

Incentive Divergence and the Global Financial Crisis

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Price bubbles and cycles due to reliance on financial intermediaries are ordinary characteristics of market interaction in a market economy. So long as people are free to interact, they will often err and be misled. It is possible that such errors and mistaken reliance on others can accumulate, leading to unusually large changes in demand and supply conditions.¹ The global financial crisis that began in 2007 was partly a manifestation of these ordinary phenomena. The phenomena were magnified and exaggerated, however, by a set of laws and government-created institutions. The most important were (1) regulation of financial intermediation by the Federal Reserve Bank (FED), the Federal Deposit Insurance Corporation (FDIC) and the Securities and Exchange Commission (SEC) and (2) the manipulation of money.

This essay explains the crisis by focusing on *incentive divergence*. Incentive divergence refers to a condition in which an actor's action in his own interest causes either benefits or harm to others whom he does not take into account.² I attribute the crisis to the incentive divergence (1) that exists under normal conditions in an otherwise pure market economy and (2) that is introduced by the regulation of financial intermediation, the manipulation of money, and other regulation related to the monetary system and monetary policy.

Unfortunately, space considerations prevent a full exposition of this explanation. In this essay, I omit discussion of monetary factors. I recognize this as a significant gap. A consequence is that I will be unable to fully defend my recommendations. I hope that some other author adequately presents the Austrian economists' case for maintaining a constant quantity of money, the elimination of deposit insurance, and abolition of government-controlled fractional reserve banking.

¹The fact that such crises are ordinary is reflected by Reinhart and Rogoff's 2008 report on a number of similar crises under widely varying policy regimes.

²The concept of incentive divergence has a long history in economics. Its most recent manifestation may be in the work of theorists involved in so-called "mechanism design" (Maskin 2008; Myerson 2008).

I have a good reason for emphasizing the incentive divergence that occurs in the absence of regulation. It seems likely that government measures to deal with the crisis, which was mostly caused by regulation, will themselves consist of regulation, albeit of a different sort, rather than deregulation. The regulations will change but no doubt the new regulation will be a major factor helping to cause future crises. Since it is uncertain what these future regulations will be, an essay that identifies defects in a previous regulatory regime is likely to be irrelevant for the future. However, the incentive divergence that occurs in the absence of regulation will continue to exist, so long as some segments of the economy remain unregulated. For this reason, an explanation of the recent crises that focuses on market incentive divergence is likely to have greater relevance for explaining future crises. Moreover, if one's goal is either to justify non-intervention or to construct the optimal regulatory regime, he must account for the incentive divergence that would exist without regulation. An hypothesis about how a financial crisis could occur in the absence of regulation, then, has direct policy relevance.

Parts 1-3 describe the incentive divergence that is present in ordinary market interaction. Part 4 tells how incentive divergence is increased by regulation of financial intermediation. Part 5 presents my recommendations. A brief glossary is provided at the end of the essay, since I use several terms that may be unfamiliar to readers.

1. INCENTIVE DIVERGENCE IN A MARKET ECONOMY

The starting point for modern economics is the theorem of consumer sovereignty.³ This theorem applies strictly only to a complete private property system. Ludwig von Mises defined such a system as a

³See Gunning 2009.

situation in which each actor receives all of the benefits that result from his action, including the benefits that are felt by others, and in which he is responsible for all of the harm to others that he causes (Mises 1966: 655). In the market economies we know, such a situation is rare if it exists at all. Recognizing this, I regard the complete private property system assumption partly as a *paradigm* for comprehending and describing the extent to which consumer sovereignty prevails in real market interaction.

I aim to invoke this paradigm to explain why there can be a sudden disruption in the satisfaction of consumer wants of the type that occurs during a financial crisis. To achieve this goal, I identify situations of incentive divergence. Incentive divergence leads consumer sovereignty to be compromised because an actor may make decisions in his own interest that harm others and because he may fail to act when the benefits to others are much greater than the costs to him in terms of money.⁴

Incentive Divergence in Market Interaction

By definition, no incentive divergence could exist in a Crusoe situation – the one-person society. However, specialization causes it to be pervasive in a market economy. Whereas Crusoe has an incentive to produce and use knowledge that he believes will satisfy his wants, the specialist in a market economy ordinarily has very little incentive to produce knowledge about how to produce the goods that she consumes. This lack of knowledge exposes a person to harm due to others errors, to misjudgments about others' future actions and to deceit or fraud. Consider first the case of deceit and fraud. It is true that communication by means of markets, prices and contracts helps individuals reduce much of the incentive divergence that would otherwise exist. For example, although the employer makes job offers in his own interest; his announcement

⁴Although use of the incentive divergence concept is a clear implication of Mises's praxeology-based economics, he did not often use it, to my knowledge. Nor did his students. The pioneers of practical work in applying the paradigm were the so-called property rights theorists of the 1960s and 1970s, following the lead of Ronald Coase and the new institutionalists (Furubotn and Pejovich, 1974; Klein, 2000). To my knowledge, no one has used the concept to explain the global financial crisis and to formulate policy recommendations.

sends a signal of a potential gain to prospective employees. This gives them an incentive to apply for the jobs. Thus, a specialized employer who could benefit potential employees actually does so by means of his job offers and eventual employment. A large-scale milk manufacturer produces milk for others because she expects to sell her milk to consumers. Consumer responsiveness in the past and her belief that their choice conditions have not changed significantly give her confidence that she can earn a profit. The specialized milk producer's knowledge benefits milk consumers by enabling them to use money to buy milk in a market. An electrician acquires an incentive to install the electrical network for a new house by receiving a promise from a builder to pay for his work after she sells the house. The contract enables the building contractor and ultimately the house buyer to gain from specialized knowledge and work of the electrician.

Observations of such signaling and responses to signals led F. A. Hayek to refer to the price system as a marvel (Hayek 1945: 527) in that it economizes on the production and use of specialized knowledge. The market economy is also a marvel in that each person knows next to nothing about how to produce the vast majority of the economic goods she consumes. Indeed, it is the fact that individuals need not acquire such knowledge that best characterizes the gains from specialization in market interaction (*ibid.*).

Nevertheless, as pointed out above, when a person depends on others to produce goods for her, she renders herself vulnerable (1) to their errors, (2) to her own misjudgments about the actions that the others will take and (3) to their deceit and fraud. On the one hand, she may misjudge contractual or implicit promises. The employer may not pay after the work is done, the milk may be tainted, and the electrical wiring may cause a fire. On the other hand, the market conditions that led others to send signals upon which a person comes to rely may change. The employer may layoff workers who expected to keep their jobs because of a reduction in demand or a rise in costs; the milk producer may go out of business; and electrical contractors may drastically raise their prices after the builder has already made a substantial investment in

house construction. In both cases, the theorem of consumer sovereignty is violated. The reason, as I define it, is incentive divergence.

In parts 2 and 3 I describe two classes of events that can result from incentive divergence in a pure market economy that lacks complete private property rights. The first is a housing bubble, which results from incentive divergence in market signaling and in selling house mortgages. The second is a reliance cycle in financial intermediation, which result from incentive divergence associated with the principal-agent relationship in the supply of financial services and corporate governance.

2. HOUSING BUBBLE THEORY

I distinguish a price bubble from a sustained price increase. A sustained price increase is common in markets for highly durable resources like houses and land. A continuing unexpected migration of people from one place to another causes a continuing rise in demand. Increases in supply lag behind the increases in demand. Land and/or house prices persistently rise. Eventually, the migration slows and increases in supply catch up with increases in demand. The price stops rising and may even fall if suppliers have made the error of anticipating further increases in demand.

