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The risk of relying on reputational capital: a case study of the 2007 failure of New Century Financial

Allen B Frankel[1]

The quality of newly originated subprime mortgages had been visibly deteriorating for some time before the window for such loans was shut in 2007. Nevertheless, a bankruptcy court's directed ex post examination of New Century Financial, one of the largest originators of subprime mortgages, discovered no change, over time, in how that firm went about its business. This paper employs the court examiner's findings in a critical review of the procedures used by various agents involved in the origination and securitisation of subprime mortgages. A contribution of this paper is its elaboration of the choices and incentives faced by the various types of institutions involved in those linked processes of origination and securitisation. It highlights the limited roles played by the originators of subprime loans in screening borrowers and in bearing losses on defective loans that had been sold to securitisers of pooled loan packages (ie, mortgage-backed securities). It also illustrates the willingness of the management of those institutions that became key players in that market to put their reputations with fixed-income investor clients in jeopardy. What is perplexing is that such risk exposures were accepted by investing firms that had the wherewithal and knowledge to appreciate the overall paucity of due diligence in the loan origination processes. This observation, in turn, points to the conclusion that the subprime episode is a case in which reputational capital, a presumptively effective motivator of market discipline, was not an effective incentive device.

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[1] Retired from the Bank for International Settlements (BIS) in September 2009 as an Adviser, Monetary and Economic Department. The views expressed in this article are my own and do not necessarily reflect those of the BIS. I thank Claudio Borio, Ingo Fender and Frank Packer, as well as the other participants at a BIS seminar, for their comments.

Contents

1. Introduction

In the early years of this decade, private securities firms transformed the loan origination process in the US mortgage market by issuing securities backed by pools of nonprime (that is, less than prime and subprime) mortgages. It is impossible to understand what transpired in the nonprime mortgage markets without examining the operation of the capital markets in the issuance of such mortgage-backed securities (MBS).[2]

A supposed benefit of securitisation is its diversification of risk. Yet, in the past three years, nonprime loan defaults triggered by falling housing prices in only a few US states imposed investment losses on many global capital market investors.[3] As a result, questions surfaced as to what explained the exceptional concentrations of loan losses. One argument that has appeared prominently in the literature concerns the absence of capital market incentives for originators of nonprime mortgages to police their lending processes. A shortcoming of such discussions has been their neglect of the role played by stand-alone mortgage brokers.[4] The neglect obscured the possibility that loan-level data would be tainted and, therefore, should not have been employed in underwriting.

Ashcraft and Schuermann (2008; A&S) set out an overview of players in the securitisation of nonprime mortgage loans. The paper is often cited as a source of how securitisation of these loans could generate bad outcomes. Surprisingly missing from their listing of key players (see p. 8) are mortgage brokers. Mortgage brokers are also missing from other often-cited descriptions of the organisation of the subprime market, such Kiff and Mills (2007) and Gorton (2008).[5] By contrast, Gramlich (2007) highlights the prominent role played by brokers in the origination of subprime mortgage loans. His characterisation corresponds with both market data compiled by the trade press and the firm-specific disclosures of the largest originating firms, eg New Century Financial (see below).

A&S also provide a listing of top subprime MBS issuers in 2005-06 (p. 9, Table 3) that shows credit based on the inclusion of an originating firm's loans in issued MBS. This is may be misleading, since it hides the fact that most of the loans originated in these two years were incorporated in MBS underwritten by one of the large securities dealers. By contrast, in the first few years of this decade, most of the originated loans were incorporated into MBS underwritten by the originating firms. In sum, because of these two omissions, the authors describe a process that disregards the anomaly of a large securities firm assuming reputational risk through the underwriting of MBS backed by loans originated by brokers with questionable incentives to operate in a reputable manner.

Consequently, one contribution of this paper is its description – fuller than has appeared in the literature to date – of the agency problems that were embedded in the underwriting of nonprime mortgage securities. This description highlights the source of systemic risk issues that were surfaced by the bunched failures of subprime mortgage loan originators from

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2 From a financial system perspective, the key characteristic of nonprime mortgage loans has been that the credit risks involved were taken up by investors other than the two government- sponsored housing agencies, Fannie Mae and Freddie Mac.

3 The four states with the largest cumulative declines in median house prices have been Arizona, California, Florida and Nevada. See www.zillow.com.

4 The trade publication *Inside B&C Lending* reported that brokers accounted for 59.3% of subprime originations in 2005. It further noted that institutions reporting under the Home Mortgage Disclosure Act (HMDA) are credited with the origination of loans they underwrite rather than the broker. See *Inside B & C Lending* (2006).

5 For a pre-crisis description of developments in subprime mortgage markets see Frankel (2006).

December 2006 to April 2007.[6] These issues involved the governance and risk management behaviours of key MBS arrangers, including the major investment banks.

The failures signalled that capital cover had not been provided for the considerable risks retained by subprime mortgage originators through repurchase clauses of sales contracts. The systemic import arose from the fact that the counterparties to the sales were large securities dealers. Only belatedly did the market question whether contingencies such as when the "provider of reps and warranties is no longer in existence" had been considered.[7]

The bunching of failures of loan originators had other important implications. The failures reduced the availability of refinancing options to households and therefore bumped up household delinquency rates. They also mattered because of abruptly cancelled contracts that had allowed issuers of securitised mortgage pools to return individual defective mortgages. One response to this could well have been a widening of the lemons premium for subprime-based MBS.[8] Overall, the failures highlighted concerns about the independent capacities of even major market participants' processes to value MBS.[9]

The remainder of the paper covers these topics as follows: Section 2 sets out and discusses mortgage origination in the US residential finance system in the early years of the current decade. It compares and contrasts networks of brokers and originators across mortgage products and over time. The discussion is embedded in a treatment of agency issues. Section 3 outlines the economics of subprime loan origination and discusses changes in the origination of such loans over the past few years. Section 4 reviews the economics of the subprime loan market from the perspective of one firm, New Century Financial, a large independent originator of subprime mortgages that declared bankruptcy in April 2007.[10] This section draws on the report of an examiner for New Century's bankruptcy court, which sets out the roles and responsibilities of the company's outside directors, its senior managers and other staff members (Missal (2008)). The report also discusses the character of New Century's ongoing relationships with independent mortgage brokers, loan purchasers and large financial firms that provided working capital through their advances of warehouse credit. Section 5 sets out my views on the relationship between what happened in the subprime market and the subsequent disruption of financial markets. Section 6 offers concluding remarks.

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6 Six subprime lenders declared bankruptcy between December 2006 and April 2007. In addition to New Century Financial, they were Ownit Mortgage Solutions, Mortgage Lenders Network USA, ResMae Mortgage Corporation, People's Choice and SouthStar Funding.

7 See Fitch Ratings (2007).

8 Note that the period of these failures coincides with the initial jitters in the market for subprime mortgages in early 2007, which preceded the start of the actual crisis later that year. See BIS (2008, Chapter 7).

9 According to a staff study by the Securities and Exchange Commission (SEC (2008)), the credit rating agencies did not incorporate in their MBS ratings an adjustment for the included originators' loan performances prior to December 2006. The omission persisted even though there was evidence of significant differences in the performances of loan originators. Consequently, the absence of such adjustments acted to reduce the differentiation in MBS prices from what it would have been if originator-specific data had been employed.

