Petty [1899] 1963, 624–30, as quoted in Roncaglia 2005.)

The existence of a market, on the contrary, allows transformation of a large part of the elements that distinguish each individual exchange from any other into sufficiently systematic differences in price relative to an ideal type of diamond taken as a reference point.

*Thus the paradox of supply and demand as determinants of price: a uniform commodity is necessary to the creation of a market, but the uniformity that creates a commodity requires a market and a market price.*

There is thus a relationship between the emergence of a regular market on the one hand and, on the other hand, the possibility of defining as a commodity a certain category of goods, abstracting from the multiplicity of effective exchange acts, a theoretical price representative of them all. ... Petty's writings thus offer a representation of the process of abstraction leading to the concepts of market and commodity from the multiple particular exchanges that occur in the economy. (Roncaglia 2005)

Thus, for Petty, the market is an abstraction, in the sense that each individual act of exchange concerns a specific diamond, exchanged at a specific time and place, at a specific price. The market exists as a concept which is useful, indeed indispensable, to an understanding of the functioning of a mercantile and then capitalistic economic system, precisely because it is possible to abstract from the myriad of individual exchanges a given set of relationships which can be considered as representative of actual experience and which can provide a guide to behavior. The same considerations apply to the concept of the commodity. In fact, reality is

composed of an infinite number of specific individual objects. We group them into categories, such as diamonds, on the basis of some affinities to which we attribute central importance while ignoring elements of differentiation considered as of secondary importance. In other words, the commodity is not an atom of economic reality, but is itself an abstraction, that already implies a certain level of aggregation. The most opportune level of aggregation is determined by the extent of the interrelationships between the various acts of exchange. Thus, we can speak of different individual diamonds as belonging to a single commodity, with its own specific market, because the links among various individual exchanges of particular diamonds are such as to render acceptable the hypothesis that they are one and the same good, since they permit reduction of all differences of weight, dimension and quality to quantitative price differences. On similar grounds, we may speak of the market for apples, or of the fruit market, or of the market for food in general: apples, fruit, or food may be considered, in turn, as a commodity according to the level of aggregation thought to be most adequate, keeping in mind the relationships that come into play within the group of producers and within the group of buyers.

Some abstraction is also necessary in formulating the concept of price so as to deal with the analytical problem of determining relative prices, namely exchange ratios between different commodities. Indeed a “price” corresponds to a “commodity”; it represents a multiplicity of values, each relative to an individual act of exchange, when such acts of exchange concern goods sufficiently similar among themselves as to be included under the unique label of the same commodity (as in the case illustrated above of the “price” of the “diamond”). Furthermore we have to delimit the set of acts of exchange to which we refer as the basis for our notion of price, relative to the time and space in which they take place. (Roncaglia 2005)

*Thus, the theory of free markets requires markets to furnish the prices that render homogenous the diversity of aspects of commodities, but a market can only exist if there are homogenous commodities.*

This paradox is usually hidden behind the assumptions that are set out to define a perfectly competitive market, usually defined in the textbooks as the existence of a single price for a given “commodity”:

1. Many suppliers each with an insignificant share of the market—this means that each firm is too small relative to the overall market to affect price via a change in its own supply—each individual firm is assumed to be a price taker.
2. An identical, homogenous output produced by each firm—in other words, the market supplies homogeneous or standardized products that are perfect substitutes

for each other. Consumers perceive the products to be identical and perfect substitutes.

3. Consumers have perfect information about the prices all sellers in the market charge—so if some firms decide to charge a price higher than the ruling market price, there will be a large substitution effect away from this firm, and vice versa, for those selling below the ruling price.

4. All firms (industry participants and new entrants) are assumed to have equal access to resources (technology, other factor inputs) and improvements in production technologies achieved by one firm can spill over to all the other suppliers in the market.

5. There are assumed to be no barriers to entry and exit of firms in long run—which means that the market is open to competition from new suppliers—this affects the long run profits made by each firm in the industry. The long run equilibrium for a perfectly competitive market occurs when the marginal firm makes normal profit only in the long-term and each firm faces a horizontal demand curve for its output.

