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Sweetening the Lemon with Fair Cost: Flaws of the U.S. Government’s Toxic Asset Programs and Possible Legal Solutions

SIMIN GAO AND GUIFENG SHI

This article seeks to provide new solutions to rectify the information disparity and price manipulation problems in the government’s toxic asset purchase program. The first part identifies the reasons for the mortgage-backed securities market meltdown through the lens of Lemon Market Theory. Then, the article defends the idea that the government can be a purchaser of mortgage-backed securities as a last resort and investigates the signaling effects generated by the government’s purchases. The third part examines Treasury’s asset purchasing programs, Troubled Asset Relief Program and Public-Private Investment Program, which aim to sweeten the sour market, and argues that they are poorly designed and further encourage the information disparity and sellers’ incentive to cheat, which may make the market sourer. To address the flaws of the purchase programs, in the final part, the authors point out that the traditional approaches to achieve information equilibrium through buyer screening and seller disclosure will not work in the government’s toxic asset purchase programs. The solution proposed is to allocate the risks between sellers (financial firms) and buyers (government and the private investors) according to the information each holds.

“There is an element in the readjustment of our financial system more important than currency, more important than gold, and that is the confidence of the people.”

President Franklin Roosevelt (1933)1

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“The cost of dishonesty … includes the loss incurred from driving legitimate business out of existence.”

George Arthur Akerlof (1970)

Toxic assets, which scared investors and fazed banks in the United States’ recent financial crisis, have not gone away. The Wall Street Journal showed that toxic assets were still piled up in big banks. Although the taxpayers may benefit from the economic comeback, those benefits have been offset by the potential need to continuously fill the black hole of toxic assets. The government launched two toxic asset purchase programs, Troubled Asset Relief Program (TARP) and Public-Private Investment Program (P-PIP), to sweeten the sour mortgage-backed securities (MBSs) market. Unfortunately, neither of them has hit the nail on the head.

To find the right solution, we first need to know what caused the problem. Information asymmetry turned the MBS market into a living version of a sour lemon market like Professor Akerlof described in his Nobel Prize-awarded paper: investors can’t tell good MBS (referred as “cherries”) from bad MBS (referred as “lemons”). Without an effective mechanism of adequate disclosure and risk allocation, the MBS market is very risky for investors. Investors who suffer losses because of information asymmetry will gradually lose confidence in this market. Moreover, when confidence is lost, the market will go on runs and liquidity dries up.

The U.S. Department of the Treasury’s (Treasury) asset purchase programs, created to “sweeten” the market and restore confidence, turned out to have bad

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results; they further increased both the information disparity and the sellers’ incentive to manipulate prices or to sell off the bad quality MBS to Treasury. The government’s defective actions not only burden taxpayers with losses, but also send a negative signal to the market. The governments’ purchase of MBS has two signaling effects: a pricing effect and a policy effect. The government’s purchase, as a “driver of changes in asset prices,” will generate pricing information in an otherwise frozen market and attract potential buyers to come back to the market. Moreover, the government’s purchase has strong signaling effect reflecting government’s attitudes towards market behaviors and preferences. If the government’s purchase programs tolerate manipulating pricing and information, it will send out a noisy price signal to potential investors and deteriorate the MBS market into chaos. Moreover, the government’s activities send a signal to the public that “I can tolerate unfairness and distortion in the market.” You can imagine what a lethal strike such signal will bring to the market, especially a market suffering from a crisis of faith.

This article seeks to provide new solutions to rectify the information disparity and price manipulation problems in the government’s purchase program. The first part identifies the reasons for the MBS market meltdown through the lens of Lemon Market Theory. Then, the article defends the idea that the government can be a purchaser of MBS as a last resort and investigates the signaling effects generated by the government’s purchase. The third part examines Treasury’s asset purchasing programs (TARP and P-PIP), which aim to sweeten the sour market, and argues that they are poorly designed and further encourage the information disparity and sellers’ incentive to cheating which may make the market sourer. To address the flaws of TARP and P-PIP, in part four, the article points out that the traditional approaches to achieve the information equilibrium through buyer screening and seller disclosure will not work in the government’s toxic asset purchase programs. The solution proposed is to allocate the risks between sellers (financial firms) and buyers (government and the private investors) according to the information each holds.

BACKGROUND: WHY DID THE MBS MARKET BECOME SOUR AND ASSETS BECOME TOXIC?

In September 2008, the U.S. financial market reached the peak of its
crisis: major national financial institutions were on the hook of failure; investors fled from various stock markets causing the markets to dramatically fall; and the spreads on a variety of different types of loans over comparable U.S. Treasury securities widened dramatically. This stagnant financial market can be described as an aggravated version of the “Lemon Market.” Lemon Market Theory is a robust economic theory widely used by economists to describe market problems caused by uncertainty about quality, which occurs when the seller knows more about a product than the buyer and he fails to honestly disclose this information. The Lemon Market Theory was awarded a Nobel Prize because it applies widely to various markets, including financial markets. In this section, Akerlof’s Lemon Market Theory is introduced and his theory is applied to the financial market meltdown.

**LEMON MARKET THEORY**

Professor Akerlof presented this famous theory in his paper, “Market for Lemons: Quality Uncertainty and the Market Mechanism,” which won him a Nobel Prize in Economics in 2001. In his paper, Professor Akerlof used the example of selling a used car to explain the problem caused by quality differences in situations characterized by uncertainty, and then he proposed a structure for determining the economic costs of dishonesty. The cars in used markets have different qualities; there are good cars and bad cars. A bad used car is called a “lemon” in U.S. slang, originating from the idea that “handing (someone) a lemon is to pass off a sub-standard article as good.” A good car correspondingly has the felicitous name of “cherry” in Professor Akerlof’s paper. The basic problem is that buyers are unable to distinguish between lemons and cherries, which allow lemons and cherries to be sold at the same price. A new owner can only learn whether the car is a lemon or a cherry after driving the car for awhile. Of course, the seller of the used car knows much more information about the car than the buyer. There is an asymmetry in the information available to the seller versus the buyer. Now, does the seller have an incentive to rectify the information asymmetry through disclosure? Assuming he will not face a penalty, the seller has no incentive to disclose information because the lemon and cherry sell at the same price. Disclosing will only decrease the amount he can earn for the lemon. Moreover, the seller has strong incentives to fob off bad assets as
good assets. However, this information asymmetry and misrepresentation has negative impacts on the market:

**Pricing Distortion**

Because of information asymmetry, the buyer cannot tell the good from the bad. How much will the buyers be willing to pay for an asset without knowing its quality? The maximum price buyers are willing to pay corresponds to their best guess of the assets’ quality. Let’s assume the good asset’s quality is $q$ and its market value is $p$ if all information of this asset’s quality were transparent. Also, assume the bad asset’s quality is $\frac{1}{2} q$ and its market value is $\frac{1}{2} p$ if all information of this asset’s quality were transparent. Without information about quality ($q'$), the best guess a buyer has for the given asset is that it is of average quality, which Formula (1) shows. Consequentially, the best offer a buyer is willing to make would be $p'$, shown in Formula (2). $\frac{3}{4} p$ is higher than what the bad asset is really worth and lower than what the good asset is actually worth.

$$q' = \left[ \frac{1 + \frac{1}{2}}{2} \right] q = \frac{3}{4} q$$

$$p' = \left[ \frac{1 + \frac{1}{2}}{2} \right] p = \frac{3}{4} p$$

**Bad Drives Off Good**

This pricing distortion has the consequence of attracting lemons while driving off cherries. Cherries cannot earn enough to make selling them worthwhile and lemons are going at a premium. Bad cars will tend to drive out the good “because they sell at the same price as good cars.” Consequently, the average quality of used cars fell with a corresponding fall in the price level.

**Confidence Crash**

When bad assets overwhelm the market, that greatly increases the chances that “the used cars that come onto the market are not a random selection
from the population … but just the worst ones. When this happens, a used-car buyer who thinks that the used cars that are for sale are of average quality will be sadly mistaken.”15 Buyers whose expected interest was hurt will lose confidence in the market.16 After all, when a market is imbued with cheating, the best option for buyers is to leave it.

**Market Meltdown**

A market ends when bad assets overwhelm the good, confidence crashes and buyers flee. Dishonesty has high cost, which is externalized to the whole market. The cost of dishonesty does not only include the reduction “in the amount by which the purchaser is cheated; the cost also must include the loss incurred from driving legitimate business out of existence.”17 While dishonest deals keep driving the honest deals out of market, the side of the market will “reduce from N to 0,”18 which will create “such a sequence of events that no market exists at all.”19 This type of *domino* disaster is not only a conjecture in Akerlof’s paper; it is the tragedy that happened in the mortgage-backed securities market over the past decade, which finally led us to the current subprime mortgage crisis.

**LEMON MARKET PHENOMENON BEFORE FINANCIAL CRISIS**

A mortgage-backed security is an extremely complex, structured asset-backed security where debt obligations represent claims to the cash flows from pools of mortgage loans,20 most commonly on residential property.21 Like the used car, MBS varied greatly in quality due to unexpected risks associated with their underlying mortgages, like default risk,22 interest rate risk,23 and prepayment risk.24 Two factors prevent investors from recognizing the risks. First, some information is confidential and held by the originator, like the private information of mortgagors and their payment records. This information is intensely related to the default risk held by the mortgagee and cannot be accessible to investors unless the mortgagee discloses it. Second, even though some information related to prepayment risk, like interest rates and housing prices, is publicly accessible, the full extent of the variation of interest rate risk and prepayment risk associated with MBS is masked from
investors through the process of “securitization.” Securitization is like a factory line. Mortgage brokers and banks generate material (loans), and they sell it to investment banks that package the material in the factory producing the final product: special purpose vehicles (SPV). Next, this article will illustrate how essential information about MBS risks was withheld, evaporated and hidden in the process of securitization.

Let’s begin with the materials supplier, the mortgage issuer, who holds the information about underlying assets and the mortgagors’ (A and B) financial record. MBS values are directly related to the value of their underlying assets which are “sensitive to private information held by the issuer of the securities.” As Downing claims, “the most complete information concerning individual pool prepayment efficiency is likely to be held by informed originators because only they know both the level of points paid by borrowers at origination and other difficult to quantify characteristics of credit worthiness.” When a mortgage issuer issues a mortgage to homeowners A and B, it will inquire into the financial situations of B and C as well as determine the value of the properties through an appraisal. To raise new capital, the mortgage issuer will sell both A’s mortgage and B’s mortgage to an investment bank. At this point the risks associated with each isolated mortgage, like A’s or B’s, are clear and will remain clear if the mortgage issuer transfers all the information it has about the loans to the investment bank. However, the mortgage issuer will not have an incentive to tell all truth if telling the truth does not increase its payoffs, and signals sent by lenders are “costless, non-binding, and non-verifiable.” We called this “information evaporation.” Information evaporation potentially exists in every stage of securitization. Not only the mortgage issuer, but also the investment bank, SPV, servicer, and rating agency all have an incentive to hide the available information for the sake of their own benefit. Moreover, information evaporation is continuous since the risks are dynamic with the change of mortgagor B and C’s performance. For example, if mortgagor B becomes delinquent after the mortgage issuer sells B’s mortgages to an investment bank, the information about B will not be reported to the investment bank or SPV even though this is critical for default risk evaluation.

