Wall street and patents

Wall Street and patents: financial innovation or ethical dilemma

Chris Tanner
Tokyo, Japan

Stephen K. Lacewell
Murray State University

ABSTRACT

Wall Street investment banks are presently experiencing a very unfavorable public opinion. This is for numerous reasons, many of which are legitimate. Various financial instruments (e.g. Credit Default Swaps (CDSs) and Collateralized Debt Obligations (CDOs) are often blamed for assisting in the financial crisis of 2008 to 2010.

However, a more diligent examination of the industry shows the actual causes of the financial crisis to be much more complex. Financial instruments are not the problem. The misuse and misunderstanding of those financial instruments was (and still is) the problem, along with lax regulatory oversight and a perverse incentive system that rewarded the wrong kinds of behaviors.

Many Wall Street firms continue to encourage their investment bankers to develop and file patents on new and innovative financial instruments. Some of these patented financial instruments are very beneficial to our economy. Thus, the article attempts to convey that some financial innovations are very worthwhile and subject to patenting, but that investment bankers still need to exercise prudence and appropriate business judgment, which many investment bankers failed to do during the years 2003-2008.

This article deliberately avoids going into extensive detail on specifics of patents but instead strives to increase understanding of how the financial system is changing and moving toward the use of patents. Furthermore, this article will attempt to puncture some of the commonly-held misunderstandings about Wall Street and the financial collapse, and Wall Street behavior and incentives in general, by using the lens of the U.S. patent system. It is also demonstrates that patents can help democratize our financial system, increase transparency, and diminish some of the leverage of large Wall Street investment banks.

Keywords: patents, investment bank, collateralized debt obligation, credit default swaps

INTRODUCTION: INVESTMENT BANKS AND THEIR USE OF PATENTS

There is presently a lot of anger directed towards Wall Street. Many Wall Street investment banks paid enormous bonuses at the end of 2009 and are making incredible amounts of money in 2010, which is hard to reconcile with their astounding ineptness from e.g. 2003-2008. However, this anger overlooks or masks the fact that Wall Street investment bankers have developed some truly novel and interesting financial products which can benefit our economy, including, ironically, excellent schemes for risk management.

Goldman Sachs, JP Morgan, and other Wall Street investment banks generate revenue in many different ways. However, one obscure and seldom-considered method of generating revenue increasingly used by the large Wall Street investment houses is leveraging their Intellectual Property (IP) portfolios, including but not limited to patents.

Most people don't think of investment banking in combination with inventions and patents. Instead, when people think of patents and technology development, they may think of IBM, Microsoft, Google, Cisco and other technology companies who file a very high volume of patents. However, like Microsoft, Google, and Cisco, Goldman and JP Morgan also encourage patent filings among their employees, including in some cases paying bonuses for the number and/or quality of patents (United States Patent Office database of patents, uspto.gov).

This article is not meant to diffuse or negate anger at Wall Street, but instead to show that in some cases such anger is misdirected. The complex investment structures discussed in this article are just another, although somewhat unusual, form of sophisticated computer technology that some competitors and customers are willing to pay for. However, they sometimes find it easier to simply purchase these innovations rather than having to sweat the details by developing it themselves.

Furthermore, on Wall Street, a patent can be a good selling point. People (including but not limited to customers of Wall Street investment banks) tend to think of patents as symbolizing enormous, ground-breaking innovation. Even most knowledgeable persons don't realize that patents require only incremental improvements over existing products rather than true innovation. Thus, to such an investor not familiar with the patent system, a patent or even a patent application may suggest something profound, and thus an opportunity for profits even more prodigious than what is traditional for Wall Street investment banks.

Volume of Patent Filings on Wall Street

The numbers within Tables 1 and 2 (Appendix A) show that Wall Street is resolute regarding the issue of patents, and that the principles of this article are not merely surmise and conjecture. This information is publicly available from numerous venues, including but not limited to the website of the United States Patent Office (uspto.gov).

Although there have been many new financial terms that have become famous (or infamous) from the financial crisis, this article will concentrate on only two: collateralized debt obligations (CDOs), and credit default swaps (CDSs). Many additional terms could be used to make the intended point of this article, such as residential mortgage-backed securities, etc. Furthermore, for the sake of brevity, within Table 1, the patent filings of only three Wall Street investment banking organizations are shown. These are Goldman Sachs, JP Morgan, and Morgan Stanley.

Next, it is important to understand that the various tables discussed herein stop at 2008 because most patent applications are not published until 18 months after filing (35 U.S.C. §122). Further clouding the issue is that for strategic reasons it is possible to file a patent application without disclosing the Assignee (an Assignee is roughly equivalent to an owner (not inventor) of the patent). Thus, the numbers in these tables are extremely conservative, and it is likely that many more patent applications exist than what is shown herein.