6. No externalities in production and consumption, so that there is no divergence between private and social costs and benefits.

7. There are no advantages or disadvantages from geographical location, since all exchanges take place in a single location at the same time.

Thus, the diversity that emerges from Smith's insistence on the individual assessments of one's own utility to be derived from each exchange is replaced by perfect uniformity in all aspects of market exchange.

It is interesting that most economists did not fully accept these conditions. For example, both Walras and Marshall used as referent financial markets where homogeneity assumptions appear to be satisfied—in particular, Walras' reference to the institution of the “call market” used in the Paris Bourse. Here exchanges took place at fixed periods, in a fixed place for financial assets that were homogenous. There is no difference in the multiple shares issued by a company or the debts “rentes” issued by a government. They are homogenous by design, as is the market design. But more of this later. Walras believed that this example generalized to market exchange.

However, there were dissenters. For example, in his *Capitalism, Socialism and Democracy* (1942), Schumpeter argued that the kind of competition that actually takes place in capitalist economies is that associated with the creation of a

new commodity, the new technology, the new source of supply, the new type of organization (the largest-scale unit of control for instance)—competition which

commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives (Schumpeter 1942, 84).

For Schumpeter, it is the creation of diversity from existing production that provides for the benefits of the capitalist market system. It is the creation of monopoly position through a better, different output that provides for the “creative destruction” that produces wealth and accumulation in the economy. But, note that this is a different kind of diversity than that proposed by Smith, for it does not emanate from the idiosyncrasy of individual’s preferences. It results from a change in the given data, and thus much closer to the kind of process that Foster had in mind. Schumpeter rejected the existence of “an entirely golden age of perfect competition” (Ibid., 81). Yet, he maintained the Walrasian framework of equilibrium, in the belief that the market would eventually eliminate competitive advantages, although in his later years he saw the advent of the large corporation as dimming the force of creation for destruction.

Somehow, economists seem able to live with the juxtaposition of the two principles of diversity and homogeneity, market efficiency that requires diversity, perfect competition which requires homogenous products, and Schumpeterian competition which, again, requires differentiation to provide creative destruction. But, Schumpeter moves us closer to Foster’s idea of value and the decision making required in reaction and adaptation of institutions to technological change.

There is a parallel to this argument at the macro level. A corollary of Sraffa’s criticism of supply and demand theories of prices produced the Cambridge Capital theory controversies in which mainstream economists put forward models in which a homogeneous capital good produced a homogeneous commodity in a model meant to show the operation of relative prices of capital and labor. But there is no market in which capital exchanges for labor; there are only markets in which capital or labor-intensive goods compete.

## **THE DIVERSITY, UNIFORMITY, AND THE PERFECTION OF FINANCIAL MARKETS**

Let us now return to the place where the assumption of homogeneity in support of perfect competition is said to be most naturally satisfied. Just to start, let us note that the entire mechanism of market efficiency that operates in financial markets is based on the difference

between diversity and homogeneity in the form of the definition of alpha returns and beta returns. The former is idiosyncratic, and based on the diversity of an asset's returns, while the latter is homogenous with market average performance. The only justification for paying as asset manager is the ability to identify alpha returns, that is, returns that have not yet been homogenized by the market. Of course, once they are recognized, they should conform to market performance.

But, there is a more important example of this conflation of diversity and homogeneity. The very conception of an equilibrium market price requires diversity of expectations of the future movement in price on the two sides of the trade, since a buyer will only buy if a rise is expected, and a seller will expect to avoid a decline. Equilibrium and the determination of price thus require diversity of expectation, while rational expectations require full information and uniform assessment of all current information in prices. As the story goes, a Chicago finance professor will never bend down to pick up a \$100 bill since he knows that under efficient markets someone will already have picked it up. Note that if everyone believes this, there should be a lot of \$100 bills lying around the streets of the South Side of Chicago!

Of course, note the implications of the idea that it is impossible to beat the market so you should always buy the market. If there are no sellers, then it always goes and you can't beat the market, but in order to have any transactions, you need liquidity sellers, but as long as they do not dominate, the market still cannot beat a market that only rises!