10 New Century Mortgage was licensed by the California Department of Corporations to conduct finance lending in California and in other states. New Century's non-California lending was also licensed by host states. The individual states, in general, assigned few resources to oversee the activities of specialty finance companies such as New Century. At the time of New Century's bankruptcy, the California Department of Corporations reportedly had 25 examiners assigned to 4,800 state-licensed lenders (see Ip and Paletta (2007)).

2. Networks of agents

The origination and retention of prime US mortgages by depository institutions is a straightforward process that involves only a few players: a creditworthy borrower, a federally insured depository institution and one of the government-sponsored housing finance agencies. The latter's participation in the arrangement removes asymmetric information as a concern. Neither the lender nor the mortgagor lacks information that is held by the other. An agency's offer to guarantee transactions is based on large, sample-based national underwriting standards and is subject to statute-set restrictions (eg caps on individual loan amounts).

The two largest government-backed housing finance agencies, Fannie Mae and Freddie Mac, have until recently been hybrid organisations: government-sponsored enterprises (GSEs) that are also publicly traded. GSE charters have been conferred on only a few firms, and in each case the charter imposes on the firm a public policy mandate. In the case of the housing finance agencies, it has been made explicit that the privileges conferred by their charters are meant to assist in their meeting goals set by the federal government.[11]

Federal legislation governs the manner in which the agencies conduct their business. In particular, the agencies are not permitted to originate mortgages and thus are barred from directly competing with private originators for retail loan customers. Furthermore, the mortgages they underwrite cannot have loan-to-value (LTV) ratios above 80% in the absence of coverage by private mortgage insurance. In addition, like the US postal service, the agencies have for the most part chosen for their underwriting the politically attractive pricing model of nationwide standards. By contrast, private-sector mortgage underwriters have employed localised underwriting standards.[12]

New mortgage products not involving the participation of the agencies were marketed to prime, less than prime and subprime borrowers. What distinguished these product markets were elaborate networks of agents involved in the origination and distribution of mortgage-related risks. Figure 1 sets out the structure of contracting most often employed to securitise subprime mortgages originated by New Century. The figure omits some detail (for example, the complex layering of servicing arrangements) in order to focus on contracts that impinged on the liquidity position of New Century and access to loan-level information.

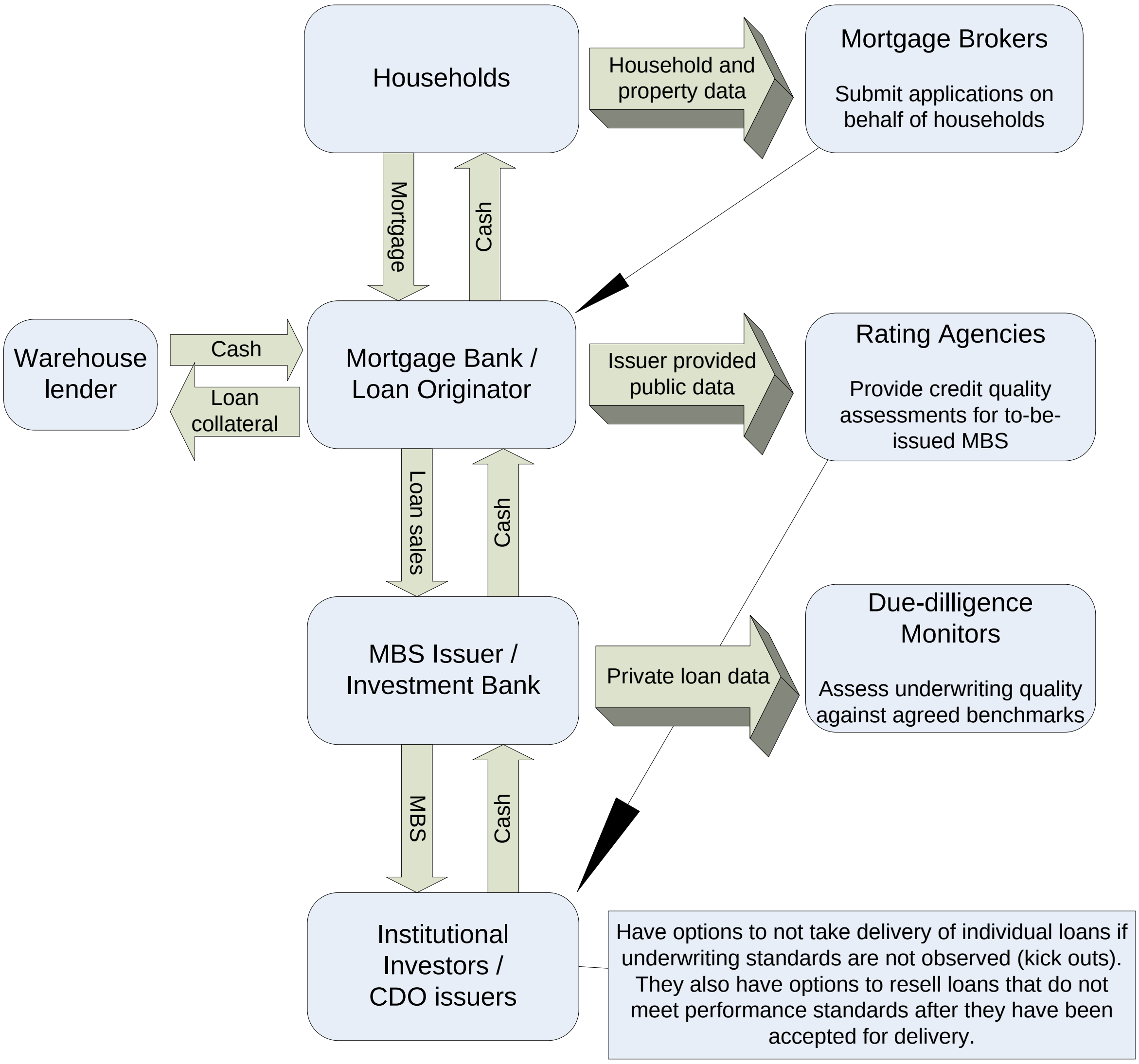
[11] The Housing and Economic Recovery Act of 2008, enacted on 30 July, created the Federal Housing Finance Agency (FHFA) as the single regulator of the housing finance GSEs. The FHFA merged the Office of Federal Housing Enterprise Oversight, the Federal Housing Finance Board and the GSE activities of the Department of Housing and Urban Development (HUD). The act incorporates within the FHFA not only the oversight of the housing finance agencies (and the 12 Federal Home Loan Banks) but also the responsibility, previously assigned to HUD, for establishing housing goals. The FHFA is authorised to take enforcement action against an agency for failure to meet housing goals. Presumably, the FHFA will attempt to carry out these two oversight responsibilities in a consistent fashion. Unfortunately, it will have little historical guidance on how to do so.

On 7 September 2008, the FHFA became the conservator of Fannie Mae and Freddie Mac after a determination that the two were in need of rehabilitation. In his public briefing on the action, Henry Paulson, the Treasury Secretary (and an ex officio member of the FHFA Oversight Board), highlighted the need to confront the contradictions inherent in the business models of the two enterprises. See Norris (2008). So far, the Obama administration has ignored Paulson's urgings in favour of implementing its policy choices – for example, the greater availability of mortgage refinancing possibilities – via direct mandates to the housing finance agencies.