Second, despite a mandated disclosure requirement for all parties participating in the securitization, they can also hide the risk using complexity. Let’s
see how the risk is hidden in the complex process of the securitization factory line. After the investment bank purchases the mortgage assets from mortgage issuers, it transfers them into an SPV, which pools together many mortgages like A’s and B’s. These collected mortgages are then sliced into many tranches from the “pool.” New “pools” are set up by bundling some of the tranches, which then may be further divided into other new tranches, and so on. The uniqueness of each mortgage and any change to its risk are submerged in the composition and division, which is not easy to discern. Then investors purchase the MBS product from SPV. Since the information of unique risks is completed hidden by the process of “pooling” and “tranching,” the investors can only assess the risk by referring to the bond rating (e.g. AAA and AA+).

**Figure 1: Factory Line of MBS**

The information asymmetry problem is severe in the mortgaged-backed securities market. Evidence shows that disclosure by the originator is inad-
Neither transaction prices nor trade volumes of MBS traded in the broker markets are released systematically. The government sponsored enterprises (GSEs) that dominate the MBS market, such as Fannie Mae and Freddie Mac, are also reluctant to disclose some potentially important information to the market. Originators hesitate to disclose critical facts about the underlying mortgages or may even misrepresent the facts. Moreover, it should be noted that the mortgage-backed securities market differs from typical lemon markets in a significant way; the risks in purchasing a security are linked to the dynamic market of its underlying assets. The risks involved in used cars are not dormant and require disclosure only at the point of the transaction. On the contrary, the risks of MBS are dynamic and will change with changes in the underlining assets, such as the delinquency of the payments, fluctuations of house prices, or the change of mortgagors' financial capability. Therefore, the MBS originators, who are acquainted with the dynamic information of underlying assets backing security, should continuously disclose to buyers. But, they usually fail to do so especially after they have passed off the mortgages to buyers.

Information is valuable in capital markets. It is generally acknowledged that “in a world where knowledge is valued, market forces should induce disclosure.” Why would issuers in MBS hesitate to disclose the essential facts of underlying assets? They will only have a motive to disclose when disclosing has value. Otherwise, if disclosing the truth will reduce the return the issuers can get, they will not disclose. Limiting private information “allows the uniformed liquidity traders to trade without fear of informed traders and thus increases the liquidity.” Since MBS have high degrees of variance, more information might reduce liquidity and only “less information can increase liquidity” for MBS originators. Therefore, “asset bundling and limited information disclosure” is an effective strategy for originators to increase liquidity.

Can rating agencies, the gatekeepers of the credit market, help investors to mitigate the information asymmetry problem? Unfortunately, the answer is “no” since rating agencies are blind to risks lurking under the assets. Rating agencies created an “alchemy that converted the securities from F-rated to A-rated (rating inflation).” There are many causes for rating inflation and complexity is one of them. Rating agencies, however, used “a simple
ex-ante model” to measure “observably high-risk deals,” which finally turned out to “underperform relative to their initial subordination levels.” Besides complexity, information asymmetry and rating shopping also significantly lead to rating inflation. Information asymmetry permeates the market; it not only affects the asset buyers but also the rating agencies. Rating agencies had difficulty estimating the risk for mortgages with low-documentation. As Sangiorgi et al. observed, rating bias of MBS originated from the “opacity” of mortgages. Why did rating agencies yield to originators’ opaque disclosure when investors heavily relied on rating agencies to release the truth? Upton Sinclair’s famous statement gave us the answer: “[I]t is difficult to get a man to understand something when his job depends on not understanding it.” It is difficult for rating agencies to understand the “opacity” and true risks under the MBS because their bosses – MBS originators – do not want them to understand. Security originators are the bosses of rating agencies and they shop for more favorable credit ratings, which can be the golden goose laying golden eggs for them. This phenomena is depicted as “rating shopping” by Sangiorgi et al. Under the pressure of losing market share, rating agencies competed with each other by inflating ratings and ignoring the true credit quality of the MBS. The rating agencies even instructed “clients on how to structure their products to score AAA because the clients had an incentive to sell products with the highest ratings to investors.” With a rating agency’s seal of approval, bad MBS were sold as solid assets and more and more investors rushed into the MBS market since they believed AAA ratings guaranteed the highest quality. Unfortunately, “93 percent of AAA-rated sub-prime mortgage-backed securities issued in 2006 have been downgraded to junk status.” Ninety-three percent of AAA MBS were actually junks, which sounds incredible but it is reality.

Since asymmetry of information cannot be cured, sellers will pass off bad asset to buyers and ultimately lead to price distortion. As former Citigroup CEO Charles Prince told the Financial Crisis Inquiry Commission (“FCIC”):

As more and more and more of these subprime mortgages were created as raw material for the securitization process, more and more of it was of lower and lower quality. And at the end of that process, the raw material
going into it was actually bad quality, it was toxic quality, and that is what ended up coming out the other end of the pipeline.54

Mr. Price did not over exaggerate his conclusion that the materials going to securitization are those bad assets. According to the Lemon Market Theory introduced above, bad assets will drive off good assets since buyers cannot distinguish bad from good and pay the same price for them. Thus, more and more bad assets are attracted to the market while more and more good assets are leaving. Empirical evidence showed that in the MBS process, “assets sold to SPVs will be of lower quality compared to assets that are not sold to SPVs.”55 It is widely believed that in an efficient market, stock prices virtually reflect all publicly available information relevant to the value of traded stocks. The MBS market, however, is not an efficient market, in which deals are sui generis, obviating creation of a thickly efficient market.56 To reiterate, asymmetry of information drives price manipulation. Low quality assets get higher prices than they are really worth while good assets cannot get what they deserve as buyers cannot distinguish good from bad. Since both good and bad assets will each be sold at the same price, the sellers have a motive to sell bad mortgage-backed securities to buyers. Goldman Sachs’ CEO testified before the FCIC that Goldman sold “clients mortgage securities that Goldman believed would default, while simultaneously shorting them.”57 The market is risky and even professional investors cannot discern the risks. Indeed, evidence shows that “sophisticated investors and qualified institutional buyers (QIBs) are the very investors who lost the most money in the subprime financial crisis.”58 Investors lost confidence and fled away, which led to market distress.

Warnings were raised about the lurking risks in the MBS market. Unfortunately, they were ignored, leading to the subprime mortgage crisis in 2007. In 2004, even the FBI warned that the fraud in the mortgage market could have as great an impact as the savings and loan crisis.59 Demand for mortgage-backed securities kept going up because the information about the mortgage market was not transmitted to the marketplace due to a block in the information pipeline. The boom of the MBS market further stimulated lending standard laxity.60 The bubble in the MBS market finally burst in 2007 after investors heard about the foreclosure epidemic. The securitization mar-
kets “started to close down in the spring of 2007 and nearly shut-down in the fall of 2008.” 62 Most securitization markets remained closed even in 2009. 63 The prices of mortgage-backed securities and the underlying mortgages went down sharply without a functioning market. Mortgages and MBS, which piled up and blocked the liquidity pipe of market, became known as toxic assets. No buyers dared to step in because the MBS market clearly became an aggravated version of the Lemon Market.

AN AGGRAVATED VERSION OF THE LEMON MARKET

During the financial crisis, the toxic asset market acted as an aggravated version of the lemon market in which buyers faced more unknown risks than they normally do. Although there is normally an information asymmetric problem between sellers and buyers, buyers can refer to similar transactions for supplementary information to remedy the information disparity, 64 such as housing prices, default rates, and financial-market liquidity. During crises, however, there are very few transactions so those information sources dry up: “market downturns lead to less learning, worsening the future adverse selection problem.” 65 The risk and quality of toxic assets therefore become even murkier during financial crisis.

Investors could not recognize the potential downside of their losses caused by market risk during the financial crisis. Market risk refers to the risk that “stems from the fact that there are other economy-wide perils that threaten all business.” 66 Correspondingly, the risk stems from the fact that perils surround an individual MBS. 67 The downside loss of the unique MBS can be reduced by holding a diversified portfolio, 68 whereas market risk cannot be eliminated by diversification because MBS are tied in “a web of positive covariance” and have a tendency to move together, not individually. 69 The market risk was more uncertain during the financial crisis because the volatility of asset prices followed the same direction, which is intensely associated with crisis. Since private investors are not clear about how deep a crisis will be, it is impossible for them to estimate the downside risk they will be exposed to. Facing too many uncertainties of risks, investors will dodge from the toxic asset market, which makes the assets more toxic.

The aggravated information asymmetry problem not only scared inves-
tors but also fazed financial firms which held mortgages or mortgage-backed securities. Toxic assets filled the financial firms’ balance sheets and blocked the pipes of liquidity. Much like blocked arteries, blocking the flow of liquidity can cause “heart-attacks” in financial firms. To clear the blocked liquidity pipes, financial firms needed to sell the toxic assets. However, whatever the firms want to sell (lemons, cherries, or both) will be perceived by investors as lemons. Moreover, the toxic assets will get increasingly rotten, as their prices will keep dropping throughout a crisis. Bad news was revealed gradually over time during the financial crisis. This definitely increased investors’ phobia of toxic assets.

Because the MBS market soured in 2007 and became more and more rotten over time, the values of those banks’ loans and MBS kept dropping dramatically. The lingering troubled assets stuck on the balance sheets of the banks significantly limited their ability to lend. According to mark-to-market rules, U.S. financial giants needed to write down at least $200 billion in losses at the beginning of 2007, which caused a wave of insolvency of financial firms. Banking failure and credit tightening caused severe domino impacts on the U.S. economy.

Since 2007, the U.S. banking sector has undergone a very difficult period after a decade of indulging in risky activities. In September 2008, the financial crisis reached its peak when insolvency threatened U.S. financial giants. This led to a money market run in early September 2008. The market for the short-term loans that banks rely on to fund their day-to-day business froze. In the hope that banks would start lending again and bolster the distressed economy if they were set free from burdens of the troubled assets, U.S. Congress passed the Emergency Economic Stabilization Act, granting Treasury the authority to use $700 billion to purchase toxic assets from financial firms that were “based on or related to such mortgages.” The idea that Treasury has the authority to buy toxic assets was widely debated the first day it was proposed. Supporters claimed that it was the government’s duty to step in to help banks to get out of a hard situation immediately. On the other hand, using taxpayer money to buy troubled assets tackled the taboo of Americans and was criticized by academia and media, some people even called it robbing the U.S. Such criticism should be taken with a grain of salt. From our perspective, the government stepping in to buy bad assets from private banks can be a possible
solution only if it can restore market confidence. The next section of this article will discuss when the government can acceptably step in to purchase toxic assets, what the impacts for the government’s purchase actions are, and what lines the government should not cross in its purchasing actions.

THE GOVERNMENT ACTING AS AN MBS PURCHASER: EXCEPTION OF TABOO AND SIGNALING EFFECTS

When news of the government’s toxic asset purchase plan came out in October 2008, it was like a stone hitting the water causing thousands of ripples. The action not only involved spending $700 billion of the taxpayers’ money but also tackled Americans’ taboo of public intervention. This taboo was evident in a bailout poll result which found that most Americans were reluctant to bail out Wall Street. In an economically conservative country like the U.S., how can it be justifiable that “the government should act as…a financial asset purchaser of last resort?”

EXCEPTION TO THE TABOO OF THE GOVERNMENT AS AN MBS PURCHASER

America has a long-held aversion of public intervention. In an efficient market, the transaction and recourse allocation in the market is determined by the invisible hand, which is created by the conjunction of the forces of self-interest, competition, supply and demand. According to conventional wisdom, the government is not a player in the asset market but the supervisor of the whole market. However, one exceptional case when the government can act as a financial asset purchaser of last resort is when the market fails. As a supervisor, the government has an obligation to restore the market when a market fails. Restoring the market is inherently a public obligation instead of a private obligation because the motivation of market participants “is to protect themselves but not the [financial] system as a whole.” The purpose of private participants is to make money from the asset market. Where the profits are drained in the market (or the potential for profits is too uncertain), they will disappear from the market. They can let the market stay barren since
they do not have any obligation to the market. It should go without saying that government cannot flee from a distressed market. Governments need to step in to intervene in the market both because it is the regulator of the market and because intervention has its economic rationale.