Finally, we get to the modern financial markets where financial innovation dominates. Now, just exactly what is *financial innovation*? As already noted, financial markets, *pace* Walras, are based on the distinction between diverse, idiosyncratic risks and market or homogenous risks. Things like consumer loans, auto loans, credit card loans, and especially home mortgages were considered idiosyncratic risks. They were all different so that that the market process of homogenization could not work. They could not be treated in the same way as bonds or shares. Every share of a given class issued by IBM is the same as any other, any bond of a given class issued by IBM is the same as any other. A loan to John Smith to buy a Porsche is not the same as a loan to Adam Smith to buy a Chevrolet; it differs in terms of the borrower as well as in the underlying asset that is being purchased. There is no way to compare the two and thus there is no market and no market prices.

## THE FINANCIAL ENGINEERS, UNBUNDLING, AND INNOVATION

Or, at least that was the case until the financial engineers showed up. First, they challenged the idea of the uniformity of a bond by unbundling. Bond is not a bond, it is a bundle of differentiated cash flows. The first coupon on, say, a thirty-year bond annual coupon bond is the same as a one-year bond. The second coupon is the same as a two-year discount bond, and so forth. A thirty-year bond can be split up into 31 separate cash flows (one for each coupon and one for the repayment of principal). Each can be traded, bought or sold, sliced or diced in any shape or form. The market for thirty-year bonds is thus also thirty-one different underlying markets—more diversity and homogeneity and the possibility of earning from differences in the different markets.

But that still left the idiosyncratic risks. This was taken care of by the process of securitization. We can skip the consumer loans, the auto loans, and the credit card loans, and go straight to the mortgages. In the words of Lewis Ranieri, who worked for Salomon Brothers and is credited with the creation of the collateralized mortgage assets that created so much difficulty in the current crisis, the “objective was to try to create a mortgage asset that was the equivalent of a bond, which was stripped of its idiosyncratic nature, of its diversity, to reduce the diverse mortgages to homogeneity.

The goal was to create an investment vehicle to finance housing in which the investor did not have to ... know very much, if anything about the underlying mortgages. The structure of the deal was designed to place him or her in a position where, theoretically, the only decisions that had to be made were investment decisions. No credit decisions were necessary. The credit mechanisms were designed to be bullet-proof, almost risk-free. The only remaining questions for the investors concerned their outlook on interest rates and their preferences on maturities. (Ranieri 2000, 38)

But,

Many of the factors that gave standard mortgage products high credit quality were missing in new mortgage products we devised. One such product was the GPM, to assist families that could not previously afford home ownership. This product is based on the principle that inflation enables workers to get annual wage increases of 6 per cent or more each year. The mortgage was designed with a rising payment schedule that gives credit for these wage increases. Therefore, a lender can qualify a borrower at a low monthly payment today and then step up the payment up 6 to 7 per cent a year. This enables more households to qualify for mortgages. (Ibid., 40)

This is a description of an adjustable rate subprime mortgage that came to dominate the mortgage market. Ranieri notes, however:

Unfortunately the GPM proved to be a failure...because we overlooked a fundamental reality—everyone does not succeed. In fact some of us fail. Most simply get along. Therefore, a pool of GPM loans has default rates well above the actuarially allowable standard of three or four out of a hundred. Furthermore, if pay raises slowed or a recession occurred, defaults could be catastrophic. We learned that structures that depend on people succeeding and earning more each year do not follow the same actuarial trend as traditional mortgage products. ... A second new product that suffered from structural flaws was the adjustable rate mortgage (ARM). The early adjustable rate mortgages ... were designed to float within external market rates or a cost of funds index. However, when the interest rate index rose, which in turn increased the borrower's monthly payments, mortgagees protested the payment hike, and many defaulted on their mortgages. Securitization starts to break down as a concept when the issuer imposes on the investor the responsibility of analyzing the underlying collateral. As a general principle, we found that in order to successfully securitize an asset type, one must be able to predict the actuarial experience of defaults. Single family homes have an actuarial foundation. ... This problem could not be mitigated by insurance because the premium would be prohibitively expensive. (Ibid., 40-1)