[12] Congressional interest in supporting housing markets in high-price areas has been reflected in legislation that allows for differences among metropolitan areas in setting conforming loan limits. In addition, the housing agencies now charge significantly higher underwriting fees and employ tighter underwriting conditions in areas with weak housing markets.

Figure 1

Standard transactions and contracts related to the securitisation of subprime mortgages



In the non-agency securitisation model of mortgage finance, many agents have independent roles in originating, pooling, structuring and servicing mortgages. Initially, a mortgage broker identifies a potential borrower through a targeted marketing effort. Brokers' marketing pitches to potential retail customers typically involve detailed loan offers. The offers incorporate an originator's spread pricing based on an applicant's standardised credit score.

One characteristic supposedly incorporated in the underwriting standards was the applicant's proposed LTV ratio, a measure that is positively associated with credit risk. If the initial ratio on a loan is to exceed the designated maximum, then the originator or the broker presumably has other information about the transaction to justify it. Various reports indicate that, in fact, when the proposed ratio might lead to rejection of an application, brokers *routinely* (that is, apparently without special knowledge of extenuating circumstances) requested waivers. One such report is that of New Century's bankruptcy court examiner (Missal (2008)). The examiner's report shows that New Century made little if any effort to see if the broker had information about the applicant's circumstances that would justify a high LTV ratio. However, as long as the housing market remained strong, MBS investors remained indifferent to the presence of the exception loans in MBS pools. That stance does not encourage an originator to expend effort on assessments of the predictive value of broker's recommendations for waivers of underwriting standards.

At closing, the borrower receives funds and, in turn, is bound to the loan's terms. In some instances, originators will sell the loans to a third party, an investment bank's conduit. In other instances, the originator retains the loans. In either case, the loans are pooled and transferred to a bankruptcy-remote special purpose vehicle (SPV). The SPV finances its loan purchases by the sale of shares in the securitised pools.[13]

The literature offers us the explanation of how a conduit creates value. It does so by benefiting from credible certification that, in turn, is the source of lower costs for capital market sales.[14] A key feature that would distinguish the conduits from the stand-alone originators is that the arranging institutions are frequent and repeated players in financial markets. They possess the recognizable track records of successful investors in reputational capital. It follows that these attributes can lead investors to prefer MBS arranged and issued by securities dealers over those issued by stand-alone mortgage originators. The preference subsumes the existence of a set of incentives and their effectiveness in motivating dealers to optimise the firm's reputational capital.[15] Simply put, investors willingly pay up if the higher price brings with it the benefits of a well-motivated due diligence effort.[16]

In designing the SPV and its investment tranches, the seller typically consults one or more credit rating agencies. The credit rating attempts to take into account both the credit risks of underlying mortgages and the risks arising from the pooling process. To assign higher investment ratings, the agencies require the inclusion of some form of credit enhancement. One such form was guarantees issued by monoline insurers, firms that specialised in insuring financial transactions.

The seller also owns the rights to service the loan pool for a fee. Sometimes the originator retained servicing rights. Servicing is often performed by specialist companies. In some cases, the master servicer may subcontract to servicers that specialise in a loan type or geographic area.

From the perspective of mortgage pool investors, the two groups – loan brokers and mortgage originators – have inefficient incentives. What they are paid is independent of the amount, and timing, of the payments made by borrowers. The compensation of both groups comes out of closing costs, the proceeds of secondary market loan sales or the sales of securitised loan pools. This practice created incentives for brokers and originators to cut corners in the underwriting process, that is, to create disparities between company policies and practices. In the short run, at least, both groups stand to benefit from poor policing of

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[13] See Fender and Mitchell (2005) for a fuller discussion of the securitisation process and the challenges involved in the pooling of assets and tranching of liabilities.

[14] Fang (2005) considers the relation between investment bank reputation and the price and quality of bond underwriting services. Her findings suggest that bond underwriters earn economic rents on reputation and therefore are presumed to have continued incentives to maintain reputation. This suggests that the most reputable underwriters offer high quality services at premium prices. Her observation that pricing improvements (larger issuer proceeds) are especially large for junk bonds lends support to a rent-based motivation as the rationale for the involvement of major investment banks in the issuance of securitised pools of subprime mortgages.

[15] Tranche retention by originators or arrangers can, in principle, serve as an alternative to reputation as an incentive device. See Fender and Mitchell (2009) for a discussion of the role of tranche retention in a one-shot securitisation game.

[16] The conjecture is supported by observed shifts of MBS issuance from direct to indirect (via the conduits), over time. That is, as uncertainty about future housing market conditions rose, investors increasingly chose to invest in securitised pools created by a Wall Street dealer. Data showing the trend increase for 2000–07 in the share of whole loan sales as a percent of the secondary market transactions of Option One Mortgage Corporation, a top-10 subprime originator, provides support for the thesis. (See Appendix A).

originators' exception policies. These policies are supposedly designed to allow a consumer to legitimately benefit (approval or larger loan rather than rejection) from information that would not be routinely taken into account.[17] Consequently, the bankruptcy examiner's negative discussion (see below) of how New Century implemented policies is revealing as to the motives of those who governed the company.

New Century Financial

New Century was created in 1996 and became a public company, traded on the Nasdaq stock exchange, in 1997. New Century set out its business model as one involving mortgage products that did not meet the housing agencies' underwriting standards. In published discussions of its business model, New Century expressed the view that it was capable of employing risk-based pricing to profitably conduct a business of originating higher-risk mortgages.

Table 1 displays annual data for New Century's loan originations and purchases covering 1997–2005. Large increases in volumes are noticeable over the 2002–05 period. It was a time of strong house price appreciation in southern California, a geographic focus for New Century.[18] This pattern meant that conforming loan limits were more effective (larger market shares of non-conforming loans), over time, in metropolitan areas with high house price appreciation. (A conforming mortgage has an original balance equal to or less than the loan limit set by the housing agencies' regulator; the agencies' loan purchases are limited to conforming loans).

Table 1

Originations and purchases

In billions of dollars

1997	2.0
1998	3.3
1999	4.2
2000	4.2
2001	6.2
2002	14.2
2003	27.4
2004	42.2
2005	56.1

Source: New Century Financial (various years).

[17] Brokers and loan officers have a similar incentive to bias their choice of independent appraisers.

[18] Forty percent of the $105 billion of loans originated by New Century from 2003 to 2005 involved California properties. See New Century Financial (various years).

In 2004, New Century changed its corporate structure to allow it to qualify as a REIT (real estate investment trust) for US federal income tax purposes. This structure minimised New Century's corporate tax liability. To maintain its REIT status, New Century was required to distribute at least 90% of REIT-linked income to shareholders. That is, by design, New Century operated through a corporate structure that penalised the retention of equity capital.

The report of the bankruptcy examiner notes that New Century's board of directors revisited the REIT conversion decision in 2005. Some board members argued for a "portfolio" strategy in which mortgages would be originated and held by the REIT, including pooled loan securitisations that remained on the balance sheet. Other board members preferred that New Century originate and sell as many loans as it could; employing that strategy, New Century would hold few loans on its balance sheet.