Finally, the best correlation between patents and owners can be found from Filing of patent applications, not actual Issued patents. An applicant for patent has no control over when any patent may or may not eventually Issue, but has total control over when a patent application is Filed. At the time of writing, the average pendency of a typical patent application is approximately 40 months. Thus, the Filing Date is a better indicator of the true intent of the Wall Street investment banking community. These terms are capitalized because they are legal "terms of art", with special significance in the field of patent law.

From Table 1 (Appendix A), it is apparent that the Wall Street investment community has steadily increased their patent filings from 2005 until the present. Table 2 (Appendix A) provides further evidence of this trend.

As can be seen in Appendix B, some well known investment banks and hedge funds appear on the list of patent applicants. Further, from Table 1 it would appear that the Wall Street investment community intends to increase their utilization of the patent system. However, the numbers in Tables 1 and 2, as well as those in Appendix B, are very conservative. There are several reasons for this. First, there are many synonyms for both CDSs and CDOs, so that the search methods discussed herein would not find patent applications using synonyms for these terms, even though they are relevant to this topic. Second, some applicants choose to not publish their patent filings. Third, as noted earlier, because of publication issues, the pool of data that can be evaluated in this document must stop at 2008.

Conversely, it is also important to note that a patent application can contain the expression "collateralized debt obligation", but be only indirectly related to CDOs. A patent disclosure can be as long as 250 pages, and thus mention many topics, although most are under 80 pages.

To best understand how to interpret Tables 1 and 2 (Appendix A), some explanation of the principal terms is appropriate at this time.

Definitions

In the United States, in the decade following 2000, the volume of mortgage obligations was greatly increasing (Bailout Nation). This was partly because of changes in federal lending policy and HUD policy beginning mainly in the Clinton Administration but continuing into the Bush administration. The goal was to increase the percentage of Americans who owned their own homes (Bailout Nation).

Partly because of the proliferation of these mortgages, complex investment vehicles known as Collateralized Debt Obligations (CDOs) came into existence (Bailout Nation, The Big Short). CDOs are created by bundling some type of financial obligation, such as mortgages, into aggregate groupings and then selling the groupings. CDOs can be an excellent way to spread risk, and yet give large institutional investors a chance to participate in the growing residential mortgage market, without the complexities of administering the individual specific mortgages

(Bailout Nation, The Big Short). There are many legitimate, non-toxic uses for CDOs, such as in corporate debt, not related to consumers or housing (Bailout Nation, The Big Short).

As previously mentioned, many of these CDO instruments are suitable for patent protection. Table 2 shows that between 2003 and 2008, there were at least 35 patent applications filed containing the expression "collateralized default obligation". However, there can be many other phrases and synonyms for this same product, thus the number 35 is very conservative, and the actual number of patent filings is likely to be much higher.

Credit Default Swaps (CDSs) are one of the complex investment products used by investment banks and are for the most part simply a form of insurance (Bailout Nation, The Big Short). Credit Default Swaps provide a way to "bet" that an entity will default on some type of obligation (Bailout Nation, The Big Short). The purchaser only gets paid if the default occurs, but in the interim must pay a premium to keep the bet alive. For example, it is well-known that IBM issues various bond offerings. It is possible to bet that IBM will "default" on one or more of their bonds. If there is an audience for such a bet, and that audience is willing to pay a reasonable fee for such an opportunity, it is likely that a Wall Street investment bank such as Goldman Sachs would be happy to accommodate that audience (Hearings before the Senate Committee Homeland Security & Governmental Affairs, Investigations Division, April 27 2010, before Chairman Carl Levin. Panelists included Goldman CEO Lloyd Blankfein). These bets are perfectly legal, and take many interesting forms. One such CDS/bet that started out very obscure, but picked up steam after 2004 and 2005, was a bet that various CDOs would default.

Many of these CDS instruments are suitable for patent protection, as was previously shown above. Table 2 illustrates that between 2003 and 2008, there were at least 95 patent applications filed containing the expression "credit default swap". Again, there can be many other phrases and synonyms for this same product, so the number 95 is very conservative, and the actual number of patent filings in this area is likely to be much higher. Conversely, as was mentioned with CDOs, just because a patent application mentions CDSs does not mean that patent application is focused entirely on CDSs.

An example may be useful at this point to better illustrate this area of thought. One way for an investment bank, such as Goldman Sachs, to provide a betting/insurance product was with the use of a CDS. However, it can be difficult to determine how to set a price for such a bet. Also, depending on whether the SEC classifies these instruments or not, Wall Street investment banks may be required to keep cash reserves (or margin) against the possibility of having to pay off on such a bet (The Big Short). Determining an acceptable amount of cash reserve can be very complicated (The Big Short). Accordingly, Wall Street investment banks routinely develop and modify techniques for performing such complex calculations.