Incentive Divergence Leading to the Housing Bubble in the US

Bubbles in such markets are also common. Bubbles are caused by two separate sources of incentive divergence: *novice speculators* and *cunning salespeople*. I define a novice speculator as someone who has no special information about the reason why a price will rise or fall. The novice speculator uses *statistical extrapolation* to make decisions to buy or sell. Statistical extrapolation refers to a decision-making rule that

predicts the future consequences of a choice entirely on the basis of the past consequences of the same, or similar choice. Its most pure form is the application of mathematical formulae and past numerical data.

Statistical extrapolation is extremely successful in the material world. The successes of physical scientists and engineers in conquering the forces of nature and in enabling the mass production of the numerous goods that have improved the human condition is largely due to the reliability of extrapolation. Statistical extrapolation is also highly successful in everyday life. Numerical statistics on past weather conditions at different times during the year help people decide when and where to live and travel and how to best exploit the resources of the sun, wind and water. Statistics on the previous consequences of various medical treatments help people decide which treatment to use for a particular ailment.

In spite of its success in science and everyday life, one who aims to successfully predict others' actions should not use statistical extrapolation. He should use "the understanding" (Mises: 117-8). That is, he should assume that the others are actors with ends and means. Beginning with this assumption, one makes judgements about the nature of the ends and perceived means. Then, she uses these judgments as a basis for building images of the others' choices. This, of course, is what economists do also. "The understanding" is appropriate both for succeeding in market interaction and in trying to predict others' actions in social science.⁵

⁵Mises's way of formulating this issue seems to me far superior to that of the modern literature. A recent paper in the *American Economic Review* presents a study of "environments with players who are naive, in the sense that they fail to account for the informational content of other players' actions" (Esponda 2008: 1269). In this "mainstream" formulation, the author implicitly defines "naive" as the character of a person who uses statistical extrapolation to make decisions. But in referring to "informational content," he implies that knowledge of the *meaning* of others' actions is available to anyone who uses the correct interpretative formula. Such an implication suggests a superior view of what a person's actions actually reveal about what she will do in the future. It directs one's attention away from the intersubjective uncertainty that is characteristic of all market interaction and, therefore, away from what many Austrian economists have called the "market process." Properly understood, the market process refers to how one can expect individuals to act in an environment in which they can earn profit by producing goods and services for others at a sufficiently low cost to attract them to buy. Such an environment provides incentives for individuals to bet that their appraisals of resources are superior to those of others. In turn, it gives the individuals an incentive to develop and employ methods to help *understand the meaning* of others' actions. Although modeling the processes that exist in environments described by Esponda (i.e., environments in which some individuals are "naive") is the only way to explain a crisis of the sort discussed in this essay, the deeper question of why such environments exist necessarily lies beyond the scope of his analysis. For this essay, it is the most important question. It is thus important

Novice speculators were especially active in the US housing market between 2003 and 2005, when the rate of price increase in new homes averaged more than 8% per annum. An increasing number of prospective buyers of houses based their decisions to buy on the expectation that the unusual price increases of the past would continue. Their decisions to bid higher prices sent signals to house suppliers and also to other prospective novice speculators. Because supply was slow to respond, house prices on average increased at a gradually increasing rate (Shiller 2005: 13).

I define a cunning salesperson as a person whose goal is to profit by using deception and/or fraud to facilitate an exchange between one person and another, who he persuades. The profit is usually in the form of a sales commission. In the case of a housing bubble, a cunning salesperson deceptively or fraudulently persuades a person that she can improve her being by buying a house because house prices have been rising. Perhaps the simplest deception is the representation of the facts of the past. The salesperson may draw a graph to show the history of house prices and present a chart to represent how much the novice speculator can gain if she decides to sell or refinance. Then, if the novice speculator objects that she cannot afford the downpayment, he offers an adjustable rate mortgage, a negative amortization mortgage, a piggyback loan or some other inducement.⁶ Such a salesperson does harm to the buyer while benefitting himself. His actions manifest the most extreme form of incentive divergence in a peaceful society with protection against theft and violence.

to ask why so many additional novice speculators entered the housing market as housing prices rose in the manner they did.

⁶Many salespeople between 2003 and 2005 went far beyond this by defrauding both buyers of houses and mortgage lenders. Such salespeople defrauded borrowers by promoting themselves as agents for the buyers and then mis-stating the terms of the contract, which unwitting buyers chose to sign. They defrauded lenders by misrepresenting the character of borrowers. Consider the testimony of a loan officer of Novastar, a California company that specialized in originating loans. The loan officer

who worked in California from 2002 to '03, told plaintiffs' lawyers that employees would apply an "X-Acto knife and some tape" to borrowers' W-2 forms and paychecks to qualify them for loans. The same employee said that on other occasions, the company would temporarily deposit \$5,000 in the bank account of a potential borrower to inflate his or her assets (Lubove and Taub: 2007).

Some house buyers do not need the prodding of salespeople to make the decision to speculate on the assets they purchase. They are already prone to use statistical extrapolation. But many would not enter the market if it were not for the persuasive techniques of the salespeople.

Partly as the result of novice speculators and cunning salespeople, suppliers of houses during the 2003-2005 period received signals that there was a sustained and continuing increase in the demand for houses. They then sent further signals to resource suppliers that there would be a more or less indefinite increase in demand for resources. Producers of electrical wiring, plumbing supplies, house fixtures, construction work, etc. all received and sent signals up their respective supply chains. Throughout all of the supply chains related to producing a house, signals were received to produce more. Upon receiving such signals the entrepreneurs upgraded, invested in R&D and embarked on human capital production programs.

Since most houses are purchased with borrowed funds, signals were also sent up the supply chains related to mortgage financing. Mortgage-finance entrepreneurs sent signals to intermediaries who, in turn, sent signals to savers to the effect that they could earn income by saving in the form of assets the value of which depended on the repayment of mortgage loans. As savers responded to these signals, they changed their patterns of demand for near and more distant future consumer goods. In the process, the financial intermediaries upgraded, invested in R&D, and produced new human capital and other resources related to their work.

During the latter stages of a housing bubble, the supply of houses rises faster than the non-speculative demand. More experienced speculators begin to signal their expectations of a decrease in the rate of price increase or even a price decrease. As these signals compete with those of the cunning salespeople, the salespeople find it increasingly difficult to persuade novices to speculate. As speculative demand tapers off, the bubble starts to burst. When this occurs, most speculators whose decisions caused house prices to be exaggerated in the first place find that they have done damage to themselves. The capital gains they

expected were not forthcoming. In addition, they and the cunning salespeople by whom many of them had been persuaded damaged all of the unwary entrepreneurs who operated businesses along the relevant supply chains for houses and mortgages. Most of these suppliers suffer losses and abandon their longer term upgrading and investment projects.

Incentive Divergence

The thesis of this section is that incentive divergence due to the novice speculation and cunning salespeople is sufficient to explain a housing bubble. Moreover, it is reasonable to attribute these phenomena to ordinary activity in a market economy. The incentive divergence due to the novice speculator is manifest in the signals that are sent up the supply chains for resources. The loss borne by any particular novice speculator from using a poor method of economic prediction is only a part of the total loss due to her error. Numerous other actors are likely to be misled by the signals sent by house buyers who use statistical extrapolation. Perhaps the most important are future novice speculators since they also use increases in past house prices to predict future house prices and future increases in house prices. Cunning salespeople contribute to this incentive divergence by means of their persuasive actions.

A person could avoid all of the harm due to incentive divergence by not relying on others. Becoming a hermit would eliminate exposure to a housing bubble. Even a participant in market interaction could invest in acquiring the knowledge to more effectively apply “the understanding.” One must assume that because people do participate, do not acquire knowledge, and do not effectively apply “the understanding” that, in general, they gain more than they lose from such interaction. The crucial issue is whether some kind of government intervention can improve matters or whether it makes them worse from the perspective of consumer sovereignty.

