



# Asymmetric information and the death of ABS CDOs<sup>☆</sup>



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## ABSTRACT

A key feature of the 2007 financial crisis is that for many securities trading had ceased; where trading did occur, market prices were well below intrinsic values, especially for ABS CDOs. One explanation is that information had been asymmetric, with sellers having better information than buyers. We first show the information advantages sellers had over buyers in both the issuance of CDOs and, through vertical integration, performance of the CDO collateral that could well have disrupted trading after the onset of the crisis. Using a “workhorse” model for pricing securities under asymmetric information and a novel dataset, we show how adverse selection could explain why the bulk of these securities either traded at significant discounts or did not trade at all.

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## 1. Introduction

Collateralized debt obligations (CDOs) were at the heart of the 2007–2008 financial crisis. By January 2009, global banks, insurers, and asset managers had taken \$218 billion in losses from their holdings of CDOs of asset backed securities (ABS), on top of \$84 billion of losses on residential mortgage backed securities (RMBS) largely backed by private label U.S. subprime mortgages (see Table 1). These firms were being penalized by markets for having these “toxic” assets on their balance sheets, and would have probably sold them at prices close to the fair liquidation value of the underlying collateral if they could have. But secondary market prices were well below intrinsic values, and selling in this distressed market would have crystallized losses and eroded their capital position even further. The uncertainty surrounding the size

and location of these CDO-related losses contributed to heightened counterparty risk, which in turn led to the collapse of interbank funding markets, setting off the Panic of 2007 (Gorton, 2009). This collapse was likely amplified by interlinkages between ABS prices and liquidity provision through the shadow banking system (Gorton and Metrick, 2012; Caballero and Simsek, 2009) and the deleveraging cycle that took place as a result of procyclical active balance sheet management (Adrian and Shin, 2010).

The main contribution of this paper is to show that, even absent these factors, asymmetric information (AI) between buyers and sellers regarding the quality of ABS CDOs was strong enough to shutter this market. First, we connect a straight-forward extension of the Akerlof (1970) lemons model to data on the quality of CDOs, and show that the distribution of the CDOs’ intrinsic values was so disperse that relatively limited AI regarding these values would have impaired trading. That is, even if all market participants had identical, perfect information about the distribution of the intrinsic values within fairly narrow sets of CDO securities, there were enough low-value securities to induce a lemons problem sufficient to close the market. As such, the market did not stand a chance. Also, in making this argument, the paper explains how the CDO securitization process gave sellers information advantages in the placement of collateral in CDOs. Specifically, we show how the 18 largest dealers derived information advantages from vertically integrating their mortgage pipelines from originations through servicing. Furthermore, we provide evidence suggesting that these vertically-integrated dealers used their informational

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**Table 1**

**Crisis-Related ABS CDO writedowns.** Data are through January 26, 2009, and are expressed in millions of dollars. Source: Creditflux Ltd. (2009). Based on publicly disclosed company information compiled by Creditflux Ltd. According to Creditflux, ABS CDO writedowns were no longer reported separately after February 2008. By this time, most firms had substantially written down their holdings.

Firm Type	ABS CDOs	Corp. Credit	RMBS	Other or Undefined	Total Write-downs
Insurers/asset managers	61,074	6320	10,386	38,347	116,126
North American banks	84,319	23,702	42,272	59,011	209,305
European banks	63,464	18,579	26,423	62,634	171,100
Asia/emerging market banks	9358	4724	5728	3743	23,553
<b>Totals</b>	<b>218,216</b>	<b>53,324</b>	<b>84,810</b>	<b>163,735</b>	<b>520,084</b>
<b>Share of total writedowns</b>	<b>42%</b>	<b>10%</b>	<b>16%</b>	<b>32%</b>	<b>100%</b>

advantage to originate CDOs that contained lower quality collateral compared to those of their peers who were not vertically integrated. In other words, it appears as though sellers were using their informational advantage to offload riskier securities as the market began to freeze.

Because the analysis proceeds in parts which are only joined together at the end, we provide the following roadmap: In the next section we summarize how subprime mortgages were securitized into ABS CDOs, and how this market collapsed in the second half of 2007, resulting in the sudden evaporation of liquidity and the dislodging of prices from intrinsic values. Having established the facts that we are trying to explain with AI, in Section 3 we describe the nature of the AI between sellers and potential buyers of ABS CDOs. In Sections 4 and 5, we lay out a “workhorse” model for pricing securities under AI, and describe a novel dataset for the intrinsic values of ABS CDOs.<sup>1</sup> In Section 6, we take these data directly to the model and show how AI between sellers and potential buyers could explain both the evaporation of liquidity and the dislodging of prices from intrinsic values. Section 7 takes a step back and asks how, given the earlier results, can we explain the existence of the market in the first place. One (easy) explanation is that the original CDO buyers did not know what they were getting into. Alternatively, we can examine the possibility that the original buyers knew everything we have assumed, including how AI would, conditional on a housing shock, shutter the market. In this case, we can ask what is the maximum probability of a housing shock that would still make the CDOs look like attractive investments. If this maximum probability is fairly high, we can imagine that buyers could have assigned a somewhat lower probability, in which case the existence of the market is consistent with the AI we have assumed. The last section concludes.