Specifically, as shown in Appendix C, Goldman Sachs has filed for numerous U.S. patents in this area, so that the patent applications shown therein are but a few examples of a much larger pool. A detailed description of these financial products would be beyond the scope of this article. Suffice to say that their main purpose was to manage risk and assist in determining rates to charge to customers as well as an amount of cash reserves to set aside (where appropriate).

Unfortunately, these patent applications were likely not put to good use. Most of the large Wall Street investment houses did not properly assess the potential risk of their CDOs (Bailout Nation; House of Cards, Too Big to Fail). Part of their rationalization for this was that it was extremely unlikely that the entire United States housing pool would experience a simultaneous nationwide decline in value (The Big Short). Thus, it seemed relatively low-risk to

allow someone to take an insurance policy or bet (CDS) on an event that is extremely unlikely to happen (one or more CDOs defaulting) (Bailout Nation, Too Big to Fail). In the meantime, the issuer of the CDS, e.g. Goldman Sachs, receives a very nice stream of revenue from the insurance premiums (the "ante" or cost of carrying the bet/CDS). If the purchaser misses a premium, the bet/CDS would be entirely cancelled and Goldman gets to keep the ante/premium fees that were already paid. Among the investment community, one of the worst offenders, whose extremely unwise risk-management actions allowed them to be burdened with an enormous amount of CDO obligations, was arguably AIG, and specifically a unit of AIG called AIG FP (Financial Products) (Bailout Nation, Too Big to Fail, The Big Short, Hearings before the 2008 Financial Crisis and Derivatives, Day 2, Executives Panel, July 1, 2010). Another large player in this market, Deutsche Bank, consumed an enormous amount of these products. Further, Lehman Brothers' enormous exposure to this area (Too Big to Fail) made them legendary for being financially tone-deaf. Lehman Brothers is especially relevant because Lehman filed aggressively for patents in the area of credit default swaps, as shown herein (Appendix B).

Thus, although Goldman, Deutsch Bank, and Lehman developed some very nice models for risk analysis, and even filed for patents on some of these products (as shown in the various Appendices and Tables herein), these companies either largely ignored or did not follow the advice of the subject matter of their own patent applications. This article attempts to clarify that the patent applications are not necessarily flawed, but the companies that owned the patent applications and chose to ignore them were extremely flawed. The patents themselves could be valuable and useful.

COMMON MISUNDERSTANDINGS ABOUT CDOs AND CDSs

There has been a lot of negative press related to the thousands of foreclosures occurring across the United States. Stories about unscrupulous lenders making high-risk loans and disguising the risk to other investors have been sometimes portrayed as an event unique to 2005-2008, and somehow related to the use of CDOs (The Big Short). However, the fact is that this risk has always existed. Blaming the CDO, or thinking of the CDO itself as toxic, is mistaken and misdirected (The Big Short).

For example, a CDO can not by itself foreclose on a property, and a CDO can not cause a foreclosure. The problem stems from the risk rating of the CDO, and also the ownership and mismanagement of the CDO. Had CDOs been properly rated by the ratings agencies, the financial crisis of 2008 and onward would have been somewhat reduced (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, Chairman Phil Angelides.). The innocent purchasers of the CDOs would have been properly informed to stay away unless they had very high risk thresholds.

As previously stated, one example of such a purchaser was AIG FP (Hearings before the 2008 Financial Crisis Inquiry Commission, Day 2, Executives Panel, July 1, 2010, Chairman Phil Angelides). However, Goldman Sachs created an enormous portfolio of CDO products based on residential mortgages, thinking they were a "can't lose" proposition (The Big Short). Goldman even held the bets themselves until it became clear that the market was in full panic mode. Then, using their market leverage, Goldman was able to unload some of the CDOs on their trusting customers (Hearings before the Senate Committee Homeland Security & Governmental Affairs, Investigations division, April 27 2010, before Chairman Carl Levin).

Interestingly, in their 2009 Annual Report, Goldman Sachs minimizes the extent of their exposure to CDOs (Goldman Sachs, Form 10K submitted to the U.S. Securities and Exchange Commission). However, during the Senate investigation into Wall Street's culpability for the financial collapse, Goldman executives claimed they took billions of dollars of losses on CDOs, thereby characterizing themselves as an innocent victim, rather than a participant in causing the financial crisis (Hearings before the Senate Committee Homeland Security & Governmental Affairs, Investigations division, April 27 2010, before Chairman Carl Levin).