Through the first half of 2006, the debate about financial strategy continued among members of New Century's board. At a mid-2006 board meeting, the debate was concluded with a decision to publicly refer to the primary business of New Century as involving the origination and selling of mortgages. The rejected alternative would have referred to New Century as a company focused on balance sheet management of own loan pool securitisations.

Table 2 shows the decline in New Century holdings of liquid assets from the end of 2004 though the third quarter of 2006. The decline primarily reflected increasing repurchases of defective loans that had been sold to investment banks. However, New Century's liquid assets also continued to be drained by stock repurchases and higher dividend payments.[19] New Century's dividends per share in January 2007 were more than 25% above what had been paid in January 2005 (New Century Financial (various years)).

Table 2

New Century's liquid assets

Period end	**Millions of dollars**
2004	987.4
2005	530.4
2006 (Q3)	457.1

Source: Missal (2008).

Loan originations and purchases

New Century originated and purchased loans through a network of independent mortgage brokers and correspondent lenders. That wholesale operation accounted for 85% of New Century's loan originations and purchases in 2005.

Brokers were recruited by New Century's account executives. As of the end of 2005, the company had approved nearly 50,000 brokers to submit loan applications to it. Of these, the 10 largest producing brokers together accounted for 5% of New Century's total of more than $55 billion in loan originations and purchases New Century Financial (various years)). The

[19] In August 2005, the head of a US hedge fund that was the largest single shareholder in New Century made a presentation to New Century's board in which he urged the sale of loans and the repurchase of stock. He forecast that the result of an aggressive repurchase strategy would have a substantial positive impact on New Century's stock price. In March 2006, he became a member of New Century's board, and he resigned from the board in March 2007. See Missal (2008, pp. 94–95)).

brokers identified potential borrowers, assisted them in completing loan applications and gathered loan documentation. In short, they created an exclusive relationship between New Century and the borrower until a mortgage loan was closed and funded. Similarly, correspondent lenders sold loans to New Century that they had originated, closed and funded. Supposedly, New Century's correspondents met its own underwriting standards.

New Century also operated a retail mortgage loan division, which accounted for less than 15% of its originations in 2005–06. Given that small retail share, New Century's operations resembled those of the government-sponsored housing finance agencies in that, loan origination was initiated by independent agents and not by employees of the underwriting company.[20]

The housing agencies' information advantages stemmed from their databases, whose exceptional size accommodated meaningful statistical analyses of issues such as differences among groupings in loan prepayment propensities. They suffered competitively from a lack of detailed knowledge (private information) about individual mortgage applicants. New Century, by contrast, lacked both sources of competitive advantage; it did not have an exceptionally detailed database, nor did it have access to soft information on individual loan customers. Therefore, in these circumstances, New Century was not motivated to retain equity capital in amounts sufficient to credibly meet its obligations for the representations and warranties about borrowers and the underwriting process that it had issued.

The lack of motivation within New Century to retain equity capital is illustrated by its experience with appraisals. It is widely held that appraisals should be a key part of the underwriting process. In New Century's case, its loan production staff was responsible for determining the acceptability of appraisals performed by outsiders. Regional managers routinely overrode internal appraisers' negative assessments of the acceptability of appraisals performed. In turn, the compensation of loan production staff was independent of losses that were suffered by New Century on purchased loans that were not accepted for delivery by pooled loan purchasers.

Financing New Century's operations

To finance and carry new mortgages pending their disposition through a secondary market transaction, New Century employed repurchase agreements with warehouse lenders. At the end of the third quarter of 2006, New Century had outstanding borrowings under 14 repurchase agreements with such lenders. Under the agreements, each lender had the right to initiate a margin call, which required New Century to provide additional collateral to avoid debt repayment.

New Century's secondary market activities consisted of sales of whole loans (to investment banks and other loan purchasers, who would then securitise the loans) and own loan securitisations.[21] In 2005, New Century securitised about one third of its loan production. This share fell to less than 10% in the first three quarters of 2006.

New Century sold whole loan packages under non-recourse contracts that incorporated representations and warranties related to borrower characteristics and to the integrity of the

[20] Obvious differences between New Century and the agencies included the existence of an implicit government guarantee for the latter and the fact that, by design, New Century operated in different parts of the market, catering to borrowers of different quality, than did the agencies.

[21] In its SEC Form 10-K filing of 16 March 2006, New Century listed only seven loan purchasers, mostly major investment banks or large internationally active banks with important investment banking operations, as having long-standing institutional relationships with it. Each of these firms submitted claims related to New Century's loan repurchase obligations at the time of the bankruptcy filing. Only six other firms filed such claims.

origination process. The sales agreements included New Century's commitment to repurchase (or substitute for) a loan in the event of an early payment default or of a material breach of its obligations.

Kickouts and scratch and dent loans

Purchasers of New Century's loan production normally conducted a due diligence examination after a sales agreement had been reached. The investor, or a due diligence firm hired by the investor, would review loan files to determine whether the loan was underwritten according to the pool's guidelines. Loans not meeting guidelines could be excluded from the loan bundle (kicked out) and returned to the originator.[22]

Once kicked out, the mortgages were known as a "scratch and dent" (S&D) loans, which were purchased by specialised investors at a large discount to their principal balance. Consequently, one measure of the deterioration of the quality of New Century's loan production is the percentage of S&D loan sales. In 2004 and 2005, such sales amounted to less than 0.5% of New Century's secondary market transactions. By contrast, in the first three quarters of 2006, S&D loan sales accounted for 2.1% of such transactions (Missal (2008, p. 68)).

The upsurge in loan repurchase requests to New Century coincided with a change in the methodology employed to estimate its allowance for loan repurchase losses. New Century's board learned of the change after a considerable delay. This discovery was followed, after a few days, by a public announcement on 7 February 2007 that New Century's results for the three quarters of 2006 needed to be restated. It also noted an expectation that losses would continue due to heightened early payment default (EPD) rates.[23]

New Century's announcement prompted margin calls by many of its warehouse lenders and requests for accelerated loan repurchases. Soon, all of New Century's warehouse lenders ceased providing new funding. Because simultaneous margin calls by its warehouse lenders could not be met, New Century filed for bankruptcy on April 2, 2007.[24] It ceased to originate mortgages and entered into an agreement to sell off its loan servicing businesses.

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[22] In January 2008, a major due diligence firm, Clayton Holdings, agreed to cooperate with New York State authorities. Press accounts linked the agreement to an investigation focused on whether information developed by due diligence firms and provided to investment bank loan purchasers was, in turn, disclosed to the credit rating agencies. These accounts suggested that a particular interest of the investigation concerned disclosures of the presence of exception loans in securitised loan pools. See Efrat and Simon (2008).

[23] Sales contracts between subprime loan sellers and investors defined EPDs as the failure of the borrower to make specific payments (such as the first) following the sale. That is, a contractual first payment default might involve a borrower who has been delinquent on several payments within, say, the first year of the sale.

[24] Nine warehouse loan creditors, including major investment banks or large internationally active banks with substantial investment banking operations, were named in bankruptcy court documents (Reuters (2007)). In addition to eight of these creditors, another stand-alone investment bank was listed as an ongoing source of warehouse financing in New Century's SEC Form 10-K filing of 16 March 2006. The high overlap of the two lists points to an absence of defections among New Century's warehouse creditors in the year leading up to its bankruptcy, that is, prior to the onset of the implicitly coordinated demands on New Century's liquidity.