The 2000s Housing Bubble

It would be completely wrong, of course, to attribute the recent housing bubble in the US entirely to sustained migration, novice speculation, and cunning salespeople. The FED engineered massive increases in the quantity of money in 2001 and again in 2003. There can be little doubt that the low interest rates accompanying these increases helped to sustain the housing bubble. Moreover, in 2005, when the FED reduced money growth, the rise in interest rates had the effect of compelling many subprime, adjustable rate mortgage borrowers to default.⁷ So one could argue that the bursting of the bubble was also engineered by the FED. There was also some regulatory and legislative pressure on financial intermediaries to lend to subprime borrowers. My purpose in this section is not to provide a causal explanation of the bubble but to show how a bubble could occur even without the manipulation of money and regulation.

3. RELIANCE IN FINANCIAL INTERMEDIATION

The recent housing bubble was spurred partly by another type of incentive divergence that is typical of financial markets – the principal-agent relationship (see glossary). The principal-agent relationship is the underlying cause of what I will call a *reliance cycle*. In financial markets it is manifest in the following way. A financial intermediary builds a reputation for being reliable, many savers (qua investors) become reliant on him and reduce their monitoring of his activities, he or a surrogate proceeds to violate savers' trust by acting recklessly or using deceit or fraud. Guaranty and insurance promises may not be kept. After current savers lose large sums of money, future savers become more cautious than usual in turning control of their

⁷Those who had borrowed on strictly adjustable rate mortgages began to default immediately. Most adjustable rate mortgages, however, carried rates that were fixed for two years. Defaults on these were delayed until the fixed rate period expired.

funds over to an agent. In the case of the global financial crisis, the entire set of financial corporate chief executive officers (CEOs) can be conceived as playing the role of agent. Numerous financial intermediaries, many acting independently but some acting in concert, misled and were partly misled themselves about the security of the assets they acquired for themselves on behalf of savers, investors and stockholders.

Fundamentals of Financial Intermediation

The vast majority of savers in a market economy who wish to earn a return on their savings lack specialized knowledge about profit-making opportunities and know it. As a result, they have incentives to turn control of their money over to financial intermediaries. The most basic financial intermediary service offered to savers is to find either borrowing producers who can earn a profit or households who are willing to pay interest to borrow. Thus, the incentives of savers to earn income on their savings provide opportunities for financial intermediaries to gain by offering various risk-rate of return options along with a second service of giving advice, or otherwise enabling the saver to gain from the intermediary's specialized knowledge about which alternative is best. The savers' incentives provide the environment; financial intermediaries operate in that environment.

Guaranty is common in such transactions. Guaranty is a promise to perform some action if certain events are observed to take place. In financial intermediation it is used to assure savers that their principals and interest on loans will be paid. It typically consists of a promise to transfer the ownership of property, which most often consists of money, if the principal and interest is not paid as promised. A financial intermediary may provide the guaranty herself. Or she may purchase it for a fee from a specialized guarantor or insurer. The guaranty relationship is also a principal-agent relationship, although it is more complex.

The CEO of a firm that manufactures and sells a product is an agent for his stockholders. In supplying governance, he also supplies financial intermediation services for them. The CEO of a financial

intermediation firm is thus an agent for two different sets of savers: his stockholders and the savers and investors who entrust their funds to the firm he governs. Such a CEO is in a position to cause harm to both sets.

The history of financial intermediation is filled with cases in which, facing this environment, unscrupulous intermediaries have swindled savers out of their wealth. Nevertheless, if such swindles were too frequent or large, a saver would be reluctant to turn her money over to an intermediary in the first place. In general and in the long run, the expected gain from financial intermediation must be positive. Financial intermediation performs an economic function and the financial intermediary entrepreneurs, in performing that function, act according to the theorem of consumer sovereignty.

Reliance Cycle Theory

A reliance cycle in the supply of financial intermediation services can be divided into three periods. In the first, savers are extremely reluctant to entrust their savings to financial intermediaries. Their use of “the understanding” leads many of them to recognize incentive divergence and to be wary. In the second, the intermediaries proceed to build trust in various ways but primarily by persistently paying higher returns than savers can earn without the assistance of intermediaries. During this period, savers gradually come to entrust more of their savings to the intermediaries. They become accustomed to earning high returns. In the third period, savers gradually reduce their alertness to potential intermediary actions that would lead them to regret entrusting their funds. They begin to think that the high returns will occur regardless of their trust and alertness. Also during this period, many intermediaries become more careless. They more often resort to statistical extrapolation to make lending decisions. As a result, they tend to make reckless loans. In order to increase sales, the intermediaries may also become deceptive and fraudulent, concealing information from savers or lying to them about the safety of their savings. At the end of the third period, the poor quality of

loans is revealed. A wave of caution and unwillingness to trust develops among savers, the intermediation business shrinks, and borrowers find it unusually difficult to borrow. The interest rate rises sharply on loans of a given type. The conditions that were present during the first period are repeated.⁸

A reliance cycle may be local, regional, national or international. It may be large or small. The nature of any particular cycle depends very much on liability law and social norms.

Reliance Cycles in the US Economy

The reliance cycle is a normal occurrence in a specialized economy where the purchasing power of savers' savings must be transferred either to unrelated individuals who carry out entrepreneurial ventures or to unrelated dissavers. The US financial crisis was actually a combination of several reliance cycles in several financial markets. Moreover, they were triggered largely by the housing bubble which itself was spurred partly by the manipulation of money by the FED. In addition, government regulation and guarantees played an important role. To untangle the various causes is a daunting task. In this section, I will consider how, during a housing bubble, incentive divergence in an otherwise pure market economy could cause a combination of cycles in different financial markets, leading to something like a crisis of the type that occurred. I delay discussing the influence of regulation till part 4.

⁸For many economists, the question would immediately arise as to why arbitrage would not prevent a reliance cycle from occurring. There is a ready answer. The effectiveness of arbitrage in eliminating over-priced and under-priced assets depends on the presence of individuals acting in the role of the entrepreneur who possesses knowledge about the difference between the current and future price and who possesses the wealth or access to it that is necessary to make the bet required for the under-priced asset to be purchased. Effectiveness also depends on the existence of a predictable political and regulatory environment. The persistence of over-priced assets during the build up to a crisis is due to the lack of such knowledge. A more complete answer is provided in the appendix.

Types of Reliance

In the following I identify three different kinds of reliance that were prevalent during the recent financial crisis and, it seems likely, could be present under the conditions of a market economy with incomplete private property rights. These are (1) reliance of savers on sellers of packaged securities and on the firms that rate such securities, (2) reliance of stockholders in large financial corporations on their CEOs and ratings firms, and (3) and reliance of large financial firms on insurers and hedge fund managers.

Reliance of Savers on Sellers of Mortgage-Backed Securities and on Ratings Firms

The story of reliance on sellers of mortgage-backed securities (MBSs, see glossary) begins with an understanding of securitization of mortgages. Perhaps the most widely known reliance was the reliance of savers on the firms that sold MBSs and on the firms that assigned ratings to these. Many savers did not buy directly. Their purchases were made through pension plans, financial institutions, mutual funds, and other intermediaries. These savers relied on fund managers who, in turn, relied on the sellers of MBSs. Next was the reliance of stockholders on the financial corporations they owned and from which they received income. Third was the reliance of the CEOs of such corporations on insurers and hedge funds. I consider all four types of reliance in this section. The story begins with the mortgage securitization.