Thus, as discussed herein, the CDO itself is not the problem. The problem lies is the strange financial system that provided the wrong incentives for buying and selling CDOs. Adding to the confusion is the difficulty of knowing what exactly is contained in a CDO. The financial disclosure forms of a typical CDO offering are very difficult to read and digest, even for the most sophisticated of investors. Although Wall Street investment bankers will not admit to this, many underwriters of these financial instruments would intentionally write the disclosure forms to be as difficult to understand as possible (F.I.A.S.C.O.). This occurs because the employee of the ratings company tasked with rating a particular security must, to some extent, trust the Wall Street creator/inventor. The same is true for the purchasers of the securities. For example, until 2008, an enormous amount of goodwill and trust was bestowed on Goldman Sachs.

Furthermore, in many instances, the Wall Street creator/inventor would work with the employee of the ratings company, and they would cooperate together to determine how to best skew the data to "appear to be" AAA rated (Bailout Nation, The Big Short). After such cooperation, the Wall Street creator/inventor would praise the ratings company employee to his superiors, and also happily pay the ratings company's fees for the service. This flawed process, and its adverse effects on our financial system, is discussed in more detail herein.

One could reasonably suggest from this that Goldman's risk management patent applications (shown in Appendix C) are not worth much. After all, something clearly went terribly wrong with Goldman's risk management in 2005-2008 (Hearings before the 2008 Financial Crisis Inquiry Commission, Subject: Financial Crisis and Derivatives, Day 2, July 1, 2010, Bailout Nation). However, it is likely more accurate that Goldman's ignored the principles disclosed within their risk management patent applications, or merely found those principles inconvenient to exercise, their judgment being blinded by the enormous profits in CDOs and CDSs (The Big Short, F.I.A.S.C.O).

RATINGS AGENCIES

Purchasers of CDOs and other complex debt instruments tend to be sophisticated institutional investors. Nonetheless these investors have limited time and ability to investigate CDO disclosures. Thus, until 2008, they tended to first trust the investment banker who is selling the product, and second to trust the rating bestowed by the credit ratings agencies, especially a AAA rating (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, Chairman Phil Angelides).

The credit rating given to a debt instrument takes on increased importance for some investors. Pension fund managers, managers of municipal and state treasuries, corporate treasurers, and other institutional investors are often required by law to only invest in instruments rated AAA, and only if that rating originates from one of the three bond ratings agencies (F.I.A.S.C.O.). However, most CDOs enjoyed an (undeserved) AAA rating (Hearings before the

Financial Crisis Inquiry Commission, June 2, 2010, F.I.A.S.C.O.). A bond with a AAA rating should be extremely unlikely to default. However, in the area of mortgage-backed securities, between 2006 and 2008, an enormous percentage of such AAA rated bonds defaulted, with some estimates being > 95% (The Big Short). Thus, the AAA rating was effectively worthless. All three credit ratings agencies utterly failed at their task. This was unfortunate for trusting investors, but also avoidable, as numerous persons tried to warn the credit ratings agencies that they were mis-rating various bond offerings (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, Chairman Phil Angelides).

It is now apparent that a AAA bond rating doesn't really mean that a AAA bond is more reliable than another bond not rated AAA. Further, a AAA rating certainly should not be viewed as an assurance of bond quality. In fact, it may only mean that the rating agency was unable to fully digest the offering documents on the bond issuance, but did not want to lose a customer. This is in part because the rating agencies, specifically Moody's and Standard & Poor's (S&P), are part of the problem.

Within the bond rating companies, maintaining market share is much more important than ratings accuracy. Numerous employees of Moody's were fired for refusing to inaccurately rate securities in exchange for preserving market share (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, F.I.A.S.C.O., The Big Short). This became especially true after Moody's Investment Services became a publicly traded company in 2000 (The Big Short, Too Big to Fail). From that point onward, profits became much more important than the integrity of their ratings, from which they were immune from liability in any case. Fitch has significantly less market share than the other two, but still suffers from the same constraints of market share being more important than ratings accuracy (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, F.I.A.S.C.O., The Big Short).

The Wall Street companies that assemble the CDOs employ investment bankers that are more sophisticated and usually much better paid than the employees of the ratings agencies. Additionally, despite the government-mandated regulatory oligopoly, the ratings agencies need the goodwill of the investment banks. This results in someone who is very highly compensated (e.g. a Morgan Stanley investment banker with annual compensation in seven figures) brow-beating someone whose annual compensation is in five-figure territory (e.g. a Moody's employee) into providing a desired (usually inflated) rating for their securities (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, F.I.A.S.C.O., The Big Short).