The Credit Risk Management Policy Group (2008) noted the potential for systemic disruption when counterparties withdraw credit lines. In turn, it recommended that "The terms and haircuts of financing should be sized to the anticipated time required for an orderly liquidation during periods of market stress, while at the same time incorporating the uncollateralised credit quality of the counterparty." In my view, the recommendation does not address the crux of the issue: the difficulty of anticipating the circumstances in which a financial company's creditors will choose to make coincident demands.

3. The economics of subprime mortgage origination

Historically, the origination of prime mortgage loans was a widely dispersed activity. Many prime mortgages were retained in the portfolios of originating depository institutions. In the aftermath of the thrift crisis of the 1980s, the housing finance agencies developed strategies in which they focused on the sale of mortgage credit in capital markets via securitisation of pools of prime mortgage loans. A heated competition developed between the two agencies to attract loans whose processing could be automated. The competition resulted in higher fees paid to depositories for processing standard applications for agency-underwritten prime mortgage loans. Not surprisingly, over time, a few large depository institutions were able to exploit the available economies of scale involved in loan processing and, with the help of advertising, came to dominate the origination of prime mortgages underwritten by Fannie Mae and Freddie Mac.

The agencies' innovation had been to develop quantitative models to evaluate loan applications. Employing reverse engineering, large banking organisations created their own versions of the agencies' proprietary underwriting models. These private underwriting models were first employed in the origination of prime conforming loans. The motivation for this was the interest of loan originators in having a capacity to solicit competing bids for the prime loans that they originated.[25]

The banks then used the models to underwrite jumbo prime loans. Jumbo mortgages have original loan balances that exceed those for conforming loans but otherwise meet the same underwriting standards as prime conforming loans.

In the late 1990s, a number of specialised finance companies (usually organised as mortgage banks) began using quantitative techniques to underwrite loans not meeting the agencies' underwriting standards. They sold the securitised pools of the loans to institutional investors and the whole loan pools to securities dealers that specialised in structured finance securitisations. The business model employed was not innovative: it closely resembled the one that had been problematically used in the mid–to-late 1990s to fund households' purchases of manufactured housing.[26]

The supposed justification for extending the securitisation business model to subprime mortgages was that the underwriting process was credible.[27] The argument for credibility was simple and persuasive: subprime mortgage credit could be assessed with the same techniques as prime mortgage credit, and the rating agencies could be relied upon to oversee the creation of subprime credits. Furthermore, because the rating agencies were concerned with their own reputational risk, they could be relied on to provide unbiased (and informed) predictions concerning the credit performance of structured securitisations of pools of subprime mortgages.

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25 During episodes of spikes in mortgage prepayment transactions (such as in 2003), the divergence in the interests of the super-efficient originators and housing agencies surfaced. The divergence reflected the fact that prices of newly issued agency securities were negatively affected by prepayment spikes that rewarded originators with greatly enlarged revenues derived from the origination of large volumes of new refinanced mortgages.

26 From 1993 to 2003, Moody's rated 162 structured finance deals in which the underlying transactions involved the financing of manufactured housing. The downgrade rate for such deals was 75%, five times the overall downgrade rate for structured financings. See Cantor and Hu (2007).

27 More recently, the credibility of the mortgage underwriting process had been harmed by arrangements that permitted borrowers to be listed for a fee as an authorised user of an account of a stranger with a better credit rating (a higher FICO score). Mortgage brokers, in particular, may have encouraged loan applicants to enter into these "piggybacking" agreements to qualify for mortgage loans. See Berry (2008).

The data in table 3 illustrate what changed in 2006–07 to undercut the profitability of firms involved in the origination of subprime mortgages.[28] Line 1 reveals that, as late as early 2006, the origination and subsequent sale of subprime loans generated profits. This was not the case in early 2007. The sharp deterioration in profitability for subprime loan originators reflected two interrelated effects.

First, there was a sharp deterioration in expectations for the credit performance of subprime borrowers. That is, the shift from premium to discount in loan pricing occurred, in part, because of a softening of housing markets and an anticipated strengthening of underwriting standards. Under such standards, it was expected that a reduced share of current borrowers would qualify for refinancing transactions. Second, there was a sharp pickup in EPD expenses.

The Table 3 data lend themselves to alternative interpretations. On the one hand, the decline in whole loan prices might be attributable to the anticipated performance of loans already in the pipeline. That is, prices of loans that would employ revised (tighter) underwriting standards would be expected to be profitably originated. On the other hand, the price decline might have been due primarily to heightened investor concerns about the price-depressing consequences of a great increase in loan kickouts by the Wall Street conduits. Evidence supporting the latter thesis is provided by the large size of the increase for EPD expenses from 2006 to 2007 (line 4).

Table 3

Economics of subprime origination

Par value = 100

	Early 2006	**Early 2007**
1. Sale price, whole loans	102.50	98.50
Less: 2. Origination cost	101.50	102.00
Equals: 3. Profit before EPDs	1.00	(3.50)
Less: 4. EPDs	0.20	2.10
Equals: **5. Net profit**	**0.80**	**(5.60)**

EPDs = Early payment defaults.

Source: Zimmerman (2007).

As discussed in Section 4, it came to be appreciated that the oversight of New Century's subprime loan originations was problematic. In this regard, New Century was probably not exceptional. Consistent with this observation, the intensification of due diligence efforts by whole loan purchasers was a general and not a targeted initiative. In retrospect, that

[28] These data as presented in Zimmerman (2007) were intended to be viewed only as indicative. However, they are consistent with market commentaries on developments in secondary market prices.

intensification was the source of the severe liquidity problems of New Century and other subprime mortgage originators.

4. Observations on the management of New Century

A recurring comment about subprime loan originators has been that they did not devote sufficient attention to loan quality problems.[29] A mortgage originator should care about the performance of its loans because, by acquiring a poor reputation for quality control, it imperils its financial future. First, the firm might not be able to sell its loans without having to provide a sizable discount in the secondary market. Second, investors in its loans are unlikely to take a chance and hold on to delinquent loans rather than exercise their contractual resale options. Such repurchases will inevitably be costly for the originating firm since the loans will sell only at a very substantial discount to the price of a non-delinquent loan.

In this regard, it is useful to examine the New Century bankruptcy court examiner's listing of red flags related to the firm's reputation as a loan originator (Missal (2008, pp 109–10)).

- Beginning in 2003, a higher kickout rate by purchasers of pooled loans originated by New Century. Based on his review of documents and interviews, the examiner attributed the heightened kickout rate to greater sensitivity of purchasers to defective appraisals and missing loan documents.
- Beginning in 2004, an increase in recorded EPDs on mortgages originated by New Century.
- From 2Q 2005 onward, large increases in payments made by New Century to repurchase loans.[30] The payments were associated with higher rates of exercise of loan purchasers' options to resell delinquent loans to New Century as well as due to increases in the underlying rates of EPDs.[31]

The examiner's access to internal New Century documents provided valuable insights into how the appearance of the warning flags influenced, or did not influence, management. For example, the examiner could find no reference to loan quality in the internal documents that described New Century's bonus compensation system for regional managers for 2005 and 2006 (Missal (2008, p. 147)). The examiner says that the compensation of New Century's loan production executives was directly and solely related to the amount of mortgage loans originated, loans that, in turn, were subsequently sold or securitised.[32] Likewise, the examiner found no mention of penalties (reduced commission payments to loan production staff) that would be assessed against defective loans that required price discounts for secondary market sale.

