

# **The Past, Present and Future of Structured Product Ratings**

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## **Abstract**

In response to a wave of structured product downgrades by all three major credit rating agencies<sup>1</sup> in late 2007, I examine the causes of this event by incorporating the market reputational mechanism within the current regulatory environment to create a theoretical composite model. My findings suggest that this wave of downgrades stems from misaligned incentives caused by a transfer of reputation from corporate debt to structured products, which created an opportunity for rating agencies to reap large one time profits without penalty. Going forward I argue that there is no need for further regulation; the incentive to innovate and repair reputation will act as a corrective force.

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<sup>1</sup> The three major credit rating agencies are Moody's, S&P, and Fitch.

## I. Introduction

Financial instability observed in late 2007 was in part catalyzed by a massive wave of structured product downgrades by all three major credit rating agencies.<sup>2</sup> In response to this type of event there will inevitably be backlash from various losing parties to regulate these profit seeking firms. Rating agencies provide information to investors and regulators regarding the perceived quality of various types of financial instruments.<sup>3</sup> Such an important role as closing down information asymmetry should not be treated with disregard, so from this perspective we have been granted an opportunity to improve our financial markets as many different interested parties are engaged in discussion. It is my purpose to explore the role of credit ratings and to also propose one possible path we could take to address the wave of structured product downgrades that does not include more regulation.

Credit ratings are supposed to provide investors with new information in addition to what is already known about an issuer from material public information.<sup>4</sup> Historically issuers are firms trying to raise money in the capital markets through debt offerings, and investors are the holders of these corporate bonds. Today rating agencies have many different aspects to their overall business strategy, but there are two main areas; corporate debt and structured products. Many researchers and government committees have analyzed corporate debt inaccuracies in the past. A

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<sup>2</sup> See Figure 2 for graph of structured product upgrades and downgrades on a 6 week rolling basis. The financial instability observed in 2007 is in reference to a decrease in liquidity caused by a reaction to the sudden devaluing of mortgage related financial instruments.

<sup>3</sup> See Levitt (2007) for an example published in the Wall Street Journal just following the initial fall out of the sub-prime mortgage debacle. He heavily criticizes the rating industry and recommends sweeping reforms in current regulation.

<sup>4</sup> Examples of material public information are financial statements, analyst recommendations, and the media. It should be noted that this statement only applies to solicited ratings, which is always the case for structured products.

recent example is the SEC's investigation into the role of rating agencies as part of the Sarbanes Oxley Act of 2002. They specifically examine inaccurate ratings of Enron just prior to that firm's bankruptcy.<sup>5</sup> This paper focuses on one of the first major collapses in a related area, structured product ratings.<sup>6</sup> Structured products are a diverse group of financial securities that have recently exploded in popularity.<sup>7</sup> These assets were created in order to diversify risk more effectively and in a later section will be examined in greater detail.

Using an Altered Returns to Reputations Model based on both Partnoy's Regulatory License View<sup>8</sup>, and Shapiro's Returns to Reputations Model<sup>9</sup>, I incorporate the market reputational mechanism within the current regulatory environment to create a theoretical composite model. My initial findings suggest that this wave of downgrades stems from misaligned incentives caused by a transfer of reputation from corporate debt to structured products. This created a short term opportunity for rating agencies to reap large one time profits from a new type of security without penalty. I propose more regulation is not the solution and that the reputational mechanism will act as a self correcting force. I also propose going one step

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<sup>5</sup> See "Report on the Role and Function of Credit Rating Agencies in the Operations of the Securities Markets. SEC Report. January 2003.

<sup>6</sup> For more detail on structured products see section 2.5 Structured Products

<sup>7</sup> See Jobst, Andreas A., "A Primer on Structured Finance", Journal of Derivatives and Hedge Funds, Vol 13, forthcoming.

<sup>8</sup> Partnoy, Frank, "The Siskel and Ebert of Financial Markets?: Two Thumbs Down for the Credit Rating Agencies", Washington University Law Quarterly, Vol. 77, 1999, p.619-722.

<sup>9</sup> Shapiro, Carl, "Premiums for High Quality Products as Returns to Reputations", The Quarterly Journal of Economics, Vol. 98, No 4, November 1983, p. 659-680.

further and modifying the current Nationally Recognized Statistical Ratings Organization designation as well as opening up rating agencies to litigation risk.<sup>10</sup>

In the next section I will cover background information in a brief history of the credit rating industry through the 1970s, the current industry structure, the regulatory environment, and a summary of structured products. Section III explains why a wave a ratings changes represents a market failure. Section IV introduces Shapiro's original Returns to Reputations Model from 1981 and Partnoy's Regulatory License View from 1999. Section V presents my Altered Returns to Reputation Model that accounts for the current inaccuracies in structured product space by incorporating the regulatory license view, a transfer of reputation, market conditions, and Shapiro's original reputation model. In the final section I will conclude.