Whatever type of asset the banks are selling (they may sell lemons, cherries or both), in the wave of financial panic, it will be perceived by investors as a lemon. For example, suppose the market has three kinds of MBS (a, b, c) with different qualities \(q(a), q(b)\) and \(q(c)\). Each is sold respectively by Bank A, B, C. MBS (a) is the best, while MBS(c) is the worst. Suppose \(q(c) = \frac{1}{4}q(a)\) and \(q(b) = \frac{1}{2}q(a)\). Suppose the price for a is \(p(a)\). Correspondingly, the reasonable price for b and c should be \(\frac{1}{2}p(a)\) and \(\frac{1}{4}p(a)\) if the market is functioning well. As mentioned previously, investors will regard all the MBS as lemons during a financial crisis; thus, the maximum price investors will offer is the price for the worst MBS, which is \(\frac{1}{4}p(a)\). This is considered the maximum price because the actual price the investors offer is less than \(\frac{1}{4}p(a)\). There is huge uncertainty in the market risk associated with the MBS that may further discount the MBS’s price, making it lower than \(\frac{1}{4}p(a)\). If the investors only offer \(\frac{1}{6}p(a)\) for MBS a, b, and c, selling at that price will burn Banks A, B, and C causing huge losses. Making matters worse, even if banks try to sell the MBS at \(\frac{1}{6}p(a)\), the investors may not buy them since investors do not know how deep the crisis is and how much downside risk they are exposed to in the crisis. That is why the securitization markets started to close down in the spring of 2007 and nearly shut down in the fall of 2008. Most securitization markets remained closed even in 2009,\(^8\) MBS lingered and their prices kept dropping since no purchasers came. At this point of time, the government may step in as the purchaser to buy the MBS a, b, c at \(p(a), \frac{1}{2}p(a),\) and \(\frac{1}{4}p(a)\). Doing so would restore the market’s confidence. Some readers may argue that price is rarely driven by the value of the assets, instead being driven more often by government’s fiscal space and political imperatives. However, if the price does not reflect the real value it will send a negative signal to the market. This point will be further investigated in the following part.
SWEETENING THE LEMON WITH FAIR COST

SIGNALING EFFECTS GENERATED BY THE GOVERNMENT’S ASSET PURCHASE PROGRAM

“[T]he drying up of market liquidity — the inability to buy and sell financial assets — caused by a lack of good information about asset values” is the distinguishing characteristic of financial crises. Information asymmetry problems worsen during financial crises. In crisis, there are very few transactions so they cannot serve as a source of information. Moreover, it is hard for private individuals to estimate the “depth” of the financial crisis. Thus, they cannot correctly assess the downside risk intensely associated with the system risk. Because investors cannot discern the risks, they will not rashly purchase the assets, especially if they have living memory of a crisis. Investors fleeing from the market will further exaggerate a crisis. Thawing the frozen information is the best way to help the market get out of gridlock. Disclosure from asset holders is the best way to solve the information asymmetry; however, this solution is not powerful enough to calm the panic during financial turbulence. Investors might not trust the information the private market discloses when bad news abounds. What’s more, private disclosure cannot dispel their concern of system risk. In this situation, investors may hope to hear an authoritative voice from the government telling them more about the market. The government’s toxic asset transactions can send information to the market, which is called “signaling effects.” However, whether the government can send an accurate and accountable signal depends on the integrity of the transaction. Two signaling effects can be generated by government’s troubled asset purchases: price signals and policy signals.

Price Signals

Purchasing action *ipso facto* “becomes a market maker and must quote prices like any rational market maker would.” As Bond and Goldstein commented, “[I]n the recent crisis, government actions were not only perceived to be reactions to market prices, but expectations about them were often a major driver of changes in asset prices.” The purchasing of toxic assets by the government acts as an advertisement that sends asset information to frozen markets and attracts potential buyers’ attention (if the government’s purchase information is transparent and the public can access the informa-
tion). Meanwhile, the government has its own information about fundamental value. The government’s information “exhibits complementarity with the market’s information, as the informativeness of the price increases when the government has more precise information and relies less on the price.” 94 Thus, governmental participation in the toxic asset market adds additional information about price. This information itself signals that investors should increase their confidence. As House states, “typically, (the government’s) asset purchases would be expected to increase the market price of MBS and reduce the average default probability of the MBS traded.” 95 Potential investors will react to the government’s action by adjusting their beliefs based on the government’s purchase price. Gershenzon puts the point this way:

The market will embed expectations of each announcement into the respective stock prices, hence, revealing whether the market anticipates the particular idea to be helpful, hurtful, or insignificant to the respective companies’ cash flows. Logically, investors (who are in most cases considered to be experts) with a vested or soon to be established monetary interest in the companies will act according to their true beliefs and thus, signal the expected successes or failures of the events. 96

Therefore, the price of the government’s purchase will affect potential investors’ belief. This, in turn, will ultimately be reflected by the toxic asset’s price. However, the government does not necessarily perform better than private companies when purchasing assets. 97 Rowley and Smith even estimated that government purchase programs “operated at a lower efficiency, specifically 80 per cent, of private programs, because of the absence of price signals and market discipline, and the presence of bureaucratic obstacles.” 98 The government does not know more information about the toxic asset than private investors. If the government’s asset purchasing program does not devise a way to rectify the information asymmetry problem that existed in the MBS market, then the price information the government offers may be inaccurate. Since the government does not have accurate information about assets and sellers (financial firms) have a motive to pass off their low quality assets as good ones, government is very likely to overpay sellers. Overpaying 99 not only wastes taxpayer money but also sends negative signals to the market.
Exaggerated overpaying will fret potential buyers because market prices will have been distorted to be too high to have a profit margin.

Some readers may be curious as to why we need government purchase programs since private companies can do better in sending the correct price information. The answer is that investors “take their money out of risky mortgage bonds and shaky equities and put it into commodities as stores of value.” Moreover, the government as financial asset purchaser can send policy signals that private companies cannot send.

Policy Signals

Governmental intervention in the toxic asset market may send a strong signal of coming changes in regulation and policies. In addition, the government is regarded as a lender of last resort, which will influence expectation of market risk. The government’s purchase of toxic assets sends a signal to investors: “a commitment for financial stability has become a major preoccupation of the government agencies.” The government’s purchase from some banks, however, will send two different policy signals: “one signal is that if government saves a large bank, it is also likely to save another large bank (the too-big-to-fail effect).” Some potential investors may interpret the government’s purchase as a signal that the government will stand behind the big banks and government may display a policy preference to promote the mortgage market. With such expectations, investors may recover their confidence in the MBS market.

The other signal is opposite, that “government will have fewer resources to deploy for other large banks (resource crowding-out effect).” However, if the latter signal is prevailing in the market, it will not necessarily boost the price of toxic assets. Moreover, the government’s purchase activities may be interpreted by some investors as a warning signal that those banks selling assets to the government are struggling in a distressed situation. Therefore, the government’s announcement of a purchase may become a problematic signal for receivers. As Fratianni et al. stated:

During “normal” times, when markets face stable information flows and are able to price banks’ future net cash flows with relative efficiency, (an-
nouncement of bailout) is evaluated as a boost to shareholders’ return. On the other hand, in the fog of a financial crisis, when markets are extremely uncertain about the quality of the assets, a specific announcement is taken as a revelation of partially unknown troubles.106

The policy signal sent by the government’s purchase may even increase the information asymmetry problem. Without the governmental purchasing scheme, the cost of bank failure can be estimated by the market. Given the uncertain possibility of the government purchase, banks’ failing cost will be hard to estimate. The government makes a decision on whether to initiate a purchase scheme by weighing the social costs whereas the banks have no idea of the probability of a governmental purchase.107 Thus, the announcement of the government purchase scheme may “send noisy signals about the true cost of bank failure.”108 Subsequently, “banks face additional uncertainty in taking risk, due to imperfect information on whether they will receive a bailout when financially distressed.”109

Moreover, if the government overpays the banks, it will send a negative signal discrediting the integrity and fairness of the government’s policy. If the government overpays a bank, it is actually subsidizes that banks. Doing so clearly signals that excessive risk-taking and excessive indebtedness by banks will not be punished by market forces because the government will give them subsidy to avoid bankruptcy.110 Under such a situation, mortgage borrowers, lenders and sellers will not be fully responsible for their actions, which violates the market integrity principle and will jeopardize market stability.

Although incorrect pricing and information disparity in the government’s purchase program may detrimentally send negative pricing and policy effects to the market, some readers still may worry that investing too much energy in rectifying the information disparity and pricing problems will delay the stabilization of the economy. After all, the immediate purpose may be to get banks back into intermediation through solving their liquidity problem and stabilizing the economy. The next section of this article will show that rectifying the information disparity and pricing problems using the government’s purchase program accords with the purpose of stabilization.
DOES STABILITY CONQUER ALL? BOTTOM LINE PRINCIPLE OF THE GOVERNMENT’S PURCHASE ACTION

First, Congress never ignores the importance of reasonable prices and always tries to prevent unjust enrichment. Even when the U.S. economy was in serious trouble in October 2008, the Emergency Economic Stabilization Act\textsuperscript{111} (“EESA”) still required the “Secretary of Treasury to take necessary steps to prevent unjust enrichment of financial institutions participating” by selling toxic assets “at a higher price than what the seller paid to purchase.”\textsuperscript{112} Treasury was required to “pursue additional measures to ensure that prices paid for assets are reasonable and reflect the underlying value of the asset.”\textsuperscript{113} The EESA emphasized the importance of preventing “unjust enrichment” by trying to reasonably price the assets; so why is there a myth that says reasonable pricing should surrender to the purpose of stabilization? Let’s see how that myth came about.

The view that “stabilization conquers all” can find a solid basis in Henry Paulson’s testimony. Paulson, the sponsor of TARP, testified before the Senate banking committee that “[W]hen we get through this difficult period, which we will, our next task must be to address the problems in our financial system through a reform that fixes our outdated financial regulatory structure, and provides strong measures to address other flaws and excesses.”\textsuperscript{114} Two key points are indicated by Paulson’s testimony. First, stability conquers all. Mr. Paulson factually indicated that \textit{stabilitas vincit omnia et nos cedamus stabilitas}\textsuperscript{115} (stability conquers all; let us all surrender to stability). However, is it true that stability conquers all and every other endeavor should surrender to it including the integrity and fairness of government transactions? Second, Paulson assumed, though he did not point at it directly, that the endeavor of restoring market stability is competing with other endeavors, like price fixing and information disparity. Is he correct?

Undoubtedly, it is hard to over exaggerate the importance of stability in the financial system, especially during a crisis period. It is too extreme, however, to say that stability conquers all and every other endeavor should be surrendered to it. Sometimes, regulators may ignore some endeavors. This does not mean those endeavors ignored are not important; instead, regulators were focusing on other states that they thought were worse.\textsuperscript{116} Fair price and
transparency and the other assessments of market integrity are very important for the stability of the system.\textsuperscript{117} As previously mentioned, the government needs to restore the confidence of the market in order to stabilize the system. However, confidence will not eventually come back to a market without integrity. As O’Brien claimed, “restoring the confidence of investors…cannot be achieved on a sustainable basis unless the structural changes address the ethical.”\textsuperscript{118} Therefore, “the financial stability regulator shouldn’t necessarily be the ‘king’ regulator.”\textsuperscript{119} Fair pricing, transparency and other market integrity assessments are also important to market health and should be reflected by government’s purchasing program.