New Century's internal data showed that loans originated in 2005 had much higher delinquency rates than those originated in 2003 and 2004. Internally, New Century staff attributed the deterioration to specific loan products, one of which combined a low

[29] See Missal (2008, p 110) for a discussion of loan quality issues. See www.fdic.gov/news/press/2007/pr07022.html for a similarly worded assessment of the poor handling of loan quality issues at one of New Century's competitors.

[30] New Century's annual loan repurchase rates in 2004, 2005 and 2006 were 0.34%, 0.63% and 1.35% respectively (Missal (2008, p. 137)).

[31] As long as housing markets remained strong, loan purchasers were not motivated to aggressively engage in due diligence because they could expect that a distressed borrower would walk away with cash from a house sale.

[32] This is consistent with the volume-based incentive mechanisms described elsewhere, eg Kiff and Mills (2007).

requirement for documentation of income with a no-down-payment financing package.[33] Nevertheless, the examiner found that the production of such loans was not cut back until late 2006. That slow response is entirely consistent with the absence of incentives for New Century's managers to address loan quality issues.

As noted above, investor-initiated kickouts became an increasingly costly issue for New Century. Over time, purchasers of loan pools became more diligent in their identification of loans that did not meet New Century's underwriting guidelines – often the down payment or the borrower's income was below the standard.[34] Given the financial risks involved, it is significant that, according to the examiner, the responsibility for approving exception loans was assigned to New Century's Loan Production Department rather than to its Credit Department.

In a recent study, Demyanyk and Van Hemert (DVH) (2008) provide evidence of increasing sensitivity of subprime mortgage rates to borrowers' loan-to-value ratios in the 2001–06 period. This result lends support to the notion that originators, on the whole, displayed an increasing awareness that a high (greater than 80%) LTV ratio should require a high risk premium.

One interpretation of the Demyanyk and Van Hemert result is that it lends support to the thesis that subprime lending operations were conducted rationally. My own interpretation is that acceptance of the thesis would require an unwarranted disregard of documented findings of the examiner that showed a bias at New Century toward approving exception loans. This judgment is based on my reading of a number of critical descriptions of how credit decisions were made at other subprime mortgage originators.[35]

One of the examiner's findings is crucially linked to one of my conclusions about how New Century conducted its business. The examiner found that exception loans were frequent and, in the aggregate, amounted to at least 10% of the dollar value of New Century's loan originations in each year from 2004 on (Missal (2008, p. 118)). That is, such loans constituted a substantial part of New Century's ongoing operations. It supports the notion that New Century's lending operations were poorly governed. It also surfaces questions about whether the firm's "effective" loan pricing was informed by what was happening in the market.

Over time, New Century changed its loan product mix. Initial decisions to offer new loan products reflected only assessments of how they would affect New Century's competitive position in the marketplace for new subprime loans. In subsequent periods, New Century's management would assess, on the basis of other criteria, whether to continue to offer a particular loan product and on what terms.

Interest-only and stated-income loans: a differential response by New Century

The proportion of subprime loans originated by New Century with either interest-only (IO) payments or stated-income underwriting changed markedly over time (Table 4). New Century's origination of IO loans increased sharply in 2004 and 2005. In 2005, the company's management concluded that its higher rate of IO originations was, in part,

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[33] The financing package consisted of a first-lien loan for 80% of the purchase price and a second-lien loan for the remainder.

[34] A surprising feature of the subprime mortgage market was the absence of efforts to apply long-since-learned lessons from other subprime lending businesses, such as automobile loans. For example, Adams, Einav and Levin (2007) found higher-percentage down payment requirements were assigned to high-risk borrowers by a large auto sales company to manage credit risk with a liquidity constraint tool.

[35] One such description of a subprime lending operation can be found in an FDIC cease and desist order (FDIC (2007)).

responsible for the narrowing of New Century's profit margin. That is, they had concluded that the company's publicly disclosed financial performance would suffer if IO loans were to continue to be offered on the same terms. Management's conclusion led, in turn, to initiatives (in September 2005) aimed at curbing the availability of the IO loan product by making changes "in underwriting guidelines and compensation structures" (Missal (2008, p. 157)). The actions were successful – the IO share of loans originated by New Century dropped sharply in the fourth quarter of 2005 to 22.4% of total loans originated.[36] The episode demonstrates that New Century's senior management had the wherewithal to act decisively to improve the firm's profitability in a tough competitive environment (Missal (2008, p. 126)).

Table 4

Share of total loans originated by New Century

In per cent, within month

Month	Interest only	Stated income
June 2002	--	35.71
March 2003	0	--
December 2003	2.77	42.46
June 2004	21.39	43.73
December 2004	21.04	43.50
June 2005	38.49	44.89
December 2005	--	45.51
June 2006	--	42.85
December 2006	--	47.24

-- Not available.

Source: Missal (2008).

In contrast, New Century's management was also aware of significantly higher delinquency rates for stated-income loans (Missal (2008, p. 127)). Nevertheless, the share of stated-income loans increased from 2002 onward, with a notable increase of more than 4 percentage points (from 42.85% to 47.24%) in the second half of 2006 (Table 4). The absence of evidence of a penalty in secondary market pricing meant that no immediate benefit would be realised if New Century had tightened its underwriting standards to reduce its origination of stated-income loans. Thus, New Century's management apparently made no effort to curb the origination of these loans, despite their knowledge of the significantly negative long-term consequences. Management's choice not to act in this case, as opposed to its choice to act in the case of the threat to profitability posed by IO loans, might be explained by a disregard for the value of New Century's reputational capital.

The background of New Century's managers provides some context for their decision-making in this regard. The company's most senior managers had long careers in the mortgage banking industry. Each was presumably aware of the high mortality rates suffered in market downturns by mortgage banks and other specialised housing finance companies.

[36] Missal (2008) does not provide monthly data for IO loans, but does note that their share peaked in June 2005.

Their career experiences could well have inclined New Century's senior managers to heavily discount the value of efforts undertaken to create a reputation for their company as a high quality mortgage originator. Simply put, they may have taken the position that, in their industry, investments in reputational capital could well fail to pay off.

Secondary market performance

The bankruptcy examiner's report makes three observations pertaining to New Century's kickout data. First, the rise in the reported kickout rate was, in part, attributable to the higher share of originated loans that were sold rather than securitised by New Century itself. Second, when the housing market was strong, New Century had agreements with whole loan purchasers that put ceilings on allowed percentages of purchases that could be kicked out. Third, many interviewees told the examiner that whole loan purchasers' due diligence processes had become more intensive as the housing market had weakened.

When taken together, the observations suggest two explanations for New Century's trend increase in its rate of loan kick outs: (1) a trend softening of secondary market demand for subprime loans and (2) an ongoing deterioration in the quality of New Century's underwriting process as opposed to a decline in its underwriting standards.[37]

In 2004, the continued increase in the exception rate prompted a comment from a senior New Century employee:

> The number one issue *is exception to guidelines* . . . Part of this can be attributed to the fact that generally the underwriting staff did not do a good job, if any attempt at all, at documenting the reasons for making the exceptions . . . Ambiguity (in guidelines) may have been common, and even acceptable, in the past, but in today's environment it is not by the investment community and it is becoming evident that it may well be the root cause in many of our issues surrounding credit quality (Missal (2008, p. 144)).