## **II. Background**

### 2.1 The Role of Credit Rating Agencies

The credit quality of a borrower is the single biggest risk factor that lenders face. The whole idea of deferred consumption is built on the expectation that you will get paid back. The likelihood that a lender will be repaid by a borrower can be expressed as a probability of default, the higher the probability of default the more risky the loan will be.<sup>11</sup> Estimating the probability of default is a dynamic process that may change between the time of the loan and the time of repayment. If you're lending to your brother for example, you may simply perform a qualitative assessment based on your inside knowledge about him and past lending history. On the other

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<sup>10</sup> On September 24<sup>th</sup>, 2007 the SEC announced seven firms who are designated as NRSRO under the new Credit Rating Agency Act of 2006. This act is being implemented throughout 2007 and 2008. See <http://www.sec.gov/rules/final/2007/34-55857fr.pdf>. It is my view that this act has the possibility to address some of problems with the NRSRO designation. I will address this issue throughout the paper as well as define an NRSRO.

<sup>11</sup> Although it is well beyond the scope of this paper or perhaps even this field, it is interesting to observe that it may be a property of our nature to charge the highest premium to those that are judged to be the least likely to pay back a loan.

hand if you're a shop keeper you might only lend to certain people that in some way alleviate the worry you will not get your money back. You could discriminate by job status, age, or reputation. In other words you will selectively lend to only those that meet your specific risk tolerance and charge a corresponding interest rate as compensation. However, what if you don't know your customers at all, or don't have the ability and resources to accurately estimate default probabilities? You might ask someone who does know, perhaps a trusted third party.

The solution in corporate debt markets has been for someone who is ultra-efficient and knowledgeable to provide the necessary information so capital can be allocated efficiently to the best net present value projects. Imagine trying to draw an efficient frontier for allocating capital to corporations without knowledge of the benefits and costs associated with various combinations along that frontier. It is a rather dubious exercise to say the least. The expectation is that rating agencies will have the appropriate incentives to pierce the fog of asymmetries without succumbing to moral hazard issues and provide this information to the market.<sup>12</sup> With this information market forces should then be able to efficiently allocate resources among competing corporations.

## 2.2 CRA History

The earliest version of a credit rating agency was the famous abolitionist Louis Tappan's Mercantile Agency in 1841. The idea was to provide unbiased information regarding the credit worthiness of American merchants, which previously had been a lending market plagued with fraud, inefficiency, and opaqueness.<sup>13</sup> As this idea developed, it transferred over to capital

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<sup>12</sup> See White (2001)

<sup>13</sup> See Partnoy (1999)

markets in 1909 when John Moody first began rating railroad bonds and later all sectors. Other early entrants include Poor's Publishing Company 1916, Standard Statistics Company in 1922, and Fitch Publishing Company in 1924.<sup>14</sup>

Early industry development was relatively quick with nearly complete coverage of the bond market by John Moody in 1924. It has been suggested by Partnoy (2000) that initially there were no barriers to entry as indicated by the number of early entrants in the 1920's. In the 1930's rating agencies continued to be respected and well used despite a drop in accuracy during the financial turmoil throughout the depression era. However, the opposite occurred through the 1940's and 50's when the demand for ratings fell significantly sending the industry into contraction.<sup>15</sup> In both instances turmoil and uncertainty seem to correspond with high demand for credit information versus the stability of the 40's and 50's with low demand. Table 1 provides a brief summary of the aforementioned historical events.

**Table 1 Summary of Credit Rating Industry Development 1841-1970**

1841	Louis Tappan founds The Mercantile Agency
1849	John Bradstreet starts a similar firm as Tappan
1857	Bradstreet publishes ratings
1859	Robert Dun acquires The Mercantile Agency
1909	John Moody begins rating railroads
1910	Moody advances into utility and industrial bonds
1916	Poor's Publishing Company enters
1922	Standard Statistics Company enters
1924	Fitch Publishing Company
1933	Dun and Bradstreet merge
1941	Standard Statistics and Poor's merge into S&P
1962	Dun and Bradstreet acquire Moody's

**Table 1 provides a brief summary of the major developments in the industry.**

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<sup>14</sup> See Cantor(2)

<sup>15</sup> See Partnoy (1999) p. 639

This observation suggests if someone doesn't have an intimate and profound knowledge of what they are investing in, they are forced to rely on someone else's analysis. This notion can be robustly applied anywhere from 19<sup>th</sup> century merchant financing to the explosion in complex structured financial products today. High levels of uncertainty imply high demand for information which leads to high demand for ratings. Within my focus on structured products, it is reasonable to expect that part of the reason for the high demand for ratings is the growing complexity of structured products.

In addition to the notion of uncertainty corresponding to higher demand for ratings and the lack of barriers to entry, Partnoy suggests that the idea of reputational capital also characterized the early development of the industry.<sup>16</sup> Reputational capital refers to a multi-period scenario where a firm invests in reputation like an asset, and is able to charge higher prices as perceived quality increases. This concept applies to rating agencies because quality is only observable ex post. Basically a firm's reputation is their previous period's quality level. Reputation allows a firm to charge a higher than competitive price because of the return from the investment in building that reputation. Later on this reputational capital will be modeled within the current industry structure.