Thus, the critical point is that government should not sacrifice fair pricing and transparency for getting stability first. Since the asset purchase program is an asset transaction, the bottom line for government is to make sure that the transaction price is fair and the information is transparent. Now we can ask: why does government have such a duty?

First, the government is using taxpayer’s money to invest in the toxic assets. The government has a fiduciary duty to make a good deal for taxpayers and avoid the unnecessary losses.\textsuperscript{120} Thus, the government should do its due diligence when buying an asset. It should create a fair transaction structure and terms, require disclosure, gather information relevant to the transaction it enters into, and reasonably allocate the risks between itself and the counterparty. Of course, government should not use its regulatory power to coerce the counterparty because it is acting in a commercial capacity, not as a regulatory agency.

Second, but most importantly, the government’s asset purchase program has significant signaling effects to the transaction world.\textsuperscript{121} If government entered into a program that tolerates manipulating pricing and information, it will risk losing a lot of money. However, losing money is not the worst possible outcome. The worst result is that the government’s activities send a signal to the public that “I can be tolerant of unfairness and distortion in the market.” You can imagine what a lethal strike such signal could bring to the market, especially a market which suffered from a faith crisis.

As noted, discovering a fair price and rectifying information disparities accord with the purpose of stabilization. However, discovering a fair price and rectifying information disparities are thorny problems since the govern-
SWEETENING THE LEMON WITH FAIR COST

ment is without knowledge of the toxic assets’ quality and value. Thus, the government needs a special scheme. The next section of this article will examine whether TARP and P-PIP serve as an appropriate scheme assuring reasonable price and rectifying information disparity, which can finally restore confidence in the market.

EFFECTS OF THE GOVERNMENT’S EMERGENCY PRESCRIPTIONS: TARP AND P-PPIP

TARP: Can Lemon Socialism Rescue the Lemon Market?

Some people criticized TARP as a Lemon Socialism plan tampering with market mechanisms, which would normally allow bad companies (“Lemon Companies”) to fail. TARP has a risk of privatizing profits and socializing losses, as President Jackson warned in his comments on closing the Second Bank of United States in 1832. Does TARP have an appropriate scheme assuring purchases at a reasonable price and restoring the market confidence? Unfortunately, it does not. TARP is a cursory product born of government panic without adequate considerations of price, information disclosure, or restoring market confidence.

The primary, and perhaps only, purpose of TARP was to solve the liquidity problem. Secretary of the Treasury Paulson identified the liquidity problem facing financial firms as the primary problem and warned that it would cause large scope distress. This served as the major justification for purchasing bad loans and relevant securities — to increase the liquidity of the financial sector. It is dubious whether the banks’ problem was a liquidity problem or instead an insolvency problem. Also, as mentioned previously, the liquidity problem was actually a crisis of faith and transparency. To solve the liquidity problem, the government needed to first restore the confidence problem stemming from information asymmetry by signaling correct price information to the market.

Although the EESA emphasized the importance of fair price, it did not specify how to assess the asset price. The EESA authorized the Secretary of the Treasury to judge the price using his discretion. Treasury can determine a purchase price that is “consistent with the purposes of this Act.” Further,
the EESA stated that Treasury should “pursue additional measures to ensure that prices paid for assets are reasonable and reflect the underlying value of the asset.” TARP designed an auction approach to assess price which was thought to satisfy the market mechanism requirement of EESA. However, it is dubious that an auction can inform Treasury of fair price. If information asymmetry still exists in the government purchase program, it will trap the government into a losing game against banks, which hold much better positions in terms of significant information. Figure 2 will illuminate the information asymmetry problem in TARP.

Figure 2 – Information Asymmetry in TARP

In Figure 2, each hollow arrow represents information flowing. The width of the arrow indicates amount of information (wider arrows have more information than the thinner arrows). In this figure, Bank 1 has many MBS (A, B and C). Bank 1 should have a record of each mortgagor and its collateral real estates. Bank 1 sells some portions of its loan to investment Bank 2 and gives it some of the information about the underlying mortgages and mortgagors. But, Bank 1 will only disclose information about those mortgages and mortgagors when doing so benefits the bank and withholds information when it does not. Again we called this process information evaporation.
We can see that Arrow 2 from Bank 1 to Bank 2 is much thinner than Arrow 1 from the mortgagors to Bank 1, which means that some information has vaporized in the process of transition. Of course, Bank 2 can get additional information from other sources (U and V) that may have business ties with A. The same information evaporation situation applies to Bank 3 and Bank 4. When those banks claim that they want to sell toxic assets to Treasury, they need to disclose some information for Treasury to make a judgment about the asset. Information evaporation also exists in the information transition from banks to Treasury. The arrows pointing to Treasury are much thinner than those pointing to the banks. Different from other market players, Treasury is in the center of this web without many connections to the individual market players, especially the underlying mortgagors. So Treasury has a weak ability to collect information and most of its information depends on the banks’ disclosure.

**Figure 3 – Moral Hazard of “Cheap” Talk**

Will the bank disclose everything, such as the delinquency of mortgagor A? Maybe, maybe not? The more information about the poor quality of the assets that the bank discloses, the lower the price it will get since Treasury has said it will pay only a reasonable price. Figure 3 shows the moral hazard of cheap
The solid line in this figure represents the action that will actually be taken by the bank while the alternative action is represented by the dotted line. The bank wants to sell MBS to Treasury. The bank knows the quality of the MBS while Treasury does not. Thus, the bank needs to convey messages about the quality of the MBS to Treasury so they can decide on a transaction price. As aforementioned, there is heavy information asymmetry in MBS market; hence, it is difficult for Treasury to distinguish the high quality MBS from the low quality MBS. Treasury can only rely on the bank’s disclosure to get information. Will the bank tell Treasury the truth? If the bank’s MBS have very high quality, the bank will definitely let Treasury and the other buyers know the truth. Here, disclosure is good for the bank because it acts as a free advertisement to distinguish its good assets from other sellers’ bad assets in the market. Unfortunately, the MBS in the bank’s hand are not good because they have high default risks. In this case, it is fortunate for the bank that the default risks of its MBS are indiscernible unless it discloses them. Here, we can see that the bank has two options. First, the bank can tell Treasury the truth about the MBS’s quality, including the default risks, which will lead to a lower sales price for the MBS. Here, the bank pays a cost, a lower price, for its honest disclosure. Second, the bank may only disclose the information that promotes its own interests and hide information about the default risks. If the bank chooses this option, it can get a higher price for its MBS. Which option will the bank choose? Since banks want to get as much as they can get for MBS, they will opt for partial disclosure and withhold the information against its interests. The bank risks a penalty if it chooses the second option and Treasury detects it. However, the chance that Treasury will detect the bank’s hidden action or dishonest disclosure is very low because Treasury lacks information about the MBS the bank sold. Thus, the bank will definitely choose the second option with no fear of trouble later.

Since TARP does not have a risk share scheme, banks have incentives to cheat and perform in bad faith. It is safe for banks to manipulate the price of the asset they sell to the government because the government does not know very much about the underlying assets. Inadequate information and possible cheating by the bank would lead TARP to overpay for assets. Without essential information, the government does not know what the toxic assets are worth. In this situation, the government fell into a dilemma, as Professor Murdock observed:
If the government pays too much, the taxpayers take a bath. If the government pays too little, the capital problem of the banks is not resolved. Here again, there is a moral hazard problem. Banks want the highest possible sales price for their assets; on the other hand, the government must be careful not to negotiate too aggressively or else the price paid for the assets will not be sufficient to remedy the banks’ capital problems.¹³⁴

In most scenarios, the government will pay too much and pass the risk and losses onto taxpayers.¹³⁵ Moreover, if the value of the assets is unknown, it is impossible to know how much capital is necessary to solve the problem and the asset purchase program will become a black hole. Because of this concern, TARP encountered fierce criticism and Treasury was forced to abandon the toxic asset purchase plan¹³⁶ instead shifting to use the $700 million for injecting capital and buying stock, which was easier to value in Treasury’s view. However, scandals were revealed gradually about banks’ manipulation of stock price,¹³⁷ appropriation of recapitalization funds,¹³⁸ and even criminal activity.¹³⁹

Because banks that received federal funds did not increase lending to boost economic recovery,¹⁴⁰ and because increasing banks’ liquidity cannot solve the lemon market problem, the government decided to try a new toxic asset program to address the two problems left by TARP: TARP cannot signal a very accurate price, and TARP cannot enhance market integrity to restore investors’ confidence. Since TARP did not include a mechanism to induce seller disclosure or reasonable risk allocation, sellers may still lie.

To solve these problems, the government had two options for how to go about solving the remaining problems: disclosure and screening. Disclosure is a requirement for the seller. It means that the seller should release more essential information or the structure of the transaction should be designed to force the seller to release information or adopt a real risk for failing to release it. Screening affects the buyer (Treasury). The buyer can acquire more information by making more inquiries of the sellers, essentially doing more market research. The buyer can also get assistance for accurate pricing from other private parties (rating agency or private investors¹⁴¹) because private parties are deemed as doing a better job in the private market. The government chose the second solution by joining with private investors in purchasing, through a new program, the Public-Private Investment Program (P-PIP). The next part of this article will exam whether P-PIP can solve the problem left by TARP.
P-PIP: Who Eats the Sugar and Who Eats the Risk?

Since the toxic asset plan under TARP had a high risk of over paying which may send negative signals and deteriorate the market, the government decided to try a different approach to discover the correct price with the assistance of private investors. Evidence showed that there was a large population of cash-rich investors and those buyers did not make purchases in 2008 because they were waiting for better news since they hated the uncertain risks. Apparently, Treasury recognized this potential purchasing force and decided to take measures to awaken their investment incentive by sharing the risks with them via the Public-Private Investment Program. P-PIP offered “at least a tablespoon of financial sugar for every teaspoon of risk that investors agree to swallow.” Treasury’s plan was to “restart” the market for troubled assets by introducing sufficient additional capital on the buying side of this market. The missions for P-PIP are as follows:

Maximize the impact of each taxpayer dollar: first, by using government financing as well as a co-investment with private sector investors, creating substantial purchasing power and making the most of taxpayer resources;

Shared risk and profits: with private sector participants: second, the PPIP ensures that private sector fund managers and market participants invest alongside the taxpayer, with these investors standing to lose their entire investment in a downside scenario and the taxpayer sharing in profitable returns;

Private sector price discovery: third, to reduce the likelihood that the government will overpay for these assets, private sector investors competing with one another will establish the price of the securities purchased under the program.

Treasury’s change of plan gained the approval of the market and the stock market went up six percent the day the news was released. T. Timothy Ryan Jr., president of the Securities Industry and Financial Markets Association remarked that “for the first time in seven months …they’ve done it right.” However, does P-PIP really solve the information asymmetry and overpay problems? This question is important because P-PIP is different from
TARP which was a temporary emergency rescue program;[^148] P-PIP is a long-term program “lasting eight years, with the possibility of two one-year extensions.”[^149] Thus, the reasonable pricing problem is more important for P-PIP than the TARP because its negative impact will last longer if P-PIP is poorly designed and sends noisy signals to disturb the market. To answer this question, we need to look further into the design of P-PIP.