Implicit acceptance of this assessment by the audit committee of New Century's board of director can be inferred from the minutes of an August 2004 meeting: "Management and the Committee then discussed ways to incentivise or penalise employees to ensure increased focus on loan quality rather than just production volume" (Missal (2008, p. 147)).

The examiner found no evidence that the discussion at the audit committee's meeting led to action. Indeed, he found that, even in 2006, the rules for determining the compensation of regional managers "made no reference to loan quality" (Missal (2008, p. 147)). Overall, the examiner was unable to find any meaningful effort to address loan quality issues even though they had been identified as a serious risk to New Century's long-term survival. And as noted above, senior management did respond aggressively when it was disappointed with the prices received for IO loans.

Heightened investor concerns about the performance of subprime loans were reflected in changes in their due diligence processes (Missal (2008, p. 165)). Historically, investors would ask due diligence firms to examine, on their behalf, only a small sample of loans in a particular pool. The character of the process first changed in 2006 when most investors began to look at the appraisal documents in all loan files in a loan pool. Investors then

[37] The second explanation is consistent with the findings of Bhardwaj and Sengupta (2008). In their paper, the authors set out the results of a counterfactual analysis that provides strong evidence against the hypothesis of a weakening of underwriting standards for subprime mortgages. It is important to appreciate that their results do not contradict the notion that, on average, underwriting standards deteriorated for new mortgages. This is because there was an increase, over time, in the market share of what were unquestionably more risky mortgages, namely alt-A and subprime mortgages.

increased the share of loan files examined. This intensification of due diligence efforts was responsible for a sharp increase in New Century's kickout rate from 6.9% in January 2006 to 14.95% in December 2006 (Missal (2008, p. 161)).

The examiner commented on the response of New Century's management to the strong surge in its kickout rate: "New Century seems to have moved toward making loan quality improvement a priority in the fourth quarter of 2006. This was 'too little too late'." (Missal (2008, p. 158)). Consequently, and not surprisingly, the character of New Century's late-in-life initiatives to improve loan quality are implicitly quite revealing of the character of its loan origination process:

> At the start of 2007, New Century put in place controls designed to incentivize account executives in the Production Department to focus on loan quality. New Century introduced the 'broker scorecard' system whereby brokers who had an excessive quantity of loans that had early payment default (EPD) would not be able to earn income from loans submitted by that broker (Missal (2008, p. 171)).

The new system was designed to encourage account executives to develop relationships only with brokers "who tended to present high quality loans" (Missal (2008, p. 172)). The timing of its introduction suggests that it was a last-ditch effort to put things right.[38]

5. The relationship between the failure of New Century and the subsequent disruption of financial markets

Economists are accustomed to highlighting the propensity of banks to seek profits from privileged access to client information. In mortgage banking, practitioners have argued that the deployment of automated underwriting has diminished the scope for earning such rents. Consequently, in an environment of rising house prices and strong investor demand for subprime MBS, it is not surprising that New Century (and most other originators of subprime mortgage loans) delegated the responsibility for processing mortgage applications to independent mortgage brokers. Before 2005, or even later, the limited up-stream due-diligence efforts by MBS underwriters were apparently not strong enough to motivate mortgage banks to bear costs associated with the origination of defective mortgage loans.

Potentially, the origination of defective loans could be costly because originators' standard loan sales contracts provided the loan purchaser with the option to return defective loans, such as when the borrower had failed to make a payment in a period soon after the sale.[39]

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38 With the cooperation of several large mortgage originators, First American CoreLogic has recently developed a pooled database that allows an originator to see if a mortgage broker is adversely selecting borrowers (see Tay (2008)). Presumably, the new interest of originators in such cooperation arises from a concern with the incentives that had been used to motivate mortgage brokers.

39 New Century characterised the typical arrangement as one in which "Originators generally commit to repurchase a loan if a payment default occurs within the first month or two following the date the loan is funded". New Century's SEC Form 10-K filing of March 16, 2006. However, the explanation differs from one cited in Missal (2008, p. 121). In a cited e-mail (dated February 24, 2005), an employee of New Century explains the repurchase liability. "Our purchase liability for first payment defaults include[s] loans that fail to make their first payment to the investor so, even though the borrower may be failing to make their second or third payment overall, we would still be on the hook to repurchase the loan if that payment was the first payment due to the investor."

Furthermore, the standard contract gave loan purchasers the right to kick out selected loans before the completion of a sale.[40]

From 2005 on, independent due diligence exams of loans sold became more intense and thereby increased the rate of loan repurchases at New Century and other subprime originators (Missal (2008, p. 66)). Increased investment in due diligence examinations by loan purchasers took place in response to rising delinquency rates for the newest vintages of subprime loan originations. Thus, it is clear that loan repurchases would have increased in the absence of change in the level of due diligence investments, as higher EPDs would have been triggered by the weakening housing market in any case.

What is not clear is what would have happened to loan repurchases in a counterfactual scenario in which due diligence efforts were assumed to have been, and continued to be, at a high level. In such circumstances, would purchasers have been strongly motivated to efficiently liquidate purchased loans identified as defective? In turn, if originators knew that defective loans were likely to be identified and resold, would they have employed origination practices that were less likely to result in defective loans, such as exception loans?

New Century's account executives were responsible for developing and maintaining relationships with individual mortgage brokers. The account executives' incentive structures encouraged them to devote more effort to relationships with high-volume brokers, and it was precisely such brokers whose loans were likely to be developed with flawed processes (such as assisting applicants in inflating their stated incomes). Thus, the account executives possessed a clear rationale for preferring relationships with brokers who tended to generate loans with high rates of delinquency and foreclosure.[41]

Retrospectively, it is clear that, in the face of falling housing prices, New Century's retention of its compensation structure for account executives produced a sharp deterioration in New Century's liquidity position. In the absence of positive incentives, account executives overlooked what had become a pressing adverse selection issue.[42] That failure, in turn, led to a sharp increase in EPD claims associated with defective loans. Such loans were repurchased at par and then resold at a discount in S&D transactions.[43] Thus, the origination of a growing amount of defective loans led to a drawdown of New Century's liquid assets that, in turn, prompted third-party downgrades of its creditworthiness.[44]

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[40] Loans were kicked out because of characteristics that led to their being marked down in value in the secondary market; for example, subprime mortgages with high LTVs (well in excess of 80%) became progressively less acceptable to loan purchasers from 2005 on.

[41] Discussions of so-called stated-income mortgage loan applications have been seriously incomplete. Routinely, mortgage applicants are required to sign an authorisation allowing their mortgage bank to verify their incomes with the US tax authority. However, only a small percentage of the authorisations have typically been filed by the mortgage banks. This poor track record provides support for the thesis that mortgage banks were not strongly motivated to pursue due-diligence efforts aimed at verifying the integrity of information supplied by loan applicants. See Morgenson (2008).