Securitization of Mortgages

The nationwide and even worldwide scope of the crisis was due to mortgage securitization and associated developments. Securitization refers to the process through which the owner of a collection, or pool, of mortgage loans transforms them into bonds (mortgage-backed securities – MBSs) which earn income based on mortgage payments by borrowers. Typically, a securitizing investment bank bundles a set of mortgage loans into a pool and employs a private agency like Standard and Poor's or Moody's to attach a

rating to the MBSs that are issued from the pool. Shares in the income, minus fees and commissions, are then sold to investors. This process nationalizes and, in the rapidly growing international financial intermediation market, internationalizes a mortgage market that would otherwise be financed only by local savers who are in the best positions to evaluate the original mortgage lender and borrower.⁹

An increasing number of managers of investment funds, mutual funds, ordinary banks, and even the investment banks themselves were attracted to MBSs following 2003. An especially large group of buyers of MBSs were foreigners, typically through some intermediary. It was estimated that more than half of MBSs were held by foreigners as the housing bubble expanded.¹⁰

Mortgage securitization has a history that goes back to the pre-depression era.¹¹ Until 2003, however, it was dominated by agencies or enterprises created by the US government: Fannie Mae, Freddie Mac, and Ginnie Mae. Between 2003 and mid 2006, while the housing bubble was expanding at its fastest pace, privately securitized mortgage grew from about 20 per cent of the total to nearly 60 per cent. The increase corresponded almost exactly with the increase in mortgages to subprime borrowers and other non-traditional loans which appears to have increase the probability of default (England 2006; USGAO 49; Mayer et. al. 2009: 28). Since profitable private mortgage securitization has had a very short history, it is not certain that

⁹In addition to simple securitization of a mortgage pool, securitizers found that by attaching different legal rights to the pool of income received from mortgage payments, they could increase MBS marketability. Thus, ratings firms (see below) were willing to give the top AAA rating to MBSs that claimed the right to, say, the first 70% of the income from a given mortgage pool, while assigning a much lower rating to MBSs that claimed only the right to, say, the last 5% of the pool income (Morris 2008: 39-40). This process is called “collateralization” and an MBS of this type was called a collateralized mortgage obligation. Other debts, such as credit card debt have also been collateralized, so that a collateralized mortgage obligation is part of a larger class of collateralized debt obligations. The AAA-rated MBSs were attractive to pension funds and ordinary insurance companies because they paid a higher rate but were practically as secure as government bonds; the BBB-rated MBSs were attractive to hedge funds (see below) because of their high return and the possibility of balancing this risk against some other risk (*ibid.*: 108).

¹⁰The buyers were often agencies of foreign governments, called “sovereign wealth funds.”

¹¹The first effort at private securitization in the US failed, along with a large number of other financial schemes, during the Great Depression (Jones 1962; Weiss 1989; Bartlett 1989). Its revival was achieved through government intervention, which provided the guaranty for mortgage loans. Significant private securitization re-emerged in the late 1990s.

a market economy would contain a large amount of it. Indeed, it is quite possible that many intermediaries and savers were lured into this market by cunning salespeople. The salespeople could point out the history of relative security and high yield of MBSs. Of course, they neglected to mention or under-emphasized the pre-2000 conservative policies of the government enterprises and the implicit government insurance against default, while attaching undue importance to ratings agencies and the “insurance” that could be purchased to protect against unusual mortgage loan defaults. Depending on how much additional sales resulted from the prior government’s involvement in issuing MBSs, the magnitude of a financial crisis based on a housing bubble might be several levels below what it actually reached and the crisis may not have spread far beyond US markets.¹² With this reservation, I proceed on the basis of the assumption that savers in distant places could be persuaded to purchase rated MBSs.¹³

Ratings Firms

A critical factor in the choice to securitize was the rating. MBS ratings firms attached a range of high-to-low ratings to bundles of mortgages that were securitized into MBSs. The ratings had long been (and still are) regarded by buyers as a way of judging risk. Everyone, including foreigners, can tell the difference between an AAA-rated MBS and one that is rated BBB.

There are three major ratings firms: – Standard and Poor’s, Moody’s Investor Service and Fitch Ratings. However, Standard and Poor’s claimed 92% of the US market (Morgenson 2008). Since these firms perform direct services for buyers of MBSs, consumer sovereignty would probably be best served if the firms sold their ratings directly to consumers. Instead, the agencies provided the information free and charged fees

¹²The presence of government-sponsored securitization might help explain the difference between the magnitude of the effects of the collapse of subprime mortgage loan securitization and that of automobile loan securitization in the late 1990s (Hojnacki and Shick 2008).

¹³Coval et. al. (2009: 23) are more skeptical.

to the investment banks that issued the MBSs. To compete with the market leader, Moody's apparently reduced its standards, although it is difficult to prove this claim. Threatened with a loss of market share, Standard and Poor's responded by offering ratings that were at least as good as those of its competitors. When asked by an investment banker to rate a package of mortgages that had previously been rated by one of the smaller raters, its policy was to accept the rating of the smaller rater out of concern for the possibility of losing the sale of its services to the investment banker who made the request (*ibid.*: 2008). Since Standard and Poor's had the better initial reputation in the US, this strategy worked.¹⁴ However, such a response implicitly incorporated Moody's rating models into practically all of MBS ratings. Although these models are proprietary, it is practically certain that they were statistical extrapolation models based on the assumption that housing prices would not fall.¹⁵ Thus it seems reasonable to conclude that statistical extrapolation, as opposed to the understanding, thus became a systemic characteristic of mortgage pool ratings. This would not change until the crisis came.¹⁶

A ratings firm in an unregulated environment that was focused on its reputation and long run profit would recognize that the use of statistical extrapolation could jeopardize its future sales. Apparently, however, the executives in these firms were not concerned with the long run.

In such an environment, investment bankers who were building MBS pools typically shopped for a high rating and, if needed, had the rating sanctioned by the industry leader. Moreover, the ratings firms actively participated, for a fee, in helping an investment bank structure a pool of mortgages in order to assure

¹⁴Ratings firms are regulated in the US by the government's Securities and Exchange Commission. Apparently, this agency failed in its mandate. In light of our discussion of regulatory agencies in part 4, this is not surprising.

¹⁵When referring to how it rated financial instruments, Moody's executives referred to ratings by its "models" (Jones and Tett 2008).

¹⁶A couple of articles in the Financial Times (Jones and Tett 2008; Jones, Tett, and Davies 2008) report that Moody's knew about "an error" in a computer program and that ratings should have been adjusted downward long almost a year before they actually were.

that the pool would achieve the highest rating or set of ratings according to its objective tests (Rosner 2007).¹⁷ This arrangement gave ratings firms opportunities to increase short-term profit albeit at the expense of reducing their reputations as unbiased raters.

Those who relied on ratings firms also used statistical extrapolation. If they had used “the understanding,” they might have recognized the conflict of interest. On the one hand, they may have paid attention to the vulnerability of subprime borrowers especially on adjustable rate mortgages, to a fall in house prices, to a recession, and to a rise in the indices used to determine adjustable rate mortgage payments. In addition, they may have recognized the prospect for increased deception and fraud by mortgage applicants and mortgage originators or they may have expected the level of these activities to increase due to the very large increase in funds available to lend and subsequent increase in independent mortgage originators. On the other hand, they may have recognized that the ratings firms could not be trusted to employ “the understanding” in a timely fashion.¹⁸

¹⁷This article also describes court cases in which stockholders of corporations tried to recoup losses by suing a ratings firm for providing misleading ratings.