### 2.3 Modern Credit Rating Agencies

During the time from the 1970's through today is generally viewed as a second period of major growth. Major structural changes and market innovations have led to a renewed demand

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<sup>16</sup> See Partnoy (1999)

for credit information. Dittrich (2007) summarizes 5 factors that influenced this change and characterize the current market structure:<sup>17</sup>

1. Individual countries have increasingly financed themselves through capital markets
2. American approaches in capital markets have set the standards worldwide
3. Ratings based regulation has increased
4. Structural changes in financial markets
5. Securitization and disintermediation has shifted away from institutions

Factors three, four, and five are particularly relevant to the growth of structured product ratings. The 5<sup>th</sup> Factor deals with securitization which is described in more detail in section 2.3, but is essentially a tool for spreading out risk more widely. This new market for securitized assets is synonymous with structured products, and these securities all require ratings for regulatory purposes and marketability.

The 4<sup>th</sup> Factor can be thought of as globalization leading to an increase in participants as well as an increase in anonymity. Without the resources of a large institution, small investors will find it more efficient to rely on ratings as opposed to devoting resources to complete their own due diligence. This is especially true if they have no previous knowledge of counterparties.<sup>18</sup> Take for example a Chinese investor buying US junk bonds. The Chinese investor will rely more on ratings than an American investor, because the Chinese investor has less knowledge of the market in which the security originated. This same situation would apply if the two actors were in reverse positions. This example simply highlights the connection between globalization and the increase in anonymity with an increase in the information asymmetry. Remember that increased uncertainty corresponds to a higher demand for ratings.

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<sup>17</sup> See Dittrich (18-19)

<sup>18</sup> Throughout this paper the term due diligence will mean performing the necessary checks to be absolutely confident that the information you're passing on to clients is what you say it is. Due diligence is a specific instance of fulfilling the fiduciary responsibility that I will define as putting your client's interests above your own.

The 3<sup>rd</sup> Factor and perhaps most relevant is ratings based regulation discussed later in section 2.4. Like investors, regulators find it efficient to incorporate ratings into regulation, and this too creates demand for ratings that is constant. I will refer to this as the regulatory constant, which simply represents the fact that for a security to access liquid secondary markets it must have a rating. In this way rating agencies are gatekeepers to the debt markets just as underwriters are for equity.

Currently Moody's, Fitch, and S&P are the three major players in the industry which closely resembles oligopoly with homogeneous products and prices.<sup>19</sup> That is to say the market doesn't prefer one firm's ratings over another and none of the big three can charge significantly different prices without losing market share.

An important characteristic of the industry starting in the early 1970's was that rating agencies began charging issuers instead of investors for services. Two major causes account for this shift in pricing. The first is the public good nature that was created with the proliferation of photocopying, and the second was the rapid increase in demand from issuers wanting to signal quality during a liquidity crisis not dissimilar from current conditions.<sup>20</sup> During this time Penn Central unexpectedly defaulted on outstanding commercial paper. This started a wave of uncertainty which caused difficulty in rolling over short term debt.<sup>21</sup> To inject liquidity issuers sought ratings to signal investors they were of high quality. From then on rating agencies all switched over to this new pricing strategy. The conflict of interest for rating agencies is the incentive to give their clients too high a rating. This is presumably balanced out with the

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<sup>19</sup> See Cantor and Packer (1994).

<sup>20</sup> Ibid

<sup>21</sup> Ibid

incentive to increase reputation by supplying accurate ratings. Accuracy is a component of quality, which is how a firm invests in reputation. Reputation allows a firm to earn a return on this investment in quality. Other important benefits of reputation are the ability to cater to more diverse clients and gain market share. Some clients gain extra benefits from a reputable rating agency so they will not choose to solicit a rating from a firm who isn't known for high quality. Highly reputable firms are then able to gain market share through diverse product offerings.

One point not addressed here, because it doesn't apply to structured products is that rating agencies also release unsolicited ratings for firms that are not clients. Admittedly these ratings are based on only public information, but it could be viewed as evidence that rating agencies don't have a conflict of interest. However, most researchers reject this notion and instead view it as a technique to induce firms to pay so private information will be incorporated into their rating. Research suggests that these unsolicited ratings are systematically lower.<sup>22</sup>

Key observations from this section on the modern credit rating agency are factors three, four, and five. These forces set up a situation that had the potential for the recent wave of downgrades. The three major players are characterized by oligopoly as opposed to the competitive markets prior to 1970. Rating agencies charge issuers not investors due to a free rider problem after the advent of photocopying. Reputation allows for a return on investment in quality, and the ability to increase market share through a more diverse product offering.

#### 2.4 The regulatory environment

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<sup>22</sup> See Poon and Firth (2005)

As indicated in the previous section, the 3<sup>rd</sup> factor of ratings based regulation heavily influences the current market structure. Financial regulation that uses credit ratings attempts to ensure credit risk is diversified. The end goal is to prevent any concentration of credit risk in major market players.