CDOs by their nature consist of a package of significant risk. This risk is supposed to be reflected in the rating assigned by the rating agency. However, when the investment bankers would meet with the Moody's employees, they would brow-beat and intimidate the Moody's employee into giving a AAA rating to an instrument that should have been rated at considerably greater risk, for example AA or A or BBB. This is because it was just too difficult for the 5-figure person to say "no" to the 7-figure person (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, F.I.A.S.C.O., The Big Short). The spreadsheets, the charts, the numbers, were too complex to master in the short time allotted to the ratings agency employee to perform the ratings task. Also, there was no downside to granting a rating that turned out to be erroneous. Conversely, there was huge downside in alienating a potential customer, thereby allowing them to take their high fees to S&P or Fitch (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, F.I.A.S.C.O., The Big Short).

Another problem is that until recently, Moody's and the other agencies did not share in the risk of the ratings. Although their ratings were required by the federal government, their

charter provided that they were immunized from liability for any ratings errors. Thus, the three credit rating agencies enjoyed the best of all worlds. First, the government requires all bond issues to be rated. Second, the ratings agencies are not held responsible for making incorrect ratings. Because of this, the value of CDOs were somewhat inflated by ratings agencies who largely avoided responsibility for making errors. Fortunately this appears to be changing as there are numerous lawsuits pending against the ratings agencies. At present, the public sentiment is that the immunity bestowed upon the ratings agencies for many years should no longer be unconditional.

Interestingly, ratings agencies, in addition to investment banking firms, also file for patents. For example, U.S. Patent Publication No. 20080133427 discloses a "Collateralized Debt Obligation Evaluation System and Method". This patent application (not an issued patent yet) is Assigned to Standard and Poor's Credit Market Services. Even before reading the application, just the title itself is amusing. Also ironic is that Standard and Poor's did an absolutely atrocious job of evaluating CDO risk (The Big Short, Bailout Nation, Hearings before the Financial Crisis Inquiry Commission, June 2, 2010), yet they filed for patent in this very area. This is another reason why Standard and Poor had possession of good risk models (e.g. the numerous patent applications discussed herein, as well as others) but did not bother to use them.

While this may seem at first to be a contradiction, a closer look may reveal more. As with many other patent applications discussed in this article, it is likely that Standard and Poor's filed on this invention as a type of intellectual property exercise or perhaps as a type of leverage or insurance for fending off patent trolls (Burning the Ships), but had no intention of actually exercising the principles discussed therein. Instead, Standard and Poor's was motivated by one over-riding principle: maximizing profits for shareholders by never, under any circumstances, surrendering market share. If this meant producing weak or inaccurate bond ratings, so be it. Standard and Poor's is not liable for their errors or omissions in ratings (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, Chairman Phil Angelides). Indeed, not just for Standard and Poor's but for all three of the credit ratings agencies, there was very little accountability for a bond rating which turned out to be inaccurate (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, Chairman Phil Angelides). For example, an inaccurate rating seldom resulted in a poor performance appraisal. Instead, the one sure way to get punished was to refuse to rate a bond AAA and then lose a customer (The Big Short, Bailout Nation, Hearings before the Financial Crisis Inquiry Commission, June 2, 2010).

Consequently, Standard and Poor's reputation for their ability to evaluate a CDO will likely be at an all-time low when this article reaches publication. If so, U.S. Patent Publication No. 20080133427 disclosing a "Collateralized Debt Obligation Evaluation System and Method" may not command very much in licensing fees. In fact, some might suggest that an appropriate tactic might be to do the opposite of whatever is disclosed in that patent application. However, the truth is more likely that the patent application discloses useful subject matter, but that Standard and Poor's preferred technique was to emphasize market share over everything else (Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, Chairman Phil Angelides).

The above discussion should clarify that CDOs and CDSs are not the problem and are not toxic by themselves. They are in fact innovative instruments with legitimate commercial potential that are suitable for intellectual property protection such as patents (Bailout Nation). These misunderstood investments are comparable to other items that could be considered dangerous if used incorrectly. For example, many types of weapons are patented, and are

perfectly legal when used appropriately. However, these devices can and often are used for dishonest or destructive purposes. That does not mean they are bad and/or should not be protected by patent. In the end it is the people wielding the weapons, not the weapons themselves, that are the real problem.

Also, there is no certainty that Goldman Sachs or Morgan Stanley actually use the financial analysis techniques described in their patent applications. That does not mean the patent applications are weak, but instead that the institutional safeguards and incentives are weak. This article attempts to illustrate the distinction between the two.

SPECIFIC PATENTS

Despite their bad reputation, CDOs are still popular and still in use today. Many of these CDOs are the subject of patents and are still subject to license agreements. For example, US Patent No. 7,433,383, assigned to Morgan Stanley, entitled "Method of Allocating Risk", discusses how to get a numeric assessment of the risk contained within a CDO. This would seem useful because of the SEC requirements to retain cash reserves against the possibility of loss, so that a mechanism for determining the amount of those cash reserves is needed (Bailout Nation, The Big Short). However, it would seem that Morgan Stanley completely ignored the principles within the patent, at least with regard to their own CDO portfolio. Most Wall Street firms felt comfortable ignoring the federal government's cash reserve requirements because the government does not have a good track record of policing cash reserves, and instead sometimes gets involved only after there is a mess to clean up (Bailout Nation).