¹⁸In this essay, I have stressed the distinction between static equilibrium and “the understanding.” To my knowledge, this would be regarded as a novel approach to modern economists. Yet listen to how similar ideas were recently expressed in a *Journal of Economic Perspectives* article by professors from Harvard and Princeton:

As we have explained, these claims [that the market for structured credit will work itself out] are highly sensitive to the assumptions of 1) default probability and recovery value, 2) correlation of defaults, and 3) the relation between payoffs and the economic states that investors care about most. Beginning in late 2007 and continuing well into 2008, it became increasingly clear to investors in highly-rated structured products that each of these three key assumptions were systematically biased against them. These investors are now reluctant to invest in securities that they do not fully understand (Coval et. al. 2009: 23).

Presumably the last sentence has something to do with using “the understanding.” However, the authors attribute the errors made by investors to “biases.” Although a close reading indicates that such “biases” were removed when investors came to realize they were tricked by the salespeople, the authors express their conclusions in the language of statistical extrapolation, as indicated by the terms they use to express the three reasons for their skepticism about the future of structured credit.

Reliance of Stockholders in Large Financial Corporations on Corporate Executives and Ratings Firms

Economists have long recognized the incentive divergence associated with the corporation, or joint stock company. This is a special case of the principal-agent relationship. The CEO is the agent and the stockholders and the principals. The CEOs of corporations that are owned jointly by many small stockholders cannot be given the same incentive to manage efficiently as an owner-manager of a sole proprietorship. As a result, a corporate CEO is likely to make substantially more errors from the point of view of the theorem of consumer sovereignty than those made by a sole proprietor of the same kind of business. He is also unlikely to be as diligent in his oversight. He may even use deceit and fraud to the detriment of stockholders and consumers. In the case of fraud, if stock ownership is dispersed, the incentive of any single stockholder to sue a CEO for damages is not strong because she would receive only a part of the total gains to stockholders if her suit was successful. The larger the corporation and the more dispersed its shareholders, the lower the incentive of a single stockholder to sue.

Corporate CEOs cannot become too inefficient without inviting takeover by corporate raiders. Thus, there is a limit on the incentive divergence in a corporation. On the other hand, if incentive divergence creates a potential profit situation, as it did in the case of investment banks, ordinary banks, and other investment funds during the global financial crisis (see below); a raider may be able to profit by taking over a corporation whose CEO has been very efficient and acted in the interests of stockholders. Since stockholders in such a situation are unaware of the extent to which the old CEO has benefitted them, they would also be unaware of how a new CEO can harm them.

Incentive Divergence in Financial Services Corporations

During the housing bubble period, the more important effect of incentive divergence due to corporate financial intermediation occurred in large financial services corporations like investment banks and large

insurance (or default swap – see below) companies like American International Group (AIG). The CEOs and top employees of these companies are in a position that is different from their positions in major production firms in two respects. First, they are typically more highly specialized, since choosing from among the possible methods available to manage the risk of loss in making financial investments is a highly specialized task. Second, the diversity of potential financial investments, combined with the large amount of speculation, implies that CEOs face a tradeoff between investments that are expected to yield higher long-term profit and those that are expected to yield higher short-term profit. Given some initial allocation of funds to different investments, a competent CEO would recognize that he can earn higher expected short-term profit if he is willing to incur a sacrifice of lower expected long-term profit or even expected loss.

As a result of these facts, incentive divergence takes a special form for large financial corporations. The gains to a CEO and other top executives in deciding how to deal with the above-mentioned tradeoff depend upon how they are rewarded for their choices. If the more permanent stockholders were well-informed, they would want a balanced tradeoff between short-term and long-term profit because such a balance maximizes the long-run price of their shares. Yet, if the stockholders can be persuaded to give large cash bonuses and/or sales commissions to those who contribute to the short-term profit, the CEOs and salespeople can earn large short-term incomes by pursuing a short-term profit strategy. Moreover, the highly specialized nature of their skills means that their role in causing the harmful effects to the more permanent stockholders may never be discovered. Finally, even if a CEO is replaced at stockholder initiative, the CEO's expertise assures that he can find a job that yields comparable income, minus the bonuses and/or commissions, elsewhere. Alternatively, he can expect to retire and live off of the large bonuses and/or commissions that he expects to earn in the short run.

There is a fine line between the CEOs (1) shift from long-term to short-term profit maximization and (2) malfeasance. So the executive who is not careful may end up the object of a lawsuit by stockholders or

even the target of a fraud investigation. However, so long as he avoids outright illegal activity, he can usually do well – provided he can persuade stockholders to reward him with bonuses and/or sales commissions for activities about which they lack knowledge and about which they are unlikely to learn.

Large CEO bonuses and high sales commissions were widespread in the financial services industry during the period before the housing bubble burst before the weakness of financial institutions became evident. Apparently, CEOs had been able to persuade stockholders to allow these.

Reliance of Large Financial Firms on “Insurers” and Hedge Fund Managers

A critical part of the process of making investments is the management of risk. It is the saver’s concern with this fact that makes her hesitate to turn her money over to an intermediary in the first place. It is the reason that providing guaranty is a function in a market economy. Consider a CEO who perceives a financial investment opportunity that will substantially raise short-term profit but which risks reducing long-term profit by too much to justify to stockholders. If he can purchase insurance on all or part of a possible loss, both he and the stockholders may come to see the investment as wise and prudent. Their interests will converge. Of course, the insurer must herself be trustworthy and she must possess sufficient wealth to pay off if the investment project fails. As mentioned above, a guarantor (or insurer) is also an agent. If the CEO and stockholders believe the insurer’s promise but the insurer fails to keep sufficient reserves to cover all of her insurance obligations, their calculations will have been wrong. Because of this, the possibility of buying investment insurance may add to the incentive divergence.

As we have seen, the relationship between the CEO and the stockholders is one of incentive divergence. Assume that the CEO has been able to persuade stockholders, for the time being at least, to pay him a bonus, the amount of which is linked to short-term profit. Then even if the CEO suspects that an insurer of his short-term project will default on the insurance payoff if the investment fails, he may still buy

the insurance if doing so helps him persuade stockholders to allow him to borrow in order to finance the project. Alternatively, since the loss to him is less than the loss to the collective of stockholders, he may not ask about the capacity of the insurer to meet her obligations or he may employ statistical extrapolation to help make his judgment.

It is essential to realize that providing insurance against business risk is a very different activity than providing insurance against material risk or risk in nature. As I have pointed out, science relies on the assumption that the future will be like the past. Scientists can be confident in applying statistical extrapolation as a fundamental mode of reasoning in cases where events in the material world are uncertain. One can confidently construct a series of risk premiums on the basis of observed material facts. In the social and economic world, however, this mode is inappropriate because, by definition, events are caused by human choice. A human being can certainly agree to be responsible for the economic losses incurred by another. However, unless she uses “the understanding” to evaluate the probability of the losses; she is likely to lose her money. And if one relies on past experience alone to predict whether an insurer will be able to pay off on a business insurance claim, she is likely to err. She is a prime candidate for becoming a victim in a reliance cycle or principal-agent relationship.

Market events cannot be insured against in the proper sense of the term. If someone hopes to earn profit from insuring against economic events, she must be capable of predicting the insured party’s long run profitability. She must act as an entrepreneur, which means that she is not, strictly speaking, an insurer. She is betting on what she regards as a superior ability to appraise resources. She is sharing in the insured party’s profit and loss, albeit indirectly. Properly understood her income is profit from the project she insures. She is like a co-investor.