In simple terms, Ranieri is saying that his attempt to convert diversity into homogeneity failed. And as a result, there was no “commodity,” no “market,” and no efficient market “price.” We could say that the fundamental theoretical error behind the subprime crisis was the failure to distinguish diversity from uniformity and the failure to realize that without a logical foundation for a uniform homogenous commodity, there can be no market—and with no market, there can be no market prices to provide perfect information to inform decisions. The market was an imaginary construction, based on imaginary commodities, and decisions were based on imaginary prices. And on this basis, Foster would quickly tell us, maximum satisfaction clearly did not produce sustainability and the ability to continually to be able to feed ourselves. We need more than simple regulations to improve the operation of markets; we need to adjust institutions to restore viability to the financial system as a support for the provision of the means of life.

But, the real world keeps throwing up examples of the difficulties in resolving the paradox of uniformity and diversity. The scandal over the manipulation of the London Interbank Offered Rate (LIBOR) is an attempt to create a uniform, homogenous rate of interest as a benchmark. But interbank lending takes place on a bilateral basis, between banks, of diverse credit quality, of different amounts, at different times and places. LIBOR is an attempt to make

these diverse bilateral exchanges appear as if it is the rate that would be created by the textbook definition of a competitive market producing a single price. Obviously, this could never be achieved, and the traders who manipulated the rate were working to their own advantage, but they were able to do so because of the paradox of diversity and uniformity.

## **DIVERSITY, HOMOGENEITY, AND THE FALLACY OF COMPOSITION IN CURRENT ECONOMIC POLICY**

Finally, we are all aware of the surprise that was caused when the sub-prime crisis produced impacts on real production and employment, producing the most serious disruption to economic activity since the Great Depression. Here, also, we find the paradox of individual diversity and homogeneity at work. Once the prices of mortgage securities were called into question, there was a uniformity of opinion on their values, which called into question the existence of markets in which to trade them. Not surprisingly the imaginary prices soon proved to be just that, and financial firms were no longer willing to engage in borrowing and lending, resulting in a severe liquidity crisis and a drying up of funding for productive activities. Indeed, this is just an application of what was called the fallacy of composition. It is best understood by reference to the old story of the optimal behavior against the risk of fire in the movie house. For any single individual, there is an optimal path to the emergency exit. Each individual believes that it is possible to escape in case of fire. When fire breaks out, all attempt to implement the optimal path, but none of them succeeds because they are all trying to execute the strategy at the same time. The same is true of financial institutions who believe that they have assets that can be converted at market prices into liquidity as required. But this implies the existence of diversity of opinion. When all hold the same view and that diversity disappears, there is no liquidity and all die in the fire. Thus the importance of the central bank acting as lender of last resort, taking a diverse view and acting as a residual buyer when everyone is a seller—of becoming the market maker and price maker.

And the same principle is at the basis of Keynes' explanation of the impact of individual decisions on aggregate output. An individual can increase savings only if someone else is willing to take the opposite view. When everyone seeks to save to offset the losses incurred in the collapse of housing prices, there is no longer a diversity of views, and incomes will fall and stymie the attempt to recover from the crisis. Who will take the opposite view? Keynes' answer



was that only the government had the ability to take a diverse view and dissave in order to allow the private sector to dissave. The government thus plays the same role as the central bank in providing the required diversity in the face of homogeneity of view: Of being the buyer of last resort.

The current political discussion appears to be an attempt to introduce homogeneity in the behavior of all sectors of the economy: financial institutions are to reduce leverage to save and build up more capital, households are to reduce expenditures to increase savings to meet their losses from the housing collapse, the business sector is to reduce costs to improve profitability, and the government is to reduce leverage by spending less to pay down debt. There is no longer the diversity that is required for a viable economy. Here we see Foster's insightful point that an economics based on individual preferences and utility implies the assumption of prior saving and a non-sustainable institutional environment. But the lack of diversity is the characteristic of the command economy, and diversity the heart of economic survival.

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