P-PIP has two programs: the Legacy Securities Program and the Legacy Loans Program. The former is designed to buy mortgaged-backed securities[^150] while the latter is for mortgage loans. Since the latter has been delayed to allow additional focus on the Legacy Securities Program and is not a direct solution for MBS market,[^151] this article will only discuss the Legacy Securities Program. Let’s first look at its basic structure. The basic structure of a P-PIP transaction is illustrated by Figure 4.

**Figure 4 – Basic Structures of P-PIP Transactions**

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<th>Buying Side</th>
<th>Auction Stage</th>
<th>Selling Side</th>
<th>Result Stage</th>
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Figure 4 shows that on the buying side, Treasury and private investment fund managers establish eight funds, which are limited partnerships. Private companies contribute 50 percent of the capital to the Public-Private Investment Fund (P-PIF), and Treasury “matched the capital raised, dollar for dollar, up to a preset maximum.” The eight private funds have raised $7.4 billion and Treasury matched the capital dollar-for-dollar with $7.4 billion. Thus, the total equity of the P-PIFs is $14.8 billion. The P-PIF management is controlled by private managers. P-PIFs purchase the Non-Agency Residential Mortgage-Backed Securities (RMBS) and Commercial Mortgage-Backed Securities (CMBS) from the qualified financial firms. When the qualified financial firms offer a toxic asset for sale, the P-PIFs will compete to bid on the assets, and Treasury will provide up to 100 percent debt. Suppose the purchase price of an MBS is $40, the capital injection from Treasury and the private partner is illustrated in the second column of Figure 4. The fourth column of Figure 4 shows the loss distribution between Treasury and the private partner.

Figure 5 further presents an example of loss and gain allocation of a legacy security purchase. As shown in Figure 6, if the true value of the toxic asset is $60, the total profit is $20 and the private fund gets $10 (50 percent) and Treasury gets $10 (50 percent). If the true value of the toxic asset is $20, the private fund and Treasury each lose $10. When the toxic asset actually is worth $0, the program will produce a loss of $40. The private fund still lose the $10 that is its down payment. But Treasury suffers the loss of $10 in equity and $20 on the loan. When the MBS has gains, Treasury and the private investment fund managers share equally (that is why the solid line is overlapped with the dotted line when the real value of MBS>=$20). But for the losses, the private investment fund managers will only lose the down pay ($10) while Treasury will always lose the rest. Treasury actually provides a “put option” for the private partner on the asset. For the private fund, the total potential loss is limited whereas the gain is unlimited. For Treasury, it is the opposite.
Figure 5 – Losses and Gains Allocation of Legacy Security Purchase

Figure 4 and Figure 5 show that the investor has little downside risk and large upside benefit. So these programs really provide private investors a soup spoon of sugar for a teaspoon of risk; private investors share a very small portion of risk and the government absorbs all additional risks. No criticism can be raised against this risk-burden design if it can fulfill the government’s purpose: encourage private investors to participate so that the reasonable price can be discovered and “reduce the likelihood that the government will overpay for these assets.” But it is doubtful whether inducing the private participants to this program a reasonable price will be discovered. To achieve this effect, there should be three premises: 1) the private manager should have the capability to screen more information related to the price; 2) the mechanism the private manager uses to screen information needs to be effective; and 3) the private manager should have an incentive to screen more information. The second one is the most critical among the three.

Let’s first look at premise one: the private manager should have the capability to screen more information related to the price. It is still too early to judge the capability of the managers Treasury has selected. But, according to the most recent report of SIGTARP, the supervising agency for P-
PIP, there are some problems with Treasury’s selection process and criteria, which might affect the quality of selection. This means “the taxpayer may have lost the benefit of the participation of qualified, albeit smaller, fund managers.” Even if we ignore the defects of selection and assume that the managers Treasury selected are the best from the candidate pool, will it assure that the managers can do a good job in screening more accurate information related to price discovery? Not necessarily. As previously discussed, even the qualified institutional buyers (QIBs) also got burned in the mortgaged-backed securities market, which indicates that professional and sophisticated private investors may not necessarily do a good job since they actually lost the most money in the MBS market. Will the managers of P-PIFs avoid the failure that the other investment funds have suffered in the MBS market with the information asymmetry problem still existing? If not, P-PIP should have new mechanism for managers to screen more accurate information or enable managers to force buyers to release information. If P-PIP does not have such innovative mechanisms, managers can only “trust to luck or the good faith of the opposite party.”

Secondly, does P-PIP have any useful mechanism that enables private managers to effectively screen information? It seems not. The main change in information screening from TARP to P-PIP is that P-PIP adds more eyes and ears for the government. Let’s illustrate the information transaction structure in P-PIP by Figure 6.

From Figure 6 we can see that P-PIP replaced Treasury and became the receiver of messages sent by the banks. The private entities in P-PIP may acquire some additional information from other sources (like W, X, Y and Z, which have business links with both banks and P-PIP) that is valuable for pricing the toxic assets. At the same time, different P-PIP programs might exchange information with each other or compete with screening ability under the requirements of Treasury. The significant improvement of this design is that it changes the status of an asset purchaser from a centralized receiver to many hubs in the information web. These hubs are more connected with market players. This design gives Treasury more hands to collect the information, but it does not change the nature of the problem: P-PIP still mainly relies on the banks, the information holder’s disclosure, to get information to make decisions. Banks 1-4 do not have incentives to
disclose the truth, as shown previously in Figure 4. We can see from Figure 6 that the arrows become thinner and thinner across the information transition to P-PIF(s). It means that information is vaporized in transition while the information senders withhold the portion that would go against their interests.

**Figure 6 – Information Asymmetry in P-PIP**

The third issue is that the private manager should have incentives to screen more information. Presumably private managers, who are the managing partners in charge of the P-PIFs, have a fiduciary duty to the P-PIFs and Treasury. Thus, private managers should work in the best interest of P-PIFs and diligently screen as much information as they can to assure the accurate price. But is that what happens? As we know, if there are conflicts of interests between a principal and the agent, there is a possible agency problem. Are there any conflicts of interest between P-PIF/Treasury and private managers? There may be. As indicated in Figures 4, 5, and 6, private managers usually only share the down payment. Thus, private managers may not have a sufficient incentive to work prudentially as they would if they were assuming 100 percent of the burden of risk. Professor Wilson points out that “the price
that prevails from a Public Private Investment Partnership (PPIP) sale will not be the market price.”

Moreover, the private manager might perform delinquent actions. SIGTRAP expressed concern in its report to Congress in April 2009 that “the increase in the price of such an asset will greatly benefit anyone who owns or manages the same asset, including the PPIF manager who is making the investment decision.” Unfortunately, SIGTRAP’s propheesy came true. SIGTARP reported in January 2010 that one P-PIF manager committed fraud by selling assets at a higher price to P-PIFs than to non-P-PIF buyers. Wanting to prevent panic, Treasury requested SIGTARP sweep the scandal under the rug and not leak the information. The attitude of Treasury is like a cat that shuts its eyes when a rat is pilfering cream. Although SIGTARP suggested “conflict-of-interest walls” to separate the manager’s other businesses from the P-PIF, Treasury did not accept it. Even if Treasury accepted the fire wall solution, it would not fully prevent managers’ delinquency because they may also collude with the seller. Joseph E. Stiglitz, a Nobel Prize winner in economics, warned of this kind of situation. Following Stiglitz’s illustration, the following example is used to clarify why the manager has incentive to collude with the seller to raise the price. Suppose an MBS is worth $100. Private Manager A colludes with the seller Bank B to raise the price of this MBS with the final knockdown at $120, a 20 percent premium. Note, this premium is not so high as to raise doubts from the public because this environment is marked by heavy information asymmetry and the deal is reached via auction. For a $20 overpayment, the government’s burden and Private Manager A’s burden are $10 respectively. Then, Bank B can return $10 to the private manager to compensate the manager for the loss. The overpayment from the government can be allocated between Private Manager A and Bank B. Maybe each gets $5. It is clear that both the bank and the private managers are winners from this overpayment game and Treasury is the only loser.

P-PIP differs from TARP only in that the public and private sectors share the risks instead of only the government. However, the government shares the risk and guarantees the purchases exposing the private sector to very little risk. Therefore, the private managers may not work as prudentially as expected. P-PIP does not solve the problem at the root of the risk: information asymmetry. The buying side is still exposed to all the risk caused by the infor-
SWEETENING THE LEMON WITH FAIR COST

mation asymmetry. The sellers, who hold all the information, do not need to bear the burden of any risk and therefore have an incentive to manipulate the quality or price. P-PIP cannot discover the reasonable price, hence we need better solutions.

FIXING THE BOTTOM OF DANAIDS JAR: POSSIBLE SOLUTIONS

Based on the discussion above, both TARP and P-PIP are Danaids Jars, which are in fact leaking curses. A Danaids Jar cannot be filled with water because it has many holes for the water to leak out. TARP and P-PIP resemble the Danaids Jar because they also have many “holes” in their design leaking taxpayer money. Under these programs, inaccurate price information and faithless behaviors will be the only things left. Theoretically, there are three possible ways to fill those holes: 1) enhancing screening on the buying side; 2) enhancing information disclosure on the selling side; and 3) determining risk allocation between the selling and buying sides according to their information holding. This article next examines each of these possible responses and concludes that the former two are not perfect since informed and uninformed players have different positions in the trade: “the informed players know the value of the trade while the uninformed only knows the distributions of attributes among the informed” and the “informed choose actions” and induce pricing whereas the uninformed can only “choose price.” Thus, the last resort may be allocating risk between the selling and buying sides according to the information each holds.

SCREENING APPROACH

The concept of screening was first developed by Michael Spence in his Nobel awarded paper, which describes a potential decision-making strategy in cases of asymmetric information. Spence considers a scenario like this in his paper: assume two economic agents — A and B — where A knows more about himself than B knows about A. The two agents are attempting to engage in a transaction. The “screener” B (the one with less information) attempts to rectify this asymmetry by learning as much as he can about A. B’s attempts are called “screening.” Screening was initially used in the labor market and in recent
years it has been widely used in the credit market and financial market. The information problem in these markets relates back to mortgages and stocks. A screening approach may include two kinds of actions:

**Action 1**

The uninformed player may collect more information from the informed players to have adequate information to make a decision. Applying this theory to the case of purchasing toxic assets, we can improve the screening ability of the buying side in the following ways:

- enhancing the screening capability of government;
- promoting due diligence in information gathering and decision making of private managers;
- relying on third parties to help with screening and sorting out the selling side information; or
- devising a mechanism (e.g. price) which induces the sellers to sort their goods out.

The first way that enhancing the screening capability of the government may be problematic, according to our analysis in TARP, is because the government is not familiar with the private market. We may achieve the second solution by proposing to increase the risk to private investors so that they have more incentives to screen information and make decision with due diligence. This way the risks of private cheating or delinquency may be reduced. But, increasing the risk for the private sector may drive them away. Also, even if we assume that the private sector can work in the best interest of the P-PIF, this is still not a final solution since no matter how much effort the private manager makes in screening, he cannot get all the information that buyers have. The third solution suggests that we may rely on a third party, like the rating agency, to enhance the sorting. Indeed, the grades on the MBS do provide some information for the buying side to distinguish the good from the bad. But don’t forget that the FDIC concluded that “this crisis could not have happened without the rating agencies” and 93 percent of the bonds the rat-
ing agencies rated as AAA were downgraded to junk bonds overnight by the end of 2006.\textsuperscript{176} Last, can we devise a mechanism (e.g. price and employment contract) that will induce the sellers to sort their goods out? Theoretically we can. This approach is widely used in the hiring process. According to Professor Spence, an employment contract that causes potential employees to sort themselves into groups is said to have a “separating equilibrium” result.\textsuperscript{177} This approach does not work if the cost of cheating is cheap and “cheap talk”\textsuperscript{178} will lead to discounting the price. In such cases the seller will always upgrade the quality of his/her assets, so the contract (price) won’t induce any sorting effect and have a “pooling equilibrium” result.\textsuperscript{179} Unfortunately, the cost of cheating is cheap in the toxic asset market because it can’t be discerned immediately and honest sorting will lead to a lower price. So this approach doesn’t work in solving the problem in the toxic asset market.