During the period prior to the breakdown of the international financial system, CEOs of the largest investment banks bought insurance directly or indirectly in the form of credit default swap (CDS) deals.¹⁹ The largest seller of such insurance may have been AIG. It is impossible to know whether the CEOs were themselves persuaded that the guarantors who offered CDSs were reliable or whether, not being persuaded, they dealt with them anyway partly as a means of appeasing stockholders.²⁰ It turned out that they were not reliable. When Lehman Brothers went bankrupt, those financial firms that had bought credit default swaps to insure their bonding holdings in Lehman Brothers lost their insurance and, as a result, suffered substantial loss. Had AIG also gone bankrupt, the hit on financial firms would have been much greater.²¹

Unfortunately, there is no way, at least for an outsider like myself, to know whether the executives whose firms participated in these markets realized how fragile the system was. It is at least conceivable, however, that a number of insiders were quite aware and that they feasted on high bonuses and commissions in the short run realizing that when the crisis comes, they could escape the fallout relatively unscathed.

Hedge Funds

A major set of players in the global financial crisis were the “hedge funds.” In formal terms, a hedge fund is merely an investment fund in which financial investors turn over their money to a fund manager to

¹⁹Matthew Phillips, writing for *Newsweek*, tells the story of a meeting of bankers in 1994 at which the idea of credit default swaps was hatched (Phillips 2008). Swaps have a much longer history. They have been used with success for three decades in foreign exchange and commodities markets as means of hedging against unexpected changes.

²⁰A more important factor may have been regulators. Regulated financial firms must, by law, provide accounts that persuade regulators that they possess sufficient guaranty to protect investors in order to avoid closer regulatory scrutiny. Failure to please regulators may not only affect their status as a licensed institution but also their ability to raise funds and to maintain share values. Since I am trying to describe an environment in the absence of regulation, my assumption here is that CEOs of financial firms may have sufficient incentive to purchase insurances solely in order to reduce the uncertainty perceived by investors. For more on how CEOs used credit default swaps to avoid closer scrutiny, see Carney 2009.

²¹See Gethard 2008 for a brief discussion of the AIG case. Unfortunately, the term “hedge” implies that the fund’s business is to offset the risk associated with one asset by purchasing another investment of a contrary nature. This is regrettable because hedging performs an important and very different economic function in agricultural, mining and currency markets. In any case, our concern here is with the hedge fund, as it has been named in the business magazines.

invest in their interests.²² A hedge fund is subject to much looser regulation than other funds and may be completely unregulated, except for a limit on the number of investors who can participate.

Hedge funds come and go. Some make huge profit; others go bankrupt. What is important for this essay is their relationship to large banks. During the period of the housing bubble, hedge funds often provided a market for the lower-rated MBSs (Morris 108-9). At the same, they were important clients of investment banks, which brokered their stock and bond trades (*ibid.*: 111). Moreover, they often made credit default swaps possible by being willing to sell or buy a swap that no other market participant would sell or buy. Finally, they played a large role in the gambling market that developed on various economic events. Besides the real market on credit default swaps and other financial assets, there was a shadow market in which individuals and firms bet against each other on future economic events, such as a fall in the price of a particular kind of bond.²³ The connection between banks and hedge funds makes a bank vulnerable to losses in the event that a hedge fund fails. The bank may own a credit default swap guaranteed by a hedge fund, its brokerage branch may have extended a credit line to a hedge fund, it may rely on the hedge fund's brokerage demand, and so on. Any relationship with a hedge fund other than merely providing banking services is likely to increase the bank's risk. Links to hedge funds were apparently largely responsible for Lehman Brothers' downfall.²⁴ I have not sufficiently studied the matter to know how important the hedge funds were to the problems suffered by other large investment banks, commercial banks, and other financial institutions.

Like insurance, a bank's relationship with a hedge fund increases the incentive divergence by increasing the complexity of the decision-making process faced by stockholders. Also, as in the case of

²²For a description of some major hedge funds in history see McWhinney (2005).

²³Richard Zabel (2008) writes that "by the end of 2007, the CDS market had a notional value of \$45 trillion, but the corporate bond, municipal bond, and structured investment vehicles market totaled less than \$25 trillion. Therefore, a minimum of \$20 trillion were speculative 'bets' on the possibility of a credit event of a specific credit asset not owned by either party to the CDS contract."

²⁴I base this partly on an article by Maurna Desmond (2008).

insurers, it is not possible to know whether a particular CEO of a bank made an honest error or used the hedge fund relationship as a means of persuading stockholders to allow bonuses and high individual sales commissions.

4. INCENTIVE DIVERGENCE DUE TO GOVERNMENT REGULATION OF FINANCIAL INTERMEDIATION

Government intervention in markets contains a large set of incentive divergence classes. I believe that the most important interventions that were relevant to the global financial crisis are the manipulation of money and credit, regulated fractional reserve banking, and deposit insurance. Also important were the actions of the so-called government-sponsored enterprises – Fannie Mae and Freddie Mac – and the Community Reinvestment Act. However, discussion of these are beyond the scope of this essay. I confine this section to the incentive divergence introduced by financial market regulation. Examples of regulatory agencies that were relevant to the crisis are the FED, FDIC, and SEC.

The regulation of financial intermediation is intended to reduce the incentive divergence associated with deceit and fraud. Some of it, such as regulation of banks, aims to block potential victims from putting themselves into positions where they can be victimized. By far the majority of such regulation aims to achieve its primary goal by restricting the behavior and actions of financial intermediaries. By and large, regulation that aims to accomplish these goals is futile. There are four reasons. First, in all but the most extreme cases, the knowledge needed to accurately judge whether deceit or fraud has occurred is either impossible for regulators to acquire or too costly to be worthwhile trying to acquire. Second, regulators' incentives and ability to achieve their assigned goals are constrained by law, which makes regulatory

agencies into bureaucracies. Third, regulators are at a disadvantage in the regulation game and, as a result, their actions and behavior tend to be greatly influenced, in the long run, by the very individuals they initially aim to regulate. The regulators are “captured.” Fourth, regulators may be impeded by political opportunism on the part of legislators and their assistants. In this part, I discuss each of these reasons. In addition, I suggest that the institution of regulation can be a source of error due to the adolescent mentality, which views regulators as performing a necessary function.

Deceit, Fraud and the Cost of Government Error in Judging Whether Deceit or Fraud Has Occurred

Consider regulation designed to deter or prevent the harm due to persuasion and fraud by enterprisers. The proposed role of the authorities is to deter deception and fraud, while encouraging principal-agent relationships that entail truthful information. The problem is that there is a fine line between an effort to deceive and defraud and an effort to help someone as an agent by either providing information or performing some action that the actor can reasonably presume is in the principal’s interest. This line is not fixed either. The kind of information that people can gain from receiving, the means of deceiving and defrauding, and the technology used to deceive and defraud are continually changing. In light of these characteristics of situations in which deceit and fraud are most likely to occur, it is only possible in the extreme cases for the authorities to accurately judge whether an agent for a principal has intentionally harmed others or failed to exercise reasonable care. This is especially true in the case of financial intermediation. The reason is the complexity of the task, which I have already discussed. In only a small minority of cases is it reasonable to expect judges or appointed lawyers for the prosecution in fraud cases to possess the expertise of the CEOs, investment fund managers, hedge fund managers, and so on. Yet

without this expertise, they could not adequately judge whether the agent had been cheating a principal or performing an entrepreneurial function.²⁵

I now focus on less extreme cases. Because of their limited knowledge, if the authorities try to make judgments in these cases, they are bound to make errors even if they are well intentioned. Suppose that the regulatory agency is charged with making judgments in such cases or of deciding whether an agent should be permitted to provide a service that would enable him to commit deceit or fraud. Then the prospect for errors by the regulator would most likely increase the incentive divergence associated with the principal-agent relationship. It would cause a prospective agent to attach an additional cost to his action. This would be enough to deter some prospective agents from offering their services and thereby reduce the benefits to members of society from the principal-agent relationship.