Dittrich (2007) identifies three main areas that are affected by ratings based regulation. The first are disclosure requirements. These requirements serve to identify only those firms that are posing risks to financial markets. For example, a firm who only owns securities of very high quality would not be subject to the same disclosure requirements as a firm who owns more risky securities. The second is investment restrictions. These restrictions serve to keep certain institutions from buying securities that are viewed as too risky. An example might be keeping pension plans from holding too much risky debt in their portfolio. The third is perhaps the most relevant to structured finance, and concerns adequate capital requirement levels for banks. Basel II regulations provide global guidance for countries to standardize the calculation of adequate capital requirements using credit ratings.<sup>23</sup> It is important to note that ratings based regulation has grown dramatically since 1973 in terms of volume.<sup>24</sup> This increase in regulation creates a necessity for issuers to solicit ratings so that they can access liquid markets.

Regulators first began officially using ratings in 1931 when the US Treasury adopted them as the measurement of quality for banks' bond portfolios.<sup>25</sup> Ratings based regulation was a response to the opaqueness prior to the stock market crash in 1929, and continued to be worked

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<sup>23</sup> See Dittrich (2007)

<sup>24</sup> See Partnoy (2001).

<sup>25</sup> See Wall Street Journal Article "75% of Bank Bond Valuations Safe", 9/12/1931

into new and existing regulation during the 1930's and 1940's.<sup>26</sup> Coinciding with the decreased demand for ratings previously mentioned following 1940 was a stabilization of ratings based regulation until the mid 1970's.

The most significant regulatory development affecting current market structure was in 1975 when the SEC designated certain rating agencies as Nationally Recognized Statistical Ratings Organizations (NRSRO). This only allows for designated firms to issue ratings that can be used for regulatory compliance. This term appears in the Securities Act of 1933, the Investment Company Act of 1940, and the Exchange Act.<sup>27</sup> The significance of this is that all of the rules that determine disclosure requirements, net capital rules, and investment restrictions incorporate only the ratings from NRSROs. This represents both a significant barrier to entry and a constant source of demand for existing rating agencies.

In the future, it is possible that the recently enacted Credit Rating Agency Act of 2006 could change the structure of the industry significantly. Among many things, the new document makes it easier to become a NRSRO. Although this doesn't eliminate the problem, it may serve to significantly lower barriers to entry.<sup>28</sup> This document may not have had a good opportunity to prove itself because of how soon it was enacted and when the recent downgrades occurred.

The final aspect of the regulatory environment is the lack of litigation risk rating agencies face. Under current regulatory measures rating agencies are explicitly exempt from facing any litigation due to inaccuracy.<sup>29</sup> In comparison to other similar financial institutions, such as

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<sup>26</sup> See Partnoy, p. 687.

<sup>27</sup> "Report on the Role and Function of Credit Rating Agencies in the Operation of the Securities Markets", A Report by the Securities and Exchange Commission, January 2003.

<sup>28</sup> See Securities and Exchange Commission (2007)

<sup>29</sup> See Partnoy (2001) p. 18-19

underwriters, this is very unique. This is a possible area for productive change in the future, as it may offer incentives to supply high quality ratings.

## 2.5 Structured Products

Structured products are a class of financial assets that have boomed in popularity in recent years.<sup>30</sup> This type of financial asset can only be definitively described as fast changing, complex, and blurry. With this being the case I will define categories based on the premise that there are always exceptions. Examples of assets will be relegated to only the simplest examples. The rule of thumb in structured products is if you can think it up, it has probably already been created and sold to investors.

There are three main categories that I will refer to as funded, unfunded, and hybrid. Funded products are instruments that securitize collateral and divide up the cash flows into specific risk classes. The benefits of this are that an investor can buy only the portion of the security that provides a desired risk tolerance level. On the supply side, parties can offload debt they no longer want. Take for example a bank that wanted to get certain loans off the books, they could sell them to someone else who could roll them up and sell them using a funded structured product. Examples associated with the funded category are asset backed securities (ABS), mortgage back securities (MBS), and collateralized debt obligations (CDO).<sup>31</sup> The common unfunded example is a credit default swap (CDS), which can be thought of as an insurance policy against default. In a CDS, one party is the protection seller and agrees to compensate the protection buyer in the event of bankruptcy. The buyer pays the seller a premium in exchange for

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<sup>30</sup> Jobst (forthcoming) shows that in 2004 the total issuance of CDO's totaled just under \$20 billion, but that by the end of 2006 new issuance total just under \$120 billion.

<sup>31</sup> See Jobst (forthcoming)

this protection. The hybrid category is where the more complex assets live, such as CDOs of CDOs and indices of structured products.<sup>32</sup> The general theme is that with these instruments, investors can achieve any risk reward profile they want in a liquid market. Ultimately the goal is increased efficiency and stability.