**Action 2**

Since the selling side (uninformed party) can choose the price, they may have “adverse selection” by adjusting the price they will offer. Adverse selection means that the buyers offer to buy at a price according to the worst quality goods they expect since only the sellers knows the quality and the buyers have no way to discern the good from bad.\textsuperscript{180} Buyers set the price according to the worst situation because buyers believe that the bad will drive off the good and the seller will try to sell the worst one. This adverse selection in pricing doesn’t work for the toxic asset purchase program because accepting such a low price will cause banks to suffer large losses. Relying on adverse selection goes against the purpose of “removing the toxic asset and restoring the liquidity of banks.”\textsuperscript{181}

Thus, the screening approach is not optimal given the fact that information is monopolized by the informed players. If the buyers want to change the situation, they may devise a scheme to elicit truthful information. However, no effective way of eliciting information has been found for toxic asset buyers. Hence, the screening approach on the buying side is not optimal.\textsuperscript{182} What about the disclosure approach for the selling side? The following section of this article will discuss that approach.
DISCLOSURE DOCTRINE

The disclosure doctrine can maximize the utility of resources. Both the legislature and courts prefer to reduce information acquisition costs because reducing information costs “enables individuals to make informed choices to maximize their own utility.” The disclosure doctrine, which has solid economic rationale, is important for maintaining the health of the MBS market. As noted, information asymmetries will not only impose a cost on the buyers but also create costs by introducing adverse selection into purchasing transactions between buyers and sellers. Buyers’ adverse selection will manifestly reduce liquidity of firms. In order to increase liquidity, firms will disclose more information about themselves or their assets to strengthen investors’ confidence in MBS transactions. Revealing information can attract more investors allowing firms to increase the liquidity of their securities. Otherwise, firms have to issue MBS at a discounted price in order to overcome the reluctance of potential investors. The possibility that investors would invest money for the firm depends on the amount of information the firm will disclose. To some extent, disclosure is a win-win strategy for both investors and firms.

Although disclosure is a win-win strategy and information asymmetry can theoretically be alleviated by a firm’s disclosure, the actual effect is still dubious since sellers may misrepresent information that is indiscernible and unverifiable. The amount of information sellers will disclose about the quality of their assets depends on their buyers’ acquaintance with product quality. As mentioned earlier, according to Lemon Market Theory, the seller has strong incentives to pass off bad assets as good assets. The incentives for sellers to lie can be weakened only if the disclosed information may be verified before a transaction. However, in the MBS market, private information is not easily observed and assessed by buyers. Thus, it is highly possible that sellers won’t disclose or may misrepresent information that is against their interests. Evidence shows that disclosure in the MBS market is far from sufficient, which leads to increased risk of litigation. The outcry over the insufficiency is largely due to the conflicting interests of sellers and investors. Under the originating-and-distribution model of the mortgage-backed security, the originator who knows about the risks of the underlying mortgage has a strong incentive to sell the securities at a high price while shifting the
risks to the purchaser. On the buying side, the investors have an incentive to purchase the security with a lower price while reducing the risks they will be exposed to. Under such paradigm, disclosure is against the originators’ interests. The originators do not want the investors to discern the risks and the real value of the assets they sell. Thus, they will structure the transactions contrary to the interests of investors and make the transaction complex and murky.

Even when Treasury sets a threshold for mandated disclosure, it is still possible for regulatory arbitrage. The originator would attempt to structure more complex transactions “in ways that appear to reduce the asymmetry, as measured by the regulatory ban, below that threshold.” Under the mandate disclosure rule, complexity is the best method for concealing the risks of a transaction and making “lemons” looks like “cherries” without clearly violating any rules. When the financial structure is highly complex, essential and critical facts can be cryptically buried in disclosure documents. Nobody except the originator can understand the real situation, and even the professional private managers cannot fully understand all the risks.

The most important fact is that sellers (banks) know the psychology and the political argot behind the government’s toxic asset purchase program: government will always try to clear off its toxic assets regardless of how much information it knows about the assets. Thus, although we can require the seller to disclose more information, clearly the sellers will only tell the government whatever information most benefits them. Moreover, even if they tell all the truth that might not always be good macro-economically. Sometimes bad but true news may cause a panic. According to “Cockroach Theory” “bad news always comes in bunches,” and the public may believe that the bad news released about an MBS is just the tip of the iceberg.

Since we cannot get the appropriate amount of information using either the screening approach or the disclosure doctrine, we need a new device. Because, “[i]n the case of asymmetric information, the risks generated by the bad behavior of one player … are generally borne by the other,” the best way to cure the information disparity is to impose liability on the party who fails to disclose the essential information. Based on this rationale, we can design a device to allocate the risks between parties according to the information they own. This approach will be the focus of the next section.
RISK ALLOCATION PARADIGM

The best way to combat disclosure insufficiency is to impose the burden of the risk on the party who fails to disclose the essential information. The smaller the risk shared by the disclosure obligators, the less information they would likely to disclose. If a party can benefit from failing to disclose essential information without being punished, that party will not have any incentive to fulfill the obligation of disclosure. MBS provided a good tool for the originators to externalize their risks. Risks flow from the originators to the investors while information is not transmitted to investors proportionally to the risks. Giving the originators a greater share of the risk provides a good paradigm for solving this incentive problem. A typical example of rectifying information asymmetry through risk sharing is the doctrine of strict liability. The doctrine of strict liability in tort is based on the ground that manufactures know the risk of products while the consumers lack the information to evaluate the risks. Another example is the famous “Lemon Law” (Magnuson–Moss Warranty Act). This act provides a remedy for purchasers if the goods they buy fail to meet standards of quality and performance. This act is called the Lemon Act because it tends to solve the “Lemon Problem.”

According to the rationales discussed above, the seller (banks) must have some risk in the transaction. The basic problem of the originating-to-distributing model of MBS is that the originator and the sponsors are removed from the risks. As noted in The Economist, “old-fashioned mortgage lending is like a marriage: both the bank and the borrower have an incentive to make things work. Securitization, at least in this market, was more orgiastic, involving lots of participants in fleeting relationships.” Because there are multiple players in the process of producing and distributing the MBS, all of them have fleeting relationships with the investors. Thus, they are distant from the ultimate risks associated with their products. Empirical evidence showed that players’ “performance is significantly worse for MBSs with greater distance” and loss and foreclosure occurred earlier. Originators without any risk in the transaction have incentives to manipulate the pricing and information for the sake of their optimal benefit. To force the sellers to take on some risk, there are two possible approaches.
**Retaining a Material Portion of Risk**

Retaining ownership equity is a convention in many nonmortgage securitizations but not usually used for mortgage-backed securities. Players in the MBS market thought the over-collateralization of mortgages provided adequate protection for investors; hence, retaining the ownership equity requirement is redundant.\(^{207}\) The burst of the housing bubble, however, showed that even MBS need collateral; the housing collateral is not adequate protection for investors to avoid losses, especially after a market collapse. Thus, retaining some portion of ownership equity is one possible solution that puts the originator’s funds in the MBS purchase. The financial reform bill suggested that the seller of the mortgage-backed securities should be required to keep a material portion of credit risk exposure to “ensure they won’t sell garbage to investors, because they have to keep some of it for themselves.”\(^{208,209}\)

Should the banks that sell toxic assets to the P-PIFs also retain material portions of equity in the assets they sell? Some dissenters may say it is improper to require that banks retain some portion of the asset because “retention is costly since there are investment opportunities and because the issuer will have to post capital against the retained proportion of security.”\(^{210}\) This opinion correctly reflects one side of the issue, but it ignores the other side: can the banks benefit from retention? Yes. Banks would incur a cost by retaining some portion of the asset, but this cost is compensated for by the reduced cost of getting liquidity. The retention credibly signals to investors that the investment is more secure. After all, “the issuer puts her money at stake with the investors and consequently this should constitute an incentive to issue higher quality securities.”\(^{211}\) Such belief will increase the liquidity of the MBS market and bring more investment to the MBS originators. Otherwise, MBS originators may need to reduce the price of MBS to attract investors. If the issuer does not send the credible signal by retaining some portion of the asset, investors will doubt the asset quality. Retaining a portion of the assets will be useful for preventing the originators from taking too many risks.\(^{212}\) Hence, it will not only reduce the P-PIF’s risk exposure but will also contribute to system stability.

**Buyback Penalty**

Another method is to guarantee the obligation adopted by the banks that
sell the MBS. There are two kinds of guarantees. First, banks can be required to guarantee the price of the assets. As Professor Murdock suggests, “to protect the taxpayer, it is desirable for the banks to guarantee the price that the government pays for the banks’ assets.”

If “upon the sale of the toxic assets, the assets are worth substantially less than the government had paid,” the government can require the bank to compensate the price difference. Second, there can be a penalty imposed for failing to fulfill the quality warrantee: if the bank fails to disclose or misrepresents essential information about the quality, that bank should be required to buyback or substitute the MBS it sold.

The price guarantee option is not as simple as Professor Murdock proposed. There may be a practical problem that must be solved before it is adopted. Since the price is unknown in the context of a toxic asset transaction, gauging the scope of the “price difference” is both critical and very difficult. Moreover, because the price is determined by the auction, the sellers would claim that they are not at fault for the error of the price since the price is offered by the P-PIF that won the auction. So there would need to be further research on how to calculate the price difference to make this proposal practical. Second, there could be a penalty for failing to fulfill the warranted quality. If the sellers misrepresented or failed to disclose the essential information, they deserve the blame. Blame, however, is not enough. There needs to be a penalty imposed for their misrepresentation or discourse failure. The P-PIF should be able to ask sellers to buyback or replace the MBS or compensate the loss of the P-PIF.

Additionally, what kind of capital can be used for the penalty? Professor Murdock suggests that “contingent liability resulting from such a guarantee would overhang the capital of the banks and stifle their ability to lend.” Thus, he suggested using the authorized but unissued stock. This approach will not only put the resources of the bank back into the purchase program, but also those of the shareholders. The shareholders of the banks dislike the contingent condition (to compensate the government with the bank’s stock) because it will dilute their shares. Shareholders also are concerned that if the contingent situation happens, the government will become a shareholder of their banks. In such a situation, the banks may serve the political purpose of government, which would ultimately jeopardize the original shareholders’ interests. Thus, shareholders will supervise the bank executives and prevent
their dishonest behavior in transactions to avoid the future loss. Moreover, the potential shareholder litigation will put pressure on executives to avoid dishonest behavior. Thus, the interest of the bank’s shareholders and the government’s purchase program can be aligned.

CONCLUSION

At the time of the writing of this article, the U.S. economic situation had changed while the framework of its bailout program (toxic asset purchase program) had not. Currently, the U.S. economy is recovering, though it has been slow. Correspondingly, the toxic asset purchase programs should not remain as the stopgap where financial giants get fed while the taxpayers are plundered. This situation cannot be allowed to continue, which seems to be the consensus of both society and the government. Indeed, the government never gave up trying to find better solutions for securing fair transactions, so they shifted the government centralized purchase program (TARP) to the Public-Private Investment Program with the hope that private participation would help to discover the reasonable price. Unfortunately, this analysis shows that this was just a naïve dream.