Bureaucracy

A second source of incentive divergence due to regulation is associated with bureaucracy. The reason for bureaucracy is well known. If a government employee is permitted to use discretion, as opposed to following bureaucratic rules, she may use her power to profit by making decisions that are demanded by pressure groups and other special interests, political incumbents, and new candidates for political office. In the most extreme cases, her decisions may threaten the continuation of the government in its present form. She may use her discretion to start a revolution. To allow a government employee too much discretion introduces such huge incentive divergence that makers of democratic constitutions demand provisions designed to avoid it. The abuse-of-power threat is typically avoided in a democracy by subjecting government

²⁵This conclusion differs from the suggestion by Milgrom (2008: 130) that making agents liable for disclosure of pertinent information would mitigate the incentive divergence problem.

employees to bureaucratic rules.²⁶ The behavior of each of the employees of a regulatory agency is constrained by such rules.

There is an obvious conflict between the desire to regulate any enterprise and bureaucratic rules. Because entrepreneurial profit and loss conditions are continually changing and because entrepreneurs are expected to possess and exercise imagination, creativity, and inventiveness; no lawmaker with insight would want regulation to be so rigid that it restricts entrepreneurship. Yet a lawmaker cannot anticipate the entrepreneurial actions that are likely to best satisfy consumer wants. Such a legislator must admit that consumer benefits are the consequence of the entrepreneurial production and use of specialized knowledge which is practically impossible for her to know and to anticipate. If she hopes to succeed, she realizes that she must rely on an expert regulator. Such a regulator would have to possess wide discretion in gathering and interpreting information and in making judgments about who should be punished and rewarded. Yet legislators cannot grant regulators wide discretion to command additional resources, if needed, without risking the abuse of power.

This is the conflict. It results in a general lack of ability on the part of regulators of financial intermediaries to make the kinds of decisions that are necessary to reduce the incentive divergence associated with deception and fraud. If a regulator in such a situation is passive, she ends up being totally ineffective. If she decides to be active, her erroneous decisions causes greater incentive divergence than would otherwise exist. Anticipating such a conflict, more insightful legislators eschew regulation of financial firms. Less insightful legislators end up favoring regulatory agencies that, presumably unbeknownst to them, actually increase incentive divergence.

²⁶See Gunning 2003, chapter 14.

The Regulation Game and Capture

The third source of incentive divergence is the disadvantage faced by regulators with respect to the parties they aim to regulate. The mere existence of regulators as an instrument of government coercion creates opportunities for enterprises to manipulate the regulators into positions where they can achieve greater monopoly power and other objectives. To understand how, it is necessary to realize that making and enforcing regulations is like a game. The regulator tries to constrain the actions of the regulated individuals. Since such constraints reduce the options available to the regulatees, they try to evade the regulations and to influence the making of them. While the rewards from winning this game to regulators must be limited due to the abuse-of-power conflict, the rewards to regulatees can be large. For example, a government regulatory agency may be created to detect and deter instances in which savers or stockholders are likely to be deceived or defrauded by a CEO. Yet, when confronted with the deep pockets of a prospective deceiver and defrauder, it may institute new rules that make it easier to deceive and defraud. The regulator may simply decide that the game is not worth winning to him. Or he may try his best to win but lack the resources that he would need to win. Or perhaps he will succumb to bribery and corruption or persuasion. If none of these occur, he may be further constrained by the politicians who oversee the regulatory agency. The politicians may be enlisted by lobbyists or bribers to thwart the efforts of well-intentioned and dedicated regulators. In any of these cases, the actions of the regulator may come to be controlled by the very people that his actions were designed to regulate. In other words, the regulators are prone to be *captured* by those they aim to regulate (Stigler 1971).

For example, mortgage lenders, investment bankers, and regular bankers were permitted by regulators at various times to use accounting procedures that obscured the true market value of their assets and liabilities from stockholders. Once they adopted these procedures, they were in a better position to employ ratings agencies to help induce customers to buy their MBSs and other products. And they could

more easily persuade the stockholders to allow them to receive large bonuses for their contribution to short-run profit through their sales, while staving off corporate raiders.²⁷

Political Opportunism

Besides the bureaucracy problem, the laws and rules that guide regulatory agencies are subject to political opportunism. Pressure groups form in an effort to divert the rules or their enforcement so that they help achieve purposes that are different from those that were intended. In the game of political opportunism, citizens with the deepest pockets or largest voice typically have an advantage. For example, the agencies assigned by the government to guarantee and securitize mortgage loans (Fannie Mae and Freddie Mac) were required, or persuaded, by politicians and regulators to help implement laws aimed at assisting otherwise unqualified borrowers obtain loans. Many banks that specialized in mortgage loans were also given incentives to incur higher risk by favoring subprime borrowers.²⁸

Adolescent Mentality

Regulation has the potential of deceiving savers and thereby adding to incentive divergence. Why then do legislators try to regulate? My answer is the *adolescent mentality*. Practically every growing child who does not encounter day-to-day violence on the part of the government goes through a stage during which

²⁷Much of this deceit related to so called regulatory capital – the value of various categories of assets, as defined by regulator, that an investment bank (regulated by the SEC) or regular bank (regulated by the FED and FDIC) must own. Businessdictionary.com defines regulatory capital it as “net worth of a firm defined according to the rules of a regulatory agency (such as securities and exchange commission).” The regulator has substantial discretion in deciding what will count as regulatory capital. By allowing the regulated firm to use CDSs to increase the value of regulatory capital, the regulators in effect permitted CEOs to increase their risk of long term loss. See Carney 2009. So called regulatory capital arbitragers, like AIG, established special departments to create assets that they could sell to financial institution CEOs for the purpose of increasing their regulatory capital. With more regulatory capital, the CEO could make additional short-term investments.

²⁸It is doubtful that the law and regulations that encouraged these changes added significantly to the housing bubble or the global financial crisis. However, they surely made the allocation of savers funds less efficient in satisfying consumer wants than it otherwise would have been.

she conceives of the agents of government as functionaries in a grand system of benevolent authoritarian control. The mailman performs the function of delivering the mail, the public school teacher gives valuable education, the fireman puts out fires, the policeman helps people and maintains order, the president leads the country, and so on. To the extent that savers have adopted the adolescent mentality, they think that the function of agencies like the FED, the FDIC and the SEC is to protect their savings. They gladly hand over their funds to financial intermediaries, believing that even if the intermediaries would otherwise lie and deceive them, government regulations will keep the intermediaries in check. Regulation, combined with this mentality, adds to incentive divergence.

The adolescent mentality is particularly strong among some foreigners who see the US as the most successful market economy and democracy. During the buildup prior to the crises, it seems quite likely that regulation combined with high ratings and insurance to persuade many Asians and Europeans to be misled into thinking that the mortgage-backed securities and similar assets were sound investments. Their trust in ratings agencies and insurance (the credit default swap) was undoubtedly partly due to their trust in the SEC to regulate such agencies and insurers. Unfortunately the trust in regulation was unwarranted.

5. RECOMMENDATIONS

Consumer sovereignty is the starting point for modern policy economics. It is the theorem upon which economists rely when they trumpet their support for capitalism over socialism. It applies strictly only to a pure market economy in which there are complete private property rights. Yet it is not possible to establish a society in which individuals reap the full benefits of their action or are fully responsible for the

harm they cause. As a result, I conceive of the private property rights paradigm as a procedure for identifying cases in which consumer sovereignty does not fully prevail, due to incentive divergence.