Recently the focus in the media has been on products that have sub-prime mortgage exposure. These were funded instruments that were mainly falling under the general category of either mortgage back security or collateralized debt obligation. The MBS/CDO's and other instruments that were downgraded contained home loans to risky borrowers. These instruments had high investment grade ratings indicating low default probabilities, which were achieved by using credit enhancement. Credit enhancement comes in several forms, but two common techniques are to slice up the cash flows into specific risk categories and to use CDS to lower the risk.<sup>33</sup>

Usually this securitization process is a stability enhancing tool, but problems began occurring when the ratings turned out to be inaccurate. The rating agencies cite inaccurate information from loan originations, which means the home lenders were not following the guidelines they set for certain loans before they were turned into structured products.<sup>34</sup> An example of this would be falsifying a borrower's income. In my view the process of verifying information is at the very heart of providing high quality ratings and the due diligence process required by all fiduciaries. By using this as an excuse, rating agencies are admitting deficiencies in the rating process.

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<sup>32</sup> Ibid

<sup>33</sup> Ibid

<sup>34</sup> See Weill (2007)

### III. Market Failure

#### 3.1 Market Failure in Structured Product Ratings

A rating is composed of two aspects; the first is accuracy and the second is that new information is provided to the market. Typically accuracy is defined as the correlation between defaults and ratings, where ratings are categories for default probabilities. If correlations are high then we can say ratings are accurate.<sup>35</sup> The issue of new information is not as easy to observe.

In an attempt to proxy for inaccuracy Appendix Figure 2 shows a 6 week rolling average for upgrades and downgrades of structured products. This is used as a proxy because it is expected that accurate ratings will be relatively stable because they should encompass all of the factors that contribute to probability of default.<sup>36</sup> This isn't to say that certain market factors won't create smooth changes over time, but it can be assumed that structured product ratings changes shown in Figure 2 represent a market breakdown due to the magnitude of the movement.<sup>37</sup> In other words, there was some vital risk factor that rating agencies failed to incorporate into their process. Consequently the perceived closure of information asymmetry was not closed at all.

Assuming that the proxy is correct, what does the welfare loss look like? Depicting the market breakdown for inaccurate ratings highlights a very unique aspect to this situation which is that the final consumers of this information do not pay the rating agencies.

In Appendix Figure 1  $D_r$  and  $S_r$  represent the demand and supply curves for ratings that would exist for a given quality level. This is because the marginal benefit gained from a rating is

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<sup>35</sup> See Dittrich p 23-24

<sup>36</sup> Ibid

<sup>37</sup> All figures located at the end of the paper in the appendix

a function of the information that it provides to the market and the associated savings that an issuer is likely to gain in borrowing costs for accurate ratings. There is also a built in benefit for issuers that is gained by a rating no matter the quality level, which is lower borrowing costs due to the regulatory environment. I call this the regulatory constant  $\alpha$ . Given a quality level of zero, this would be the demand curve for ratings.

If we assume that the quality level was not accurate, then investors are not being adequately compensated for their risk. After the market recognizes the inaccurate ratings and the assets are subsequently devalued, investors recognize a capital loss due to the falling prices of their fixed income assets. Issuers are punished in future periods with higher borrowing costs. In a theoretical sense the welfare loss suffered by investors in the area enclosed by  $[aP_0d - bP_0c]$ .

## **IV Role of Reputation**

### 4.1 Basic Reputational Model—Reputation Capital<sup>38</sup>

The reputation mechanism in asymmetric markets is widely accepted, and historically this has been the case for rating agencies as well, although an alternative view will be presented in section 4.2.<sup>39</sup>

Using Shapiro's work in the area, reputation is modeled as an asset within the assumption of competitive markets excluding perfect information.<sup>40</sup> While the assumption of competitive markets has been challenged due to regulatory barriers, I will still use Shapiro's concept of returns to reputations.<sup>41</sup>

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<sup>38</sup> This section represents a summary of the model developed by Carl Shapiro unless otherwise noted, see Shapiro (1983)

<sup>39</sup> See Dittrich(2007) p. 21

<sup>40</sup> See Shapiro (1983)

<sup>41</sup> See Partnoy (1999)

Reputation is dynamic and changes over time depending on the previous period's quality. This must be observable, so each period represents the time it takes for that information to be disseminated. Reputation can be expressed in the following equation where  $q_t$  is the quality level during the current time period and  $R_t$  is the reputation during the current time period. The reputation in the current time period is a function of the quality observed in the previous time period. The quality levels of ratings are only observable after the fact.

$$(1) \quad R_t = q_{t-1}$$

The cost of supplying a particular rating at some quality  $q_i$  is  $c(q)$  where  $c'(q_i) \geq 0$  and  $c''(q_i) > 0$  are both true. Essentially this just means that the cost curve is upward sloping at an increasing rate. It costs more to produce the next higher level of quality than the level below that. The price that a firm can charge is shown in equation 3,

$$(3) \quad p(q) = c(q) + r(c(q) - c(q_0))$$

$q_0$  is the minimum quality a firm can produce in the short term and not get discovered and  $r$  is the market rate of return. Shapiro provides the following explanation of equation 3:

“The cost of providing items of quality  $q$  is the per period production costs  $c(q)$ , plus the one time information cost of  $c(q) - c(q_0)$ . The information cost is the cost of establishing a reputation for quality  $q$ . A seller incurs this cost in the initial period, given our simple dynamic structure. The price of an item of quality  $q$  reflects not only the production costs, but a normal rate of return on the information costs, namely  $r(c(q) - c(q_0))$ .” (Shapiro 668)

The price of a rating with quality  $q$  should simply represent the cost of producing that rating plus a return on the investment into maintaining reputation. Depending on what quality the market is demanding, the price will be just high enough to cover both the information cost and the production cost of supplying a rating at the demanded quality level. Shapiro calls the

different price-quality combinations the Equilibrium Price Quality Schedule and is recreated in Appendix Figure 3.<sup>42</sup>

Implied in equation 3 is also the notion of milking. Milking is when a firm decides to forego maintaining reputation and take large one time profits by reducing the quality to the minimum level  $q_0$ . Any lower and the market will immediately recognize that the quality is not at the expected level. In today's market, minimum quality may be higher than during the early development of the industry because of the increase in information and the fact that issuers are paying for ratings.<sup>43</sup> An issuer is presumed to have a good idea of the credit quality of their own firm, so the rating agency will have to do a much better job to satisfy them than they would have if investors still paid for ratings. In the structured product downgrades, it appears that the lowering of quality simply took the form of inflating ratings.

#### 4.2 Regulatory License View

Partnoy (1999) rejects the pure reputation capital view presented above and cites two major flaws. The first is that ratings have not truly been accurate over the long term as demonstrated by numerous empirical data. If ratings were based on reputation then accuracy should improve as rating agencies grow and increase profits. The second is that there have been instances in ratings driven transactions that indicate no new information is provided to the markets. One example is that in the United States, credit derivatives use credit ratings, but in Hong Kong market measures are used to estimate credit risk. The idea is that if ratings have new information they would be valuable in Hong Kong as well.

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<sup>42</sup> See Shapiro (1983) p. 666-668

<sup>43</sup> See Dittrich (2007) p. 28-29.

To account for these deviations from the expected behavior under the reputation view, Partnoy suggests that the value of ratings comes from the regulatory compliance they give investors. The term regulatory licenses simply refer to this ability to sell regulatory compliance.<sup>44</sup>

While I agree that rating agencies do sell regulatory compliance, and this is a large source of demand for ratings, I do not believe that the reputation mechanism is completely absent. Instead rating agencies still must provide some level of demanded quality beyond just assigning every important client a high rating. If that were the case then even regulators would not find it efficient to use ratings in regulation.

### **V Altered Return to Reputations Model**

In my Altered Return to Reputations Model several ideas are combined that apply specifically to rating agencies and to structured products. These ideas are the profit function implied in Shapiro's model, a transfer of reputation, unique market conditions, and the regulatory environment.

Equation 4 is an extrapolation of the profit function from Shapiro's Returns to Reputation model. Revenue is equal to the price multiplied by the quantity and cost is equal to the one time cost of building a model to rate a specific type of structured product plus the costs associated with maintaining reputation. There is no quantity term on the cost side because rating structured products has been model based compared to corporate debt ratings.<sup>45</sup> This is not to say that rating structured products should be or is supposed to be model based, but rather that this has been the case as demonstrated by both the low observed quality and the blame the rating agencies put on

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<sup>44</sup> See Partnoy (1999) p. 682

<sup>45</sup> See Fender and Kiff (2004) for more insight into some of the models used to rate CDO's

loan originations. The profits being extracted justified a much higher level quality than was actually observed.

In equation 4  $Q_t$  represents the quantity of ratings. This term only appears in the revenue side of the equation due to the model based rating process assumption mentioned above.  $P_t$  represents the price of a rating for a specific reputation level. The one time cost of developing a model for a specific structured product is  $c(q)$  and the return from the previous investment in reputation is  $r(c(q)-c(q_0))$ .

$$(4) \quad \pi = [P_t * Q_t] - [c(q) + r(c(q) - c(q_0))]$$

Consider the issue that the reputation for rating structured products was transferred from corporate ratings and was not built up from an investment into accurate structured ratings. Consequently rating agencies were earning a return on an investment in corporate ratings not structured product ratings. It is not surprising that the rating agencies milked profits since there was no punishment for doing so, and in truth there was no actual investment in structured ratings that could take place since the reputation was transferred. Unlike Shapiro's model, the penalty for poor quality is not a prescription for exit to the industry, but rather just a kick back down to the regulatory constant. Consider two scenarios that assume at some point the lack of specialized knowledge will be recognized by the market.

### **Scenario 1:**

**T= time**

**T=0** Rating Agencies rates structured products using transferred reputation and earn massive profits due to the popularity of structured products.

**T=1** Rating agencies lack of specialized knowledge is recognized by the market reducing reputation back to the regulatory constant.

**T=2** Oligopolistic competition induces firms to compete for market share, so they invest in high quality ratings for structured products so they can increase profits beyond the regulatory constant.