To prescribe the right solution, we first need to know what caused the problem. The government’s toxic asset program tries to sweeten the sour mortgage-backed securities market. Lack of transparency and reasonable risk allocation are the primary causes that turned the MBSs market into a lemon market. The government’s toxic asset purchase programs with good will but bad designs further encouraged the information disparity and sellers’ incentive to cheat by increasing prices or passing off the bad quality assets. Flaws in the government’s purchase program not only confused market participants through noisy pricing signal but also signaled that government can tolerate unfairness and distortion in transactions. Such signals from the government will be a fatal strike to the market, which suffered from a crisis of faith, and further soured it.

Pragmatic solutions are needed, not platitudes. Since traditional approaches to achieve the information equilibrium through buyer screening and seller disclosure does not work in the government’s toxic asset purchase programs, this article proposed a new solution to allocate the risks between sellers (fi-
nancial firms) and buyers (government and private investors) according to the information holding. Only by asking the sellers to take on a share of the risk will their cheating be prevented and the information disparity be cured.

TARP has been phased out, but P-PIP only recently finished its establishment stage and will last eight years or more. Given the signaling effects, we should have a better device through which the government’s purchasing action can send out positive signals to restore the confidence of the market. Our efforts to perfect this program will reward us with big benefits in the health and stability of the market as this crisis, and future crises, are managed. It deserves our attention and endeavors.

NOTES

1 President Franklin Roosevelt, First Fireside Chat delivered March 12, 1933, Washington D.C.
3 During the financial crisis, “toxic asset” was widely used to describe mortgage or mortgage-backed securities, whose values had fallen significantly because the market was no longer functioning. Such assets are also call “troubled assets” in Congress’s Emergency Economic Stabilization Act 2008 (“EESA”) and “legacy loans” in Treasury’s Public-Private Investment Program (P-PIP).
6 See generally, Akerlof, supra note 2 at 488.
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10 Barry Popik, consultant of the Oxford Dictionary, stated that “lemon” is a slang term originating from American English, and “to hand (someone) a lemon” means “to pass off a sub-standard article as good; to swindle (a person), to do (someone) down.” See Barry Popik, Lemon (“Hand someone a lemon”), available at http://www.barrypopik.com/index.php/new_york_city/entry/lemon_hand_someone_a_lemon.

11 Akerlof, supra note 2 at 489 (Stating that “[B]ut good cars and bad cars must still sell at the same price — since it is impossible for a buyer to tell the difference between a good car and a bad car”).

12 Professor Arrow first described an asymmetry information situation in health care. Information asymmetry models assume that the sellers have more relevant information about assets quality than buyers, which leads to more transaction cost and even results in unrealizable trade. See Kenneth J. Arrow, Uncertainty and the Welfare Economics of Medical Care, 53 Am. Econ. Rev. 941(1963) [hereafter “Arrow”].

13 Akerlof, supra note 2 at 490.

14 Id. at 493.


16 See Bryan A. Garner (ed.) Black’s Law Dictionary (7th edition.), 1999 at 816. (Defining expectation interest as “the interest of a non-breaching party in receiving a benefit that would have resulted if the contract had been performed.”)

17 Akerlof, supra note 2 at 495.

18 Id. at 495-496.

19 Id. at 490 (stating that “[T]he bad driving out the not-so-bad driving out the medium driving out the not-so-good driving out the good in such a sequence of events that no market exists at all”).

20 The loans backing the MBS are issued by mortgage bankers, savings and loan associations, commercial banks, and other lending institutions as well as some government-sponsored enterprises backed by government.


22 Default risk is investor’s risk of loss arising when a borrower does not make payments as promised. Default risk of MBS can stem from borrower's delinquency, increase of interest rates or decline of house price. “Pooling mortgages may help

23 Interest rate risk is due to variability of interest rates. “In general, bond prices in the secondary market rise when interest rates fall and visa versa. Because of the prepayment risk and extension risk, the secondary market price of MBS will sometimes rise less than a typical bond when interest rates decline, but may drop more when interest rates rise. Thus, there may be greater interest rate risk with MBS than with other bonds.” See supra note 22.

24 Prepayment risk is the chance that fixed-rate mortgage holders prepay their mortgages more quickly or slowly than expected. Prepayment is usually precipitated by a decline in interest rates. If the interest rate decreases, the optimal choice for fixed-rate mortgage holders is to refinance at a lower fixed interest rate, which results in prepayment risk. See supra note 22. Also see Matthew S. Motyka, Risk Measurement of Mortgage-Backed Security Portfolios via Principal Components and Regression Analyses, (May 2003) (Unpublished M.S. thesis, Worcester Polytechnic Institute), available at http://www.wpi.edu/Pubs/ETD/Available/etd-0429103-231210/unrestricted/motyka.pdf.

25 Indeed prepayment risk is difficult to predict. But lenders might analyze the evidence of the effect of interest rate change in the past.

26 This expression was given by Charles O. Prince, former CEO for Citigroup, in the interview by the Financial Crisis Inquiry Commission (FCIC), March 17, 2010. See FCIC, Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States (2011) at 102 [hereafter Final Report].

27 See generally, Kurt Eggert, Role of Securitization in Subprime Mortgage Market Turmoil, Testimony before Committee on Senate Banking, Housing and Urban Affairs Subcommittee on Securities, Insurance and Investments CONG. Q., Apr. 17, 2007.


30 Like employment history, income, savings, life insurance policy, retirement plan and other assets. Different mortgage issuers have different requirements for information and that information is protected by federal and state law, which requires that the servicer keep confidential all personal information of any mortgagor and not provide a mortgagor’s personal information to any non-affiliated third party. See financial concept mortgage Web site which provides an example of essential information used when applying for a mortgage, available at http://www.fcmortgageloans.com/LoanApplicationInfo.
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33 According to rating results from rating agencies, the SPV splits asset pools into different bond classes known as tranches, with varying degrees of subordination, such as senior ("A") class with lower risk, and junior subordinated (B, C, D, etc.) with high risk, and categorized tranches into new pool and new tranches. The tranches prioritize the distribution of principal payments among various mortgages and serve as a series of maturities over the life of the mortgage pool.


36 Edward L. Glaeser, Thin Markets, Asymmetric Information, and Mortgage-Backed Securities, 6 J. Fin. Intermediation, 64, 64 (1997) [hereafter Glaeser].

37 Id. Glaeser at 66.

38 Supra note 36 at 65.

39 Glaeser & Kallal argue that “limited private information decreases the returns to market makers, causing them to exit and thus decreasing liquidity.” Supra note 36 at 65-66, 85.

40 Supra note 36 at 66.

41 Supra note 36 at 65.

42 Akerlof, supra note 2 at 499-500 (stating licensing and guarantee could reduce the quality uncertainty and further mitigate the information asymmetry).

testified before Financial Crisis Inquiry Commission that he pointed out the facts that “Wall Street was placing many of the troubled loans into bundles known as mortgage securities” to the four rating agencies, but none of them accept because “it was against their business interest to be too critical of Wall Street”).

44 Sen. Charles E Schumer quoting Nobel Economist Prize winner Joseph Stiglitz’s comments in his testimony on Restoring Financial Stability Act 2010, May 13, 2010: “[I] view the rating agencies as one of the key culprits .... They were the party that performed the alchemy that converted the securities from F-rated to A-rated. The banks could not have done what they did without the complicity of the rating agencies.” The script is available at http://www.c-spanvideo.org/videoLibrary/clip.php?appid=598136964 [hereafter Schumer].


47 Empirical Evidences show that “Deals with a high share of low-documentation mortgages also perform disproportionately worse compared to other types of risky deals.” Ashcraft, supra note 45 at 32.


50 Francesco, supra note 48 at 4. See also N.Y. TIMES., “Triple-A-Failure,” April 27, 2008 (Stating that the banks choose the agency that can deliver the desired rating. This process is known as ratings shopping).

51 Schumer, supra note 44.

52 Id.

53 Id.


55 Chris Downing, Dwight Jaffee and Nancy Wallace, Is the Market for Mortgage-Backed Securities a Market for Lemons? 22REV.FIN.STUD. 2458, 2459 (2009) (The authors study the sales of mortgage-backed securities (Freddie Mac Participation Certificates, or PCs) to SPVs over the period 1991 through 2002. Finding shows that PCs sold to SPVs are “on average valued $0.39 lower per $100 of face value relative to PCs not so sold.”).
Steven L. Schwarcz, Disclosure’s Failure in the Subprime Mortgage Crisis, 2008 Utah L. Rev. 1109 1116 (2008) (hereafter Disclosure’s Failure) (Claiming that the complexity of the financial transaction would take the market “more time to understand and reach price equilibration”).

Final Report, supra note 26 at 236.


Conclusions, supra note 59 (Noting that the fraud in mortgage market doubled again between 2005 and 2009).


Ben S. Bernanke, Chairman of Federal Reserve, Testimony Before the Committee on Banking, Housing and Urban Affairs, U.S. Senate, Washington, D.C., Feb. 24, 2009 (noting that “most securitization markets remain shut, other than that for conforming mortgages, and some financial institutions remain under pressure”), available at http://www.federalreserve.gov/newsevents/testimony/bernanke20090224a.htm [hereafter Bernanke].

Arrow, supra note 12 at 973.


Id.

Id. at 192.

Id. at 193.

This expression came from Richard Senior’s blog. He stated that “someone once observed that banks fail either because of cancer or a heart attack. That is, either assets deteriorating over time (cancer/solvency), or a sudden halt in circulation (heart attack/liquidity crisis).” See Richard Senior, The Smoking Gun: Liquidity


73 Yalman Onaran, Wall Street Firms Cut 34,000 Jobs, Most Since 2001 Dot-Com Bust, available at http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aTRUhP3w5xE&refer=home, (stating that “the collapse of the subprime mortgage market last year and the ensuing credit contraction have saddled the world’s largest financial institutions with at least $200 billion of write downs and losses”).


75 The last decade was a highly liberal and innovative period for the U.S. financial sector. Greenspan (Chairman of the Federal Reserve) inspired self-discipline and relaxed regulation. The firewall built by the Glass–Steagall Act, which prohibits a bank holding company from owning other financial companies, was repealed in 1999. In the liberal but crazy atmosphere, the banks did more risky transactions, which had been prohibited by Glass–Steagall. Countless subprime mortgages were sold as no risk investments. The collective risky and crazy activities in the banking sector drove the world’s strongest financial system to the brink of collapse in 2008. See general Barry Eichengreen, Origins and Responses to the Crisis (Working paper, 2008), available at http://econlab.berkeley.edu/users/webfac/eichengreen/e183_sp07/origins_respons.pdf. See also Carmen M. Reinhart & Kenneth S. Rogoff, Is the 2007 U.S. Sub-prime Financial Crisis So Different? An International Historical Comparison (NBER working paper 13761, 2008), available at http://www.anst.uu.se/e/jiche227/International%20Housing%20Finance/US/Is%20the%202007%20U.S.%20Sub-Prime%20Financial%20Crisis%20So%20Different%20An%20International%20Historical%20Comparison.pdf.

76 Supra note 74.

77 As estimated, $140 billion was pulled out on Sept. 17 from money markets which were regarded as ultra-safe markets before the financial crisis. See Kimberly Amadeo, Money Market Run, About.com, September 17, 2008, available at http://useconomy.about.com/od/criticalissues/a/bailout_cause.htm.