There are many sources of incentive divergence in an unregulated market economy. This essay has emphasized five of these in explaining how events comparable to the global financial crisis could occur in the absence of government intervention, including monetary policy: (1) specialization which makes a person vulnerable to the errors made by others, (2) errors in decision-making, especially those caused by the use of statistical extrapolation, (3) a cunning salesperson's prospect for gain from persuading predictors of future prices to use statistical extrapolation, (4) the principal-agent relationship in financial intermediation, and (5) the principal-agent relationship in the corporation. The essay has presented the theory of how the presence of these sources could lead to a substantial crisis.

According to the theory, a price bubble in a large segment of the market, such as housing, could occur as a consequence of changing migration patterns, the use of statistical extrapolation, and the presence of cunning salespeople. An increase in demand for mortgage funding that accompanies a housing bubble would, in turn, enable financial intermediaries to pay higher than normal returns. This would facilitate their efforts to attain a position where savers would rely on them. Having achieved that position, the intermediaries would be able to take advantage of the propensity for their principals – savers – to use statistical extrapolation due to the complexity of making financial investment decisions. To simulate the recent financial crisis, I assumed that their means of doing so is to employ a new financial instrument – the rated MBS. The CEOs of financial intermediary firms (independent investment banks and investment banks that are part of larger commercial banks) could partner with ratings agencies to deceive savers and other intermediaries who represent savers into believing that the savings are more secure than they really are. To earn income for themselves and their co-workers, they could persuade stockholders to permit high bonuses and sales commissions as rewards for higher short-term profit. And to allay stockholders' uncertainty, they

could purchase insurance from large insurance firms and hedge funds in spite of their knowledge that such firms may not pay claims.

Such actions by the CEOs harm stockholders and savers for whom the CEOs acted as agents. In some cases, it would threaten the survival of the firm. If enough financial firms were engaged in this practice, the banking system itself would be at risk.

The bursting of a housing bubble could cause the worst fears of stockholders and savers to be realized. At that point, the errors that are indigenous to the statistical extrapolation strategy would become evident to everyone. Subprime mortgage borrowers would default, MBSs would lose value, the false ratings of the ratings agencies would be revealed, holders of MBSs would suffer a decrease in wealth, investment banks would become insolvent, hedge funds and insurers would go bankrupt, and banks would fail. The CEOs and salespeople would resign or be fired.

It might be thought that the key to preventing such a crisis is regulation. However, in a democracy, regulation is likely to make matters worse. The potential abuse of power leads citizens to limit the discretion that a regulator must have to effectively compete in the regulation game. In addition, regulated firms have a strong incentive to “capture” the regulatory agency. As a result the regulator is apt to end up promoting the interests of those who she is employed to regulate. In addition, regulation is influenced by wasteful rent-seeking and political opportunism.

Once it is accepted that regulation increases incentive divergence, one must admit (perhaps with an air of humility) that if the people of nation want to enjoy the benefits of specialization and the division of labor, they must accept the incentive divergence that is endemic in this system. They must endure the inconvenience of occasional financial crises. The important questions are whether these are likely to be small or large in the absence of intervention and whether there is any means available to reduce the effects on consumers.

To what extent is it possible to reduce the harm to consumers due to the periodic disruption caused by bubbles and reliance cycles? Regulation is not the answer. What then? I cannot give a more complete answer to this question until I consider the effects of government manipulation of money, which is beyond the scope of this essay. However, I will submit that a full understanding of the effects of such manipulation leads to the conclusion that the only function of government with respect to money – and it is a very important one – is to produce non-counterfeitable paper money and to keep the quantity in circulation as close to constant as possible. Such a policy would eliminate the prospect of a government’s massive intervention in order to save a regulated fractional reserve banking system. It would allow the ordinary self-correcting mechanism to play itself out in the shortest possible time by increasing the responsibility of errant, deceitful, and fraudulent financial firms and individuals for the damage they caused to their principals.

Appendix

Why Arbitrage Did Not Mitigate the Recent Reliance Cycle

To answer the question of why arbitrage did not mitigate the reliance cycle that characterizes the global financial crisis, I begin by trying to identify the precise arbitrage action that would have been necessary for the crisis to be mitigated. The way to profit from arbitrage would have been to buy a CDS that rewards the buyer if an event occurs that causes the price of MBSs to fall. The seller of such a CDS might have been Lehman Brothers, Bear Stearns, AIG, or some other large investment bank. Or firms of this sort may have acted as intermediaries in locating speculators or hedgers who are willing to take the opposite position. In a relatively efficient market, a sufficient demand for such swaps would have made it very costly for an investor to purchase insurance against an event that would cause the price of MBSs to fall. As a result, the price of MBSs would have risen. I claim that an insufficient number of entrepreneurs who were in positions to bet on the prices of MBSs (i.e., who had the knowledge of how to bet, the willingness to bet, and the funds to back their bet) were aware that (a) there was extensive fraud in the mortgage origination business, (b) that adjustable rate mortgage borrowers could not afford to make payments on houses if the FED tightened its policy, (c) that the response by such borrowers would seriously damage the wealth positions of speculative house buyers, (d) and that bond ratings agencies had not taken these factors into account. Beyond this, it was not easy for a prospective arbitrageur to predict that monetary policy would be tightened in 2005 and, if it was and there was a large default on mortgage, what the government, including the FED, FDIC and other government agencies might do to mitigate the impending crisis. Moreover, a more sensible strategy, given that an entrepreneur predicted a crisis might have been to make a large bet on rising

MBS prices while paying close attention to the factors that would help predict exactly when the crisis would impact the MBS market. One who successfully predicted the downturn point could sell his MBSs just prior to that time and, simultaneously, buy the appropriate CDS. In short, few people had the knowledge or the willingness and ability to acquire it that would have had to exist for the arbitrage market to work efficiently. This need not always be true and there is no doubt that both regulation by itself and uncertainty about what regulatory actions would be taken in the future increased the typical prospective arbitrageur's lack of knowledge.

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Glossary

Credit default swap: a credit derivative contract between two counterparties. The buyer makes periodic payments to the seller, and in return receives a payoff if an underlying financial instrument defaults. CDS contracts have been compared with insurance, because the buyer pays a premium and, in return, receives a sum of money if one of the specified events occur (Wikipedia).

Cunning salesperson: a person whose goal is to profit by persuading one person to exchange with a second.

Incentive divergence: situations in which there are differences between the benefits and harm felt by an actor and the benefit and harm due to her actions that are felt by others.

Mortgage-backed security: a bond or share of stock whose income is a share of the receipts from mortgage borrowers, as filtered through agents who service the loan payments from mortgage borrowers, as they make payments on the mortgage.

Novice speculator: someone who has no special information about the reason why a price or price index will rise or falls.

Principal-agent relationship: a relationship in which one person or entity (called the agent) acts on behalf of another (called the principal).

Regulatory arbitrage: any transaction that has little or no economic impact on a financial institution while either increasing its capital or decreasing its required capital (riskglossary.com).

Reliance cycle: a four period social cycle consisting of (1) principals are reluctant to trust, (2) an agent builds trust, (3) principles become increasingly willing to trust, and (4) the agent violates trust and principals become reluctant to trust again.

Securitization: the process through which a set of mortgage loans is transformed into a bond or share of stock.

Subprime mortgage borrower: a borrower “with blemished credit and features higher interest rates and fees than the prime market.” (US GAO 2007: 8).

Theorem of consumer sovereignty: In a pure market economy, the entrepreneur function, by definition, acts in the interests of the consumer-saver role by bearing all uncertainty, producing all goods, and using methods of production that enable individuals in the consumer role to take the greatest advantage of the division of labor, except for errors in making predictions.