**Scenario 2:**

**T=0** CRA doesn't rate structured products due to insufficient investment in quality. The firm realizes losses during the biggest boom in the history of structured products.

**T=1** Rating agencies reputation is at the regulatory constant.

**T=2** Oligopolistic competition induces firms to compete for market share, so they invest in high quality ratings for structured products so they can increase profits beyond the regulatory constant.

This simple scenario example is perhaps elementary, but it highlights the irrationality of not milking in the short run when everyone potentially ends up in the same situation by time 2. This is a situation of misaligned incentives creating an opportunity to extract huge profits without penalty.

In Figure 4 the profit function is graphed along with reputation and quantity. This is a similar profit graph that is implied by Shapiro's model, except that the degree to which quantity offers high incentives. In corporate debt ratings the quantity of deals has reached relative stability, but the quantity of deals for structured products has been growing at an unsustainable

rate since 2004.<sup>46</sup> In Shapiro's version *quantity* is held constant, so to maximize profits a firm will invest in reputation. In the Altered Returns to Reputation version *reputation* is held constant, and so a firm will maximize profits by increasing quantity. Under constraints it may have been optimal to devote resources to increasing quantity rather than investing in quality and reputation. This is especially true assuming time was limited for the supernormal growth period in structured products.

## **VI Conclusion**

The role of credit rating agencies is vital to efficient capital allocation. Financial stability and maximizing growth depend on providing low cost financing to those firms who will contribute the most to GDP. This is an important issue for the United States as we face a crisis in pension planning and retirement savings. Much of what goes on in the capital markets directly impacts our ability to pay for things like healthcare, education, and retirement. With that said, our fears should not overwhelm our confidence in market forces. It is tempting to react harshly to failures, but in the case of rating agencies we should think twice. My initial research findings suggest that the reasons for the market failure are best explained by misaligned incentives due to market idiosyncrasies rather than malicious behavior on the part of rating agencies.

When you combine the popularity of structured products with the transfer of reputation, and the regulatory environment a situation developed that allowed rating agencies to reap huge one time profits without penalty. I recommend the way to fix this incentive issue is to remove current barriers to entry currently taking the form of the NRSRO designation. This will allow issuers to not solicit ratings if doing so does not lower borrowing costs by providing

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<sup>46</sup> See 25

information to investors. In this more open environment reputation would be relied on more as firms try to improve the quality of ratings and fight off potential entrants. If the SEC views the elimination of the NRSRO designation impractical than I believe it is possible to dampen the effect of the regulatory environment by opening up the rating agencies to litigation risk.

As for what will happen in the future for structured products with or without the aforementioned recommendations, I believe the fight for market share will cause firms to invest in quality. It is easy to see the opportunity that both existing firms and new entrants have if they can show that their ratings are of high quality going forward.