## 2. Trading of CDOs and the onset of the financial crisis

Even before the crisis, secondary market trading activity for ABS CDOs was light. Because ABS CDOs were unregistered “144A” securities with their underlying collateral subject to change after issue date, they were more suitable as buy-and-hold investments.<sup>2</sup> Also, most of the lower-rated CDO tranches were recycled into other CDOs, and thus not traded in secondary markets.<sup>3</sup> Trading took place on the over-the-counter market primarily among institutional investors such as investment banks, hedge funds, and asset managers (IOSCO, 2009). Even so, secondary market activity for CDOs increased notably between 2003 and 2005, as spreads for seasoned CDOs tightened relative to those of new-issue CDOs (Lucas et al., 2006).

<sup>1</sup> More details on the computation of these intrinsic values, which capture the fair liquidation value of the underlying collateral, can be found in Appendix A.

<sup>2</sup> Rule 144A of the Securities Act of 1933 allows private companies to sell unregistered securities to qualified institutional buyers through a broker dealer. Unregistered securities do not have disclosure requirements like public securities do.

<sup>3</sup> As shown in Table 5 of Cordell et al. (2012), two-thirds of BBB- and AA-rated CDO tranches were recycled into other CDOs and CDO-squareds.

On July 10, 2007, both Moody’s and S&P downgraded hundreds of subprime RMBS that had been issued in 2005 and 2006, citing higher than anticipated rates of early payment defaults and fraud (Moody’s Investor Service, 2007; Standard & Poor’s, 2007). Furthermore, S&P revised their model assumptions, projecting losses on subprime MBS “as high as 11 to 14%... far in excess of what we had originally projected and even what a lot of street research is telling us.”<sup>4</sup> Since BBB subprime bonds covered losses between 4–8% of the pools on average, losses of this size meant that all of these subprime bonds would be worthless.<sup>5</sup> Over the ensuing weeks S&P discovered that most of the publicly-traded ABS CDOs contained these worthless bonds. In sum, investors suddenly became aware that there were lemons in the market for CDOs, but, with limited disclosure, figuring out which CDOs were lemons was tricky. Immediately following the downgrades, investors began to question the underlying assumptions of the copula models they and the ratings agencies used to estimate expected losses on ABS CDOs. These models relied on loss correlations among the bonds in the CDOs to estimate losses; on the downgraded BBB subprime bonds the correlation was now 1. In short, the copula models became useless, and so did the ratings which appeared to have been grossly inflated.

With the onset of the financial crisis in August 2007, the ABS CDO market shut down. On August 9, BNP Paribas froze subscriptions and redemptions to several of its funds, and suspended computation of their net asset values because of “the complete evaporation of liquidity in certain market segments of the U.S. securitization market,” which “has made it impossible to value certain assets fairly regardless of their quality or credit rating (New York Times, 2007).” A survey of industry participants and market authorities by the International Organization of Securities Commissions (IOSCO) found that “secondary market trading in SFPs [structured finance products] appears to have declined significantly since the onset of the credit crisis.” (IOSCO, 2009) Where trades did occur, it appeared that market prices were well below what one might have believed to be the intrinsic value for that class of security.<sup>6</sup> In sum, the secondary market for ABS CDOs virtually disappeared, and where trades did occur, secondary market prices were dislodged from fundamentals.

## 3. Information asymmetries in the market for CDOs

Gorton (2009) argues that AI in the ABS CDO market stemmed from a loss of information about the quality of the underlying loans that occurred as a result of the long chain of structures in-

<sup>4</sup> Standard & Poor’s (2007), p. 52.

<sup>5</sup> See Cordell et al. (2012), Table 1.

<sup>6</sup> A White Paper accompanying the March 23, 2009 press release announcing the details of the Public-Private Investment Program to purchase troubled assets, the Treasury stated that “while fundamentals have surely deteriorated over the past 18–24 months, there is evidence that current prices for some legacy assets embed substantial liquidity discounts” (U.S. Department of the Treasury, 2009).

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