[42] The liquidators of New Century filed a $1 billion suit against KMPG, a major auditing firm, in late March 2009. The liquidators' lawyer has creatively asserted that if New Century's financial statements had been correct then the counterfactual would have been one in which New Century would have been unable to grow its mortgage origination business. That is, the complaint's underlying assertion is that the magnitude of New Century's business failure was due to KPMG's mishandling of accounting issues. See Hughes (2009).

[43] According to UBS, a *performing* kicked out mortgage loan might sell at a 20% discount in an S&D market sale, while a non-performing second-lien loan would sell in the pennies-on–the-dollar range. See UBS (2007).

[44] New Century's bankruptcy filing was precipitated by demands for increased margin cover by its warehouse line creditors. The requests were, in effect, coordinated across lenders by the decline in the market price of mortgages originated by New Century. Given its depleted stock of liquid assets, New Century could not meet the contractual increase in margin requirements.

The root of the problem

Most of the subprime mortgages underwritten by New Century and other stand-alone originators were purchased, from 2004 onward, by SPVs set up by major investment banks who also underwrote the issuance of these pooled mortgages as tranched securities.[45] Payments by the SPV to investors were governed by structuring rules that set out the rights of investors in any of the MBS tranches to receive payments sourced from designated interest payments and/or mortgage principal repayments. A feature of MBS issuance was the idiosyncratic character of the tranche structures of individual issues. Structures were routinely customised to take account of the risk appetites of specific investor groupings.[46]

Even before housing prices began to cool, discrepancies were observed among the secondary market prices of MBS, but rating agencies and others did not at first consider these discrepancies to be tied to credit risk because the level of subprime mortgage delinquencies was low. Yet, in late 2005 and throughout 2006, originators' financial reporting of large differences in delinquency rates was reflected in the secondary market prices for whole loan sales by originators, including New Century. The notion that large discrepancies in the performance of groupings of subprime loans could not be explained ex post is unsettling. This is because the market had, as a whole, accepted the proposition that the pricing of subprime mortgage assets with vetted models was prudent behaviour.[47] That acceptance in effect meant that market participants and regulators were led to underestimate the risks that had in earlier decades guided valuations of subprime exposures and the determination of collateral requirements in securities markets.[48]

6. Concluding remarks

The quality of newly originated subprime loans had been deteriorating for an extended period prior to the effective closing down of origination activity in 2007.[49] Furthermore, considerable evidence indicates that the trend was recognised in contemporary market commentaries and was reflected (if imperfectly) in differential secondary market pricing among both loan and borrower types. However, little evidence suggests that discrimination among originators went much beyond a simple sorting of applications into acceptable and not acceptable.

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45 See Appendix A of this paper for data for the 2000–07 capital market transactions of Option One Mortgage, one of New Century's competitors. Comparable data for New Century itself are contained in its SEC Form 10-K filings. However, due to its bankruptcy, New Century did not report such data for 2006. For 2003, 2004 and 2005, the shares (in per cent) of whole loan sales in New Century's capital market transactions were 79.8, 74.6 and 66.5 respectively.

46 This point was emphasised in the oral presentation of Smithson (2009). Smithson's expertise derived from his role as a valuation advisor to holders of portfolios of structured securities based on subprime mortgage exposures.

47 The impression of ready availability of relevant data required to price assets based on subprime mortgages was fostered by the successes achieved by private data aggregators such as Loan Performance. See loanperformance.com for a discussion of its available products.

48 In his recent book, Emanuel Derman, a theoretical physicist and a former managing director at Goldman Sachs, provided valuable insight concerning the notion of financial value:

> The techniques of physics hardly ever produce more than the most approximate truth in finance, because "true" financial value is itself a suspect notion. In physics, a model is right when it correctly predicts the future trajectories of planets or the existence and properties of new particles . . . In finance, you cannot easily prove a model right by such observations. Data are scarce and, more importantly, markets are arenas of action and reaction, dialectics of thesis, antithesis and synthesis. People learn from past mistakes and go on to make new ones. What's right in one regime is wrong in the next (Derman (2004, p. 266)).

49 See Demyanyk and Van Hemert (2008).

Therefore, a reasonable deduction from the bankruptcy examiner's report on New Century is that the company's managers did not regard stewardship of the firm's reputational capital as a high priority. Such a conclusion can be drawn from the ongoing failure of management to correct mortgage origination practices that otherwise could have been addressed. For example, the examiner noted that management had been informed of originations of mortgage products with particular risk features that had contributed disproportionately to the "billions of dollars of unsound mortgages . . . either held by New Century or sold in the market" (Missal (2008, p. 176)), but had not acted promptly to modify those products.

In some sense, what is surprising about the above is the limited feedback from the small number of counterparties crucial to New Century's ability to originate and sell subprime mortgages. In fact, the examiner's report shows that nearly 95% of New Century's 2006 loan sales were to securities dealers as opposed to ultimate investors, a 25 percentage point increase over the 2005 share (Missal (2008, p. 121)). Over the same period, New Century relied exclusively on credit lines from a small number of securities dealers to finance its origination of mortgages.[50]

The New Century case surfaces a key question about the conduct of credit risk management by New Century's counterparties. The question incorporates a presumption that the counterparties' risk managers appreciated how coincident withdrawals of credit lines might lead to the failure of New Century because of its inability to recover from the resulting liquidity shock. A second incorporated presumption is that the risk managers would expect that the losses experienced by their firms would be greatly enlarged due to knock-on effects of a sudden liquidity withdrawal. If both of these presumptions are deemed reasonable, then risk managers would have been expected to employ stress scenarios based on them to set their credit exposure limits to counterparties such as New Century. Consequently, policymakers might want to ask whether this was the case, and if not, why? Is it that New Century's counterparties have been relying too much on the assumption that reputational capital, so important for their own business, would help to control incentives on the part of New Century? Should they have known better?

The examiner's report suggests that some of the actions undertaken to improve loan quality in late 2006 and early 2007 were designed to anticipate new credit risk concerns among New Century's counterparties. Nonetheless, when New Century announced a need to recast its financial reports, there had not yet been a defection by any of its largest counterparties. Not surprisingly, defections ensued immediately after the announcement. In those circumstances, the bunching of defections probably signalled an absence of attention on the part of counterparties to the mounting risks of ongoing transactions with New Century. In turn, the evidence of ineffective counterparty risk management has led to concerns about the effectiveness of existing governance structures (corporate and regulatory) and, in particular, reputational capital as an incentive device. Can those structures now be relied on to discipline the risk-taking incentives of those involved in underwriting securities backed by subprime (and other risky) assets?[51]

[50] Part of such financing had previously come from the issuance of asset-backed commercial paper.

[51] See Acharya and Richardson (2009) for a discussion of the possibility that the origin of the financial crisis was the collapse of governance and the provision of ill-designed incentives and Fender and Mitchell (2009) for an analysis of how cyclical factors (systematic risk) can influence the incentives of loan originators.

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Appendix A

Composition of capital market transactions of Option One Mortgage Corporation for fiscal years 2000–07

In per cent

Fiscal year	Securitisations	Whole loan sales
2000	54	46
2001	77	23
2002	91	9
2003	52	23
2004	23	77
2005	9	91
2006	23	77
Q1/Q2 2007	15	85

Fiscal Year, 1 May–30 April. Data covers nonprime loans.

Source: Option One Mortgage Corporation (2007).