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Appendix

Figure 1

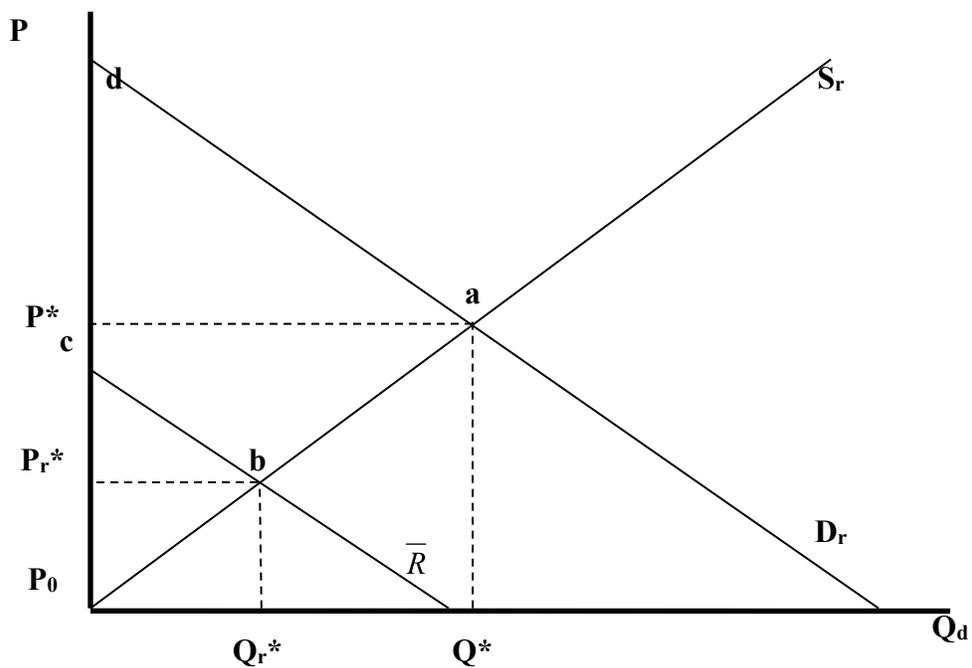


Figure 2

Structured Products Upgrade/Downgrade  
6 week rolling average

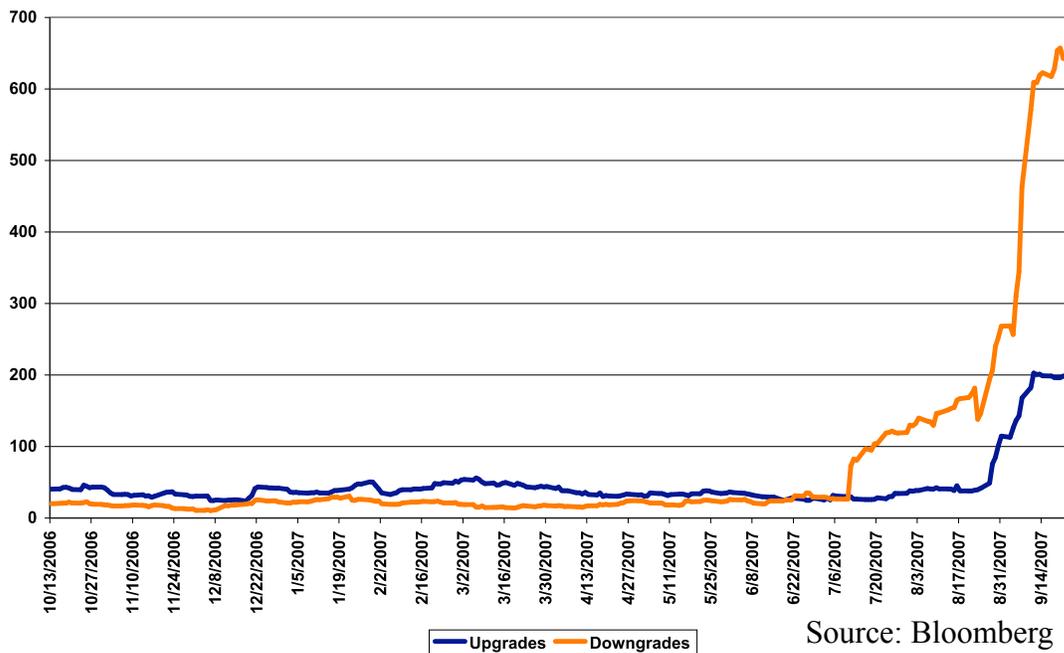


Figure 3

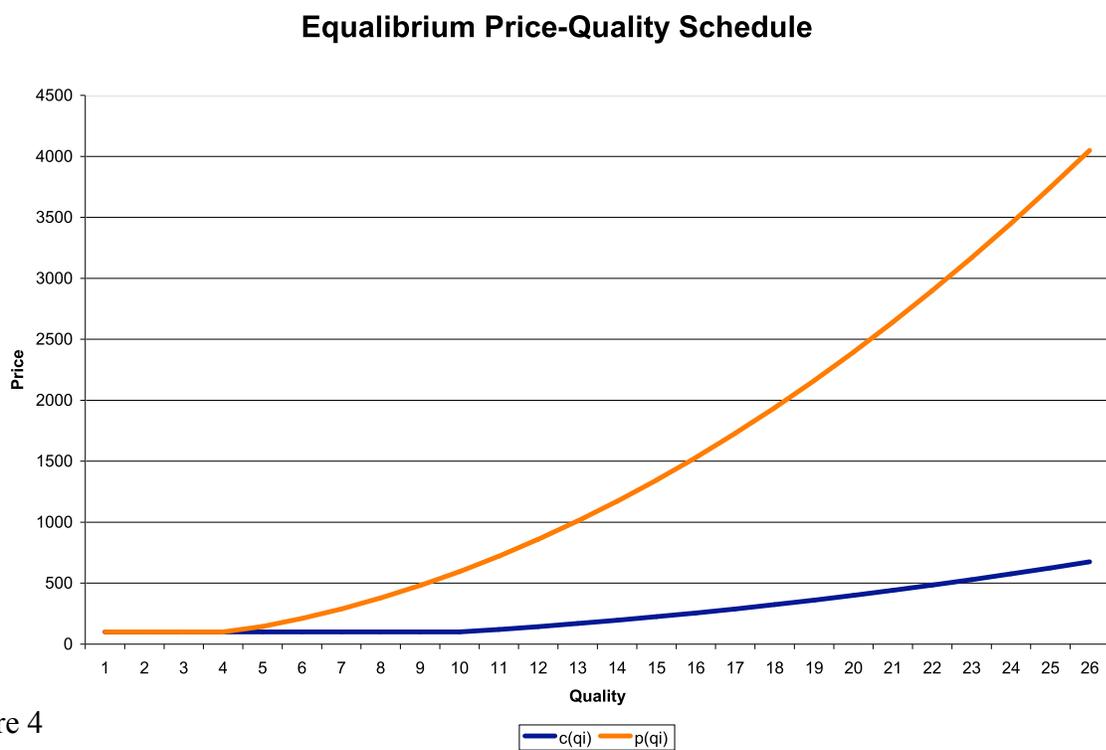


Figure 4