Thus, the reader should avoid confusing misuse/abuse of CDOs with their numerous legitimate purposes. CDOs are used in many useful, productive contexts that may not be related to real estate or mortgages (Bailout Nation). One example could be railroad bonds, for which the market is usually very thin and esoteric. By repackaging the railroad bonds into CDO instruments, they can reach a much larger audience.

Licensing/Valuation of Patents

The licensing and/or valuation of patents is a very difficult and expensive process, although some patent licenses and Assignments are traceable through public resources such as UCC registries. However, it is typically very difficult to determine which patents actually contribute cash flow to an intellectual property (IP) portfolio. For example, the exact nature of any IP portfolio licensing transactions between Goldman Sachs and JP Morgan is not publicly available and is considered highly confidential. Further, unlike many tech companies, the Annual Reports of these investment banks may not discuss their IP portfolios whatsoever.

How Our Financial Collapse Relates to Patents

As shown herein, despite their dreadful reputation, Credit Default Swaps were the result of savvy financial engineering filling a niche market. Examples of investors who made incredible amounts of money using CDSs include Michael Burry (Scion Capital), Steve Eisman (FrontPoint Partners), Greg Lippman, Jamie Mai and Charlie Ledley (Cornwall Capital), and

John Paulson (The Big Short, House of Cards). Because these instruments did not exist at the time Burry, Eisman, and numerous others wanted them, it was necessary to invent them entirely (The Big Short). However, Burry and Eisman did not bother patenting these instruments, although the subject matter is suitable for patent. Instead, at various times Burry, Eisman, and Lippman actually encouraged other investors to perform similar trades and set up similar instruments (The Big Short). Normally, this would be opposite of the usual purpose of a patent.

Consequently, this is one area where the present article may appear to have a flaw, as several of the most profitable users of CDS did not bother using the patent system whatsoever. However, that does not refute the main thrust of this article, which is that patents are coming to Wall Street, and that not all Wall Street innovations are bad. Instead, at the time, Burry, Eisman, and the other inventors may not have been aware that such financial subject matter is eligible for patent. Another seldom-recognized patent principle is that one can hold a patent and still allow others to use the principles within that patent. It is not required that a patent holder enforce a patent, or force others to desist in their behavior or take a license.

Along these same lines, setting aside Eisman, Burry, and the other financial innovators/inventors discussed herein, even today in 2010 most investment bankers do not enter a transaction involving a new financial instrument thinking that someone else will be interested in licensing that financial instrument. Further, even the most astute investment banker may not be aware that the investment principles are patentable. Instead, the existing paradigm seems to be to invent a financial instrument (where one does not already exist), and use that instrument largely for one's own customers (The Big Short, F.I.A.S.C.O.). However, this is a paradigm that Wall Street investment bankers appear to be slowly overcoming, as evidenced by the independent objective numbers in the aforementioned charts, showing an inexorable upward growth in Wall Street patent filings.

Furthermore, Wall Street investment bankers, presently engaged in a stretch of intense naval-gazing over their damaged reputations, are very aware that Burry and Eisman invented a profitable financial vehicle, and did so from outside the usual Wall Street power echelons. As such, many Wall Street personnel are vowing that next time such an opportunity occurs, they are not going to miss it (The Big Short).

As such, there is somewhat of a "herd" mentality in the investment banking community. When someone develops a type of original investment instrument, and there appears to be customer interest, other investment banks often want to "get in" on the popularity of that instrument (F.I.A.S.C.O.). They are willing to pay to be "let in" on a secret new financial innovation, because they can turn around and sell it themselves (F.I.A.S.C.O.). That's where patents can be helpful. It also helps to be able to market the investment technique by saying "this is the same type of investment mechanism that (e.g.) Goldman is selling to their best and most loyal customers. Well, we can sell it also".

Of course investment bankers' largest compensation will still come from the amount of income they produce for their clients. However, there is a growing sense that investment bankers also need to keep innovating, and keep finding new ways to make money (F.I.A.S.C.O.). One way for Wall Street companies to measure and reward such financial innovation is to encourage filing of patents.

There are at least two additional reasons why the arrival of patents to Wall Street could help consumers. First, as discussed above, some of the best financial innovations of 2005-2008 came from outside Wall Street, which was too caught up its own hubris to be aware of the clear signals that a financial disaster was forthcoming (The Big Short). As such, outside

investors/inventors were able to break through the usual barriers and gain entry into some of Wall Street's most protected areas, such as their bond markets (The Big Short). This allowed these outside investors/inventors to beat the Wall Street investment banks at their own game (Bailout Nation, The Big Short).