78 Deborah Solomon, Liz Rappaport, Damian Paletta & Jon Hilsenrath, Shock

§3(9)(A) of EESA.


Horwitz, supra note 81 (stating that legal doctrines developed the separate private realm free from public power).


Horwitz, supra note 81.

Signaling is the idea that sender conveys information to receiver. For example, an education certification is a signal sent by job seeker about his ability level to the potential employer. See Michael Spence, Job Market Signaling, 87 Q. J. Econ. 355(1973).


Gorton, supra note 7 at 1.

Corrective action refers to aiming to help firms in trouble, for example, by bailing
out distressed banks.


97 Steven L. Schwarcz, Rethinking the Disclosure Paradigm in a World of Complexity, U. ILL. L. REV. 1, 28 (2004) (As Prof Schwarcz point out that: “[I]t is doubtful that these (government) employees would do a better job than private-sector analysts, who already perform this function for investors.”).


99 Here, overpay doesn’t mean paying the seller a higher price than the market value; instead it means paying a higher price than the real value.


101 Todorova, supra note 86 at 321.


103 An analogous example is “the bond holders interpreted the Chrysler bailout as a signal that the government will stand behind the obligations of unionized firms. This evidence suggests that bondholders interpreted the Chrysler bailout as a signal that the government will stand behind unionized firms. In other words, the Chrysler bailout created a perception that unionized companies will receive preferential treatment from the government.” See Deniz Anginer & Joseph Warburton, The Chrysler Effect: The Impact of the Chrysler Bailout on Borrowing Costs 6 (5th Annual Conference on Empirical Legal Studies Paper, 2010), available at http://papers.ssrn.com/so13/papers.cfm?abstract_id=1640801.

104 Fratianni, supra note 102 at 11.

105 Firms that received government aid may be regarded as distressed firms and investors may be reluctant to invest in such firms. That is why some firms don’t want to receive government aid.

106 Fratianni, supra note 102 at 46.

107 Victor Vaugirard, Beliefs, Bailouts and Spread of Bank Panics, 57 BULL. ECON. RES.
93 (2005).


109 Id.

110 Supra note 98 at 75 (stating that “government subsidies may provoke moral hazard, signaling to the market as a whole that excessive risk-taking will not be punished when it fails, but will be rewarded when it succeeds”). See also, Yale M. Braunstein, Give Us the Information Already (Berk. Univ. Working Paper, 2009), available at http://people.ischool.berkeley.edu/~bigyale/meltdown_bailout_primer_ver11.pdf, page21. (stating that “if we fail to prevent the moral hazard problem at this time, we might send signals to future bankers to be more reckless and riskier in the future”).

111 EESA is the law authorizing Treasury as a financial asset purchaser of last resort.

112 See §101 (a)(3) of EESA.

113 Id.


115 This phrase originates from a famous saying, Omnia vincit amor et nos cedamus amori, which is a line of a painting by the Italian Baroque artist Caravaggio. See CATHERINE PUGLISI, CARAVAGGIO 201-202 (Phaidon Press 2000).

116 Chester Spatt, Regulatory Conflict: Market Integrity vs. Financial Stability, 71 U. PITT. L. REV. 625, 630 (state that “the financial stability regulators, due to their inherent focus on the worst states, have not fully appreciated the potential value of promoting disclosure and transparency for limiting systemic risk”)[hereafter Spatt].

117 Id. (The author claims that “[T]he domain of the market integrity regulator would reflect such issues as insider trading policies including disclosure requirements and outright prohibitions, the assessment of market micro-structure frictions and its ramifications for trading, anti-manipulation policies and disclosure policy and its import for public offerings, proxy voting, corporate financials and mutual funds”).


119 Spatt, supra note 116 at 637.

120 See Arthur Lenhoff, The Constructive Trust as a Remedy for Corruption in Public Office, 54 COLUM. L. REV. 214, 215 (1954) (Stating that “fundamental to our law is the conception that an agent’s position, whether a private office or public, is of a fiduciary character”).
121 See discussion on pricing signal and policy signal.
123 In conceiving the Bank Renewal bill in 1832, President Jackson said, “[G]entlemen, I have had men watching you for a long time, and I am convinced that you have used the funds of the bank to speculate in the breadstuffs of the country. When you won, you divided the profits amongst you, and when you lost, you charged it to the bank.” See Chuck Baldwin, No bailout of Wall Street, AmericaFreepress.net, available at http://www.americanfreepress.net/html/baldwin_bailout_09_27_08.html.
125 Paulson, supra note 114 (testifying that “even some Main Street non-financial companies had trouble financing their normal business operations. If that situation were to persist, it would threaten all parts of our economy.”)
126 See §2 (1) of EESA (stipulating the purpose of TARP as “to restore liquidity and stability to the financial system of the United States”).
128 See §101 (a)(3) of EESA.
129 Id. §113(b).
130 Id.
131 Id.
132 Supra note 30.
135 Some scholars claimed that taxpayers also faced a dilemma. For example, LaVorgna claimed that: “[U]ltimately, the taxpayer will pay one way or another, either through


Criminals come under the shadow of oversight. SIGTARP, the inspector office of TARP reported that there were 77 ongoing criminal and civil investigations up to December, 2009. SIGTARP, Quarterly Report to Congress January 30, 2010. at 12, available at http://www.sigtarp.gov/reports/congress/2010/January2010_Quarterly_Report_to_Congress.pdf.

Assistance the Treasury gained from partnering with private investors was not only the price evaluation, but also human resources support, information support, and management skills.


Now, P-PIP has finished the establishment process, and currently there are eight private managers that have been selected by Treasury. *Supra* note 148 at 152.

Criteria for MBS: “issued before January 1, 2009 (legacy); bearing an original AAA or equivalent rating from two or more credit rating agencies designated as nationally recognized statistical rating organizations (NRSROs); secured directly by actual mortgages, leases, or other assets, not other securities (other than certain swap
positions, as determined by Treasury) located primarily in the United States (the loans and other assets that secure the non-agency RMBS and CMBS) purchased from financial institutions that are eligible for TARP participation.” Supra note 148 at 151.


159 Treasury has discretion in creating selection criteria and legal structure of PPIP and did not require it to use the Federal Acquisition Regulation in selecting fund managers. Supra note 148 at 84-85.

160 The SIGTARP’s criticism includes “selection criteria created confusion and uncertainty among applicants,” “treasury refined its criteria during the selection process in a way that impaired the transparency of the process,” “treasury’s published selection criterion that fund managers have at least $10 billion in assets under management also risked unnecessarily discouraging applications from smaller asset managers that might have had significant expertise,” and “treasury gave an advantage to larger applicants with respect to the requirement that applicants demonstrate a capacity to raise $500 million in private capital.” Supra note 148 at 84-85.

161 Id.

162 Regulating Complexity, supra note 58 at 243.


This is an expression which means useless labor. This expression came from a German myth, “Punishment of Danaids.” The whole story can be found online in the Oxford Dictionary, available at http://oxforddictionaries.com/definition/Danaids.

J. Luis Guasch & Andrew Weiss, *Wages as Sorting Mechanisms in Competitive Markets with Asymmetric Information: A Theory of Testing*, 47 REV. ECON. STUD., 653, 656 (1980) (Stating that pooling equilibrium, A, is an equilibrium in which there exists a firm, k, offering a test, such that it attracts more than one type. A pure pooling equilibrium is a pooling equilibrium in which among the types attracted to a firm, k, there are at least two, i and j, such that their expected net wage is different from their expected net marginal product, i.e. $P_iW_{ik}^* + (1-P_i)W^F = C_k ≠ Q_z - A$ for z = i, j. A pooling equilibrium that is not pure will be noted a non-pure pooling equilibrium).

184 Adverse selection refers to a situation in which the sellers (the buyers) have more relevant information about product quality than buyers (the sellers). For an example, it can be a problem when there is asymmetric information between an insurance company (the seller) and the buyers who often have a better idea of the risks of their body. Those buying insurance are not people who face small risk but people who know that they face large risks, which is the problem of adverse selection.
186 Supra note 184.
187 Supra note 185 at 92.
189 Id. at 1325.
192 Crimmins, supra note 34 (in this article, Crimmins, et al., review the litigation in 2007 on subprime mortgage lending and summarized that “plaintiffs appear to be focusing on disclosures relating to the quality of the loans, and adherence to procedures designed to ensure loan quality.”).
193 Supra note 56 (Disclosure’s Failure) at 1118.
196 Supra note 56 (Disclosure’s Failure) at 1113.
197 Even the professional investing fund could not fully understand the disclosure statements of the mortgage back security, not to mention the other investors. See Regulating Complexity, supra note 58 at 243.

200 The rationale is to provide an optimal risk sharing mechanism in the “situations where the investor (principal) demands protection against the downside risk of her investment and the borrower (agent) has access to an action that determines the risk of the investment.” Convertible debt can prevent the entrepreneur from adopting the high risk strategy ex post, which deals with moral hazard. See Saltuk Ozerturk, Risk Sharing, Risk Shifting and Optimality of Convertible Debt in Venture Capital 17(working paper, 2002), available at http://faculty.smu.edu/ozerturk/submitted%20papers/pdfpapers/submission02-76.pdf.

201 Calabresi & Hirschoff, Toward a Test for Strict Liability in Torts, 81 YALE L.J. 1055, 1062 (1972).


203 See Jonathan Eddy, Effects of the Magnuson-Moss Act Upon Consumer Product Warranties, 55 N.C. L. REV. 835 (1977) (Stating the missions of the Magnuson-Moss Warranty Act as “(1) attempts to improve the clarity of warranty terms in consumer sales through rules governing disclosure of terms and pre-sale availability of warranties; (2) attempts to increase the substance of warranties given by inducing warrantors to comply with “minimum federal standards for warranty;” and (3) attempts to improve the remedies available to consumers, especially by encouraging “informal dispute settlement mechanisms”).


206 Supra note 199 at 6 (For example, “distance from loss matters the most where a greater proportion of the pool consists of low documentation loans”).

207 Steven Schwarcz, Protecting Financial Markets: Lessons from the Subprime Mortgage Meltdown, 34 MINN. L. REV., 373, 388 (2008)(stating that “retaining the equity ownership is not always done in mortgage securitization because mortgage loans are inherently over-collateralized by the value of the real-estate collateral, and thus investors can effectively be overcollateralized even if the originator bears no risk of loss”).

208 The Financial Reform Bill “requires companies that sell mortgaged-back securities to retain a material portion (generally 5%) of credit risk of securitized exposures and prohibits the originator or sponsor from directly or indirectly hedging or otherwise transferring this risk,” available at http://banking.senate.gov/public/_files/
FinancialReformSummary231510FINAL.pdf.

However, after the lobbying of the banking sectors, the final version of the Financial Reform Act of 2010 opens an exception of the retaining provision that “the underlying loans meet standards that reduce riskiness.” The standard of exception is too vague and opens a large space for MBS sellers to escape the requirements of retaining. Also, the new version of the Financial Reform Act only applies to the seller and not to the servers, sponsors and the lenders who actually participate in the process of production but are remote from the risks. See http://dpc.senate.gov/dpcdoc.cfm?doc_name=lb-111-2-64.


Id. at 13.

See Bank of international settlement, International banking and financial market developments, Bis Q.Rev., Sept. 2009, at 29 (finding that the degree to which the originator’s retained stake will be affected by a downturn will significantly influence the impact that the stake will have on incentives to adequately screen borrowers).

Supra note 134 at 878.

Id.

If the scope is too small, it would be too tough for the sellers. If the scope is too wide, it will create the loophole for some price manipulation to escape.

Supra note 134 at 878.

Id.

