



# Asymmetric information, adverse selection, and the pricing of CMBS<sup>☆</sup>

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## ABSTRACT

We demonstrate that asymmetric information between sellers (loan originators) and purchasers (investors and securities issuers) of commercial mortgages gives rise to a standard lemons problem, whereby portfolio lenders use private information to liquidate lower quality loans in commercial mortgage-backed securities (CMBS) markets. Conduit lenders, who originate loans for direct sale into securitization markets, mitigate problems of asymmetric information and adverse selection in loan sales. Our theory provides an explanation for the pricing puzzle observed in CMBS markets, whereby conduit CMBS loans are priced higher than portfolio loans, despite widespread belief that conduit loans are originated at lower quality. Consistent with theoretical predictions of a lemons discount, our empirical analysis of 141 CMBS deals and 16,760 CMBS loans shows that, after controlling for observable determinants of loan pricing, conduit loans enjoyed a 34 basis points pricing advantage over portfolio loans in the CMBS market.

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## 1. Introduction

In the wake of ongoing disruption to the real estate capital markets, analysts and policy makers alike have sought to better understand the collapse of mortgage derivatives. Much attention has been paid to the abuses to securitization, notably including those associated with security design, excess leverage, opaqueness, and lax

ratings. Analysts similarly have argued that conduit lending, a process whereby mortgage lenders originated loans expressly for pass-through to securitization markets, was conspicuous among deconstructing forces. Specifically, critics claim that pass-through of loans to securitization markets damped originator incentives to appropriately screen loans. Those concerns have been cited among flaws of the originate-to-distribute model (see, for example, Bernanke, 2008; Mishkin, 2008; European Central Bank, 2008; Ashcraft and Schuermann, 2008; Keys, Mukherjee, Seru, and Vig, 2010; Purnanandam, 2009).

While conduit lenders could have contributed to moral hazard in primary market loan origination, those same entities likely mitigated problems of asymmetric information and adverse selection in secondary market loan sales. Unlike portfolio lenders, conduit lenders have neither the opportunity nor the incentive to develop private information on loan quality. Accordingly, conduits potentially alleviate a lemons problem in selection of loans for sale in securitization markets by portfolio lenders. In this manner, conduit lending enhances allocative efficiency in

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**Table 1**

Comparison of commercial mortgage-backed securities (CMBS) conduit deal and portfolio deal spreads. The spread is calculated as the deal net coupon (paid to investors) minus comparable maturity Treasury rate at deal cutoff. Linear interpolation is applied to Treasury rates to obtain the full term structure.

Deal type	Mean	Standard deviation	Minimum	Median	Maximum	Number of observations
Conduit	2.2615	0.5835	0.6613	2.2153	4.4804	118
Portfolio	2.6951	0.8825	1.4987	2.5879	5.0899	23

the secondary mortgage market. In this paper, we investigate this hypothesis, via modeling and empirical evaluation of the pricing of conduit- and portfolio-backed commercial mortgage-backed securities (CMBS) and loans.

To demonstrate the lemons problem and to derive testable predictions about how the lemons effect varies with such parameters as the dispersion of loan quality and the cost of holding loans in portfolio, we first present a simple information economics model of loan sales in securitization markets. In our model, portfolio lenders face a sell or hold decision and possess private information about loan quality. Portfolio lender private information derives from their due diligence in loan underwriting and their experience in holding and servicing mortgages. This private information includes soft information as described in Stein (2002). In selecting loans to sell into securitization markets, portfolio lenders utilize their private information and adopt a strategy of selling lower quality loans. Our theoretical results show that, in equilibrium, only lower quality portfolio loans (lemons) are sold into the secondary markets and that their sales price incorporates a lemons discount. In contrast, conduit lenders originate loans exclusively for direct sale into the secondary market. Conduits lack the incentive to develop soft information about loan quality as their profit derives mainly from loan origination fees instead of from long-term returns associated with portfolio holding of loans.<sup>1</sup> In our model, information is symmetric between conduit loan sellers and buyers, all conduit loans are sold into secondary markets, and loan prices do not reflect a lemons discount. Theoretical results also suggest that the magnitude of the lemons discount associated with portfolio loan sales varies positively with the dispersion of loan quality in the mortgage pool and inversely with the seller's cost of holding loans in portfolio. The total surplus associated with the trade is higher in the case of conduit loan sales.

Our model helps to explain a puzzle in the pricing of CMBS deals. As seen in Table 1, over the course of the 1994–2000 sample period, CMBS investors paid higher prices for CMBS backed by conduit loans, as evidenced in the substantially lower spreads over Treasuries at issuance among conduit CMBS deals relative to portfolio CMBS deals. According to our theory, the discount on portfolio loans is due in part to the higher residual risk of portfolio loans sold into CMBS markets.

The theory is also consistent with growth over time in the prevalence of conduit loans in CMBS deals. In the aftermath

of the advent of commercial mortgage securitization in the early 1990s, loans backing CMBS were largely contributed by thrifts and life insurance companies, which originally intended to retain those loans in portfolio. However, in the wake of CMBS market growth, conduit lending emerged whereby originators funded mortgages with the express intent of direct sale into securitization markets. Conduit lending constituted less than 5% of all CMBS deals in 1992. However, the share of conduit loans grew to 75% by 1998 and reached almost 100% by 2001. The decline in portfolio loan sales is suggestive of efficiency problems associated with securitization of those mortgages.

In our empirical analysis, we test theoretical predictions. To do so, we first study the pricing of 141 CMBS deals brought to market during the 1994–2000 period. Estimates of a reduced-form pricing model conform to theory. Results indicate that portfolio-backed CMBS deals were priced 33 basis points (bps) lower than conduit deals, after controlling for observable CMBS pool characteristics and other established determinants of CMBS pricing, including the term structure of interest rates, interest rate volatility, the Sharpe ratio, corporate bond credit spreads, and CMBS market capitalization.

We further assess the robustness of the CMBS deal-level results via a loan-level analysis of commercial mortgage loan pricing. Here our sample contains 13,655 conduit loans and 3,105 portfolio loans sold into securitization markets during the 1994–2000 period. Our findings indicate a pricing differential of 34 bps after controlling for observable credit quality and other established loan pricing determinants, including the loan-to-value (LTV) ratio, amortization term, collateral property type, property location, prepayment constraints, CMBS pool characteristics, CMBS market cap, and the like. Moreover, we find that the lemons discount is lower for multifamily loans, which are characterized by lower levels of uncertainty and lender private information than retail, office, and industrial loans. This is consistent with theoretical predictions that buyers are more reluctant to trade and that the lemons discount is larger when information asymmetry is more severe. Overall, results of both the deal-level and the loan-level analyses are supportive of our theoretical predictions.

The intuition for our paper derives from a simple application of the Akerlof (1970) “market for lemons” theory to financial markets. It is noteworthy that substantial theoretical research has sought to address information asymmetry and adverse selection problems in financial markets (see, e.g., Leland and Pyle, 1977; Stiglitz and Weiss, 1981; Myers and Majluf, 1984; John and Williams, 1985; Diamond, 1993; Winton, 1995; DeMarzo and Duffie, 1999; DeMarzo, 2005; Gan and Riddiough, 2008). However,

<sup>1</sup> As in Stein (2002), soft information cannot be credibly transmitted to a third party. As such, conduit lenders lack the incentive to collect soft information.

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