Second, when people think of Wall Street, they often think of stocks (equity). However, most Wall Street insiders will agree that the vast majority of money that flows through Wall Street is not in equity but in debt (bonds) (The Big Short). If so, it is to all of our advantage that this area not be dominated exclusively by Wall Street insiders. Outside investors/inventors such as Michael Burry, Steve Eisman, and Greg Lippman are a necessary and important part of preserving the integrity of our banking/investment system. As more outside investors/inventors develop and patent their financial instruments, it will be necessary for the large Wall Street investment banks to either take a license on those patents, or not practice the investment concepts disclosed therein. This in turn could result in a "flattening" of the Wall Street business model. Another way to describe it might be a type of democratization of Wall Street, where smaller companies with better products can more effectively compete with large and long-established investment banks.

Some might suggest it will also increase the existence of patent trolls (Burning the Ships). Although this article is not a defense of patent trolls, as we have seen in 2008 and onwards, large and well-established investment banks sometimes practice unfair competition (The Big Short). They behave in ways that are misleading to their customers including endorsing a security while actually betting against it, are blind to their own financial forecasting and analysis mistakes (with disastrous consequences for many innocent economic bystanders), and often do not act in the best interests of the nation as a whole (Hearings before the Senate Committee Homeland Security & Governmental Affairs, Investigations Division, April 27 2010, before Chairman Carl Levin). A functioning patent system could help penetrate and ventilate such a system. Few will lose sleep over the concept of Goldman Sachs paying out an occasional settlement to a patent troll. More importantly, bringing patents to Wall Street should facilitate smaller business entities who are less inured to insular Wall Street culture and less likely to put their interest above the interests of our financial system as whole, to effectively compete for capital. Also, a flattening/democratization of the Wall Street business model could help reduce the chance of any single company or group of companies becoming Too Big To Fail.

One final benefit of financial patents is transparency. One of the many reasons for the financial collapse of 2008 and onwards was that it was very difficult to determine how our financial system actually worked (Bailout Nation, Too Big To Fail). Even people who thought they understood it turned out to be somewhat wrong, and sometimes disastrously wrong. Examples include Warren Buffet, owner of 19% of Moody's, along with Alan Greenspan, former Chairman of the Federal Reserve. One of the reasons for this was a "shadow banking system" in which many important banking transactions and obligations existed but which were not openly disclosed, and were often referred to in financial statements only very indirectly (Hearings before the 2008 Financial Crisis and Derivatives, Day 2, Executives Panel, July 1, 2010). As patents become a greater and greater part of the international financial landscape, transparency should increase.

BILSKI DECISION OF US SUPREME COURT

An issue that often arises, even among sophisticated investors, is the canard that financial instruments cannot be patented. This is definitely false, and has been false since at least 1998 and probably before, depending on how one defines the term "financial instrument". However, it is a canard which continues to have life despite much effort to repudiate it.

On June 28, 2010, the United State Supreme Court re-affirmed that business methods are patentable subject matter in a long-awaited case called In re Bilski (In re Bilski, 561 U.S. ___ (2010)). The Bilski case involved complex derivatives that were based, in part, on weather patterns (U.S. Patent Application No. 08/833892 filed by Bernard Bilski). The ability to trade in complex financial instruments that are based on weather patterns can be a very useful hedge for companies whose businesses are affected by dramatic changes in weather (U.S. Patent Application No. 08/833892 filed by Bernard Bilski). Although Bernard Bilski's patent application was found to be invalid, this finding was based largely on the prior existence of other hedging techniques, and not the business method subject matter. Indeed, Justice Kennedy, in his final Opinion before retiring (In re Bilski, 561 U.S. ___ (2010)), went to great lengths to affirm that business methods are presently and will continue to be patentable subject matter.

CONCLUSION

This article shows clearly that the patent system is coming to Wall Street investment banking. It is also shown that Wall Street investment banking is without a doubt increasing their use of the U.S. and international patent system. Despite recent embarrassments, this can be beneficial for investors in general. It has hopefully been demonstrated in this study that patents can help democratize our financial system, increase transparency, and take away some of the leverage of large Wall Street investment banks.

Appendix A: Tables Showing Volume of Specific Financial Patents (by calendar year)

Table 1: Investment Bank Patent Application Filings (not Issuances) By Year:

	2005	2006	2007	2008+	Total
Goldman Sachs	1	4	2	9	19
JP Morgan	6	5	5	4	20
Morgan Stanley	9	10	11	17	47

Table 2: Patent Applications That Contain the Expressions:

	<=2003	2004	2005	2006	2007	2008+	Total
"Credit Default Swap"	7	12	12	13	18	28	95
"Collateralized Debt Obligation"	7	4	5	6	8	9	35

Appendix B: Filers of Patent Applications

Ranking of stated Assignee on the patent applications containing the words "Credit Default Swap" (ranked in order of amount of applications):

1) Assignee not shown on patent application (may prefer to avoid disclosing)
2) Lehman Brothers (6)
3) Pensions First Group (5)
4) Creditex (5)
5) Chicago Mercantile Exchange (3)
6) Denovo Markets (3)
7) Adaptive Alpha (2)
8) Entaire (2)
9) Moody's Credit Ratings Service (2)

OTHER FILERS OF SINGLE PATENT APPLICATIONS containing the words "Credit Default Swap":

Babcock and Brown
Bank of America
Credit Market Analysis
Deutche Bank
Deutche Borsche
FMR, LLC
Hughes Fetterman

LIFFE
KCG
Licensing Development
Matsushita
Mellon Bank
Merrill Lynch
Mizuho DL
Norseman Group
Risk Metrics
Standard and Poors
TRACCR

Ranking of stated Assignee on the patent applications containing the words "Collateralized Debt Obligation" (ranked in order of amount of applications):
1) Assignee not shown on patent application (may prefer to avoid disclosing)
2) Black Diamond Capital Management (2)

OTHER FILERS OF SINGLE PATENT APPLICATIONS containing the words "Collateralized Debt Obligation"
Babcock and Brown
Credit Suisse
Global Private Equity
Ipreo Holdings
LIFFE
Moody's Credit Ratings Service
Norseman Group
Promontory Compliance
Risk Metrics
Standard and Poors
Stone Castle Partners

Appendix C: Goldman Sachs Credit Default Swaps Risk Calculation Models

1) U.S. Patent Publication No. 20090018953 "Collateralized Loans with Periodic Draw Subject to a Triggering event"
2) U.S. Patent Publication No. 20090012912 "Method and System for Simulating Implied Volatility Surface for Basket Option Pricing"
3) U.S. Patent Publication No. 20090012907 "Bond Issue Risk Management"

References

"Bailout Nation", author Barry Ritholtz, ISBN 978-0-470-59632-6

"Burning the Ships", author Marshall Phelps

"F.I.A.S.C.O.", author Frank Partnoy, published by W.W. Norton, ISBN 978-0-393-33681-8

Hearings before the 2008 Financial Crisis Inquiry Commission, Day 2, Executives Panel, July 1, 2010, Chairman Phil Angelides. Witness testifying under oath included Steven Bensinger, (Former) Chief Financial Officer, American International Group; Elias Habayeb, (Former) Chief Financial Officer, American International Group (Financial Services Group); and Andrew Forster, (Former) Executive Vice President American International Group

Hearings before the Senate Committee Homeland Security & Governmental Affairs, Investigations Division, April 27 2010, before Chairman Carl Levin. Panelists included Goldman CEO Lloyd Blankfein.

Hearings before the 2008 Financial Crisis Inquiry Commission, Subject: Financial Crisis and Derivatives, Day 2, July 1, 2010, Executives Panel, Chairman Phil Angelides. Witnesses providing sworn testimony included David Viniar, Executive Vice President and Chief Financial Officer Goldman Sachs, and also David Lehman, Managing Director Goldman Sachs

Hearings before the Financial Crisis Inquiry Commission, June 2, 2010, Chairman Phil Angelides. Witness providing sworn testimony included Gary Witt, Managing Director Moody's Investors Service (Structured Derivative Products Group); Richard Michalek, (Former) Vice President Moody's Investors Service (Structured Derivative Products Group); and Eric Kolchinsky, (Former) Team Managing Director Moody's Investors Service (Structured Derivative Products Group).

"House of Cards", Author William Cohan, ISBN 978-0-385-52826-9;

In re Bilski, U.S. Supreme Court Case, 561 U.S. ___ (2010)

"The Big Short", author Michael Lewis, ISBN 978-0-393-07223-5

"Too Big to Fail", author Andrew Ross Sorkin, ISBN 978-0-060-02125-3

US Patent No. 7,433,383, "Method of Allocating Risk",

United States Patent Office patent database, uspto.gov

U.S. Patent Publication No. 20080133427 “Collateralized Debt Obligation Evaluation System and Method”

U.S. Patent Publication No. 20090012907 “Bond Issue Risk Management”

U.S. Patent Publication No. 20090012912 “Method and System for Simulating Implied Volatility Surface for Basket Option Pricing”

U.S. Patent Publication No. 20090018953 “Collateralized Loans with Periodic Draw Subject to a Triggering event”