

## The future of securitisation: how to align incentives?<sup>1</sup>

*This article reviews the recent collapse of global securitisation markets and the loss of investor confidence in them. It then sets out measures that could be taken to revive and strengthen the securitisation process, including mechanisms based on retention requirements for originators. It ends with a number of simple implications for policymakers and market practitioners.*

*JEL classification: G100, G200.*

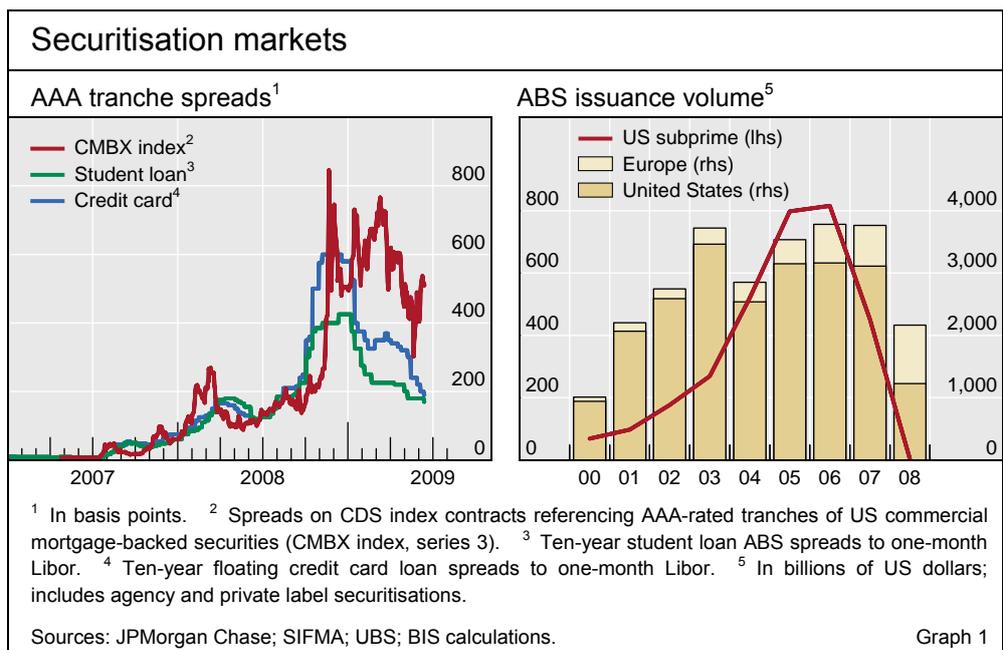
Large losses in the value of mortgage-related products and an associated deterioration in investor appetite led to broad-based distress in securitisation markets from the summer of 2007. Problems started with subprime mortgage-related instruments, which experienced severe credit quality deterioration as a long period of appreciating house prices in the United States came to a halt. Losses were magnified by increasingly illiquid markets, and worsened further during the broad investor retreat from risk triggered by the Lehman Brothers bankruptcy and subsequent signs of global recession.<sup>2</sup>

As a result, spreads on securitised products soared (Graph 1, left-hand panel) and activity across most market segments came to a sudden stop. Issuance volumes, which had risen to a combined annual total for the United States and Europe of about \$3.8 trillion over the 2005–07 period, collapsed to just over \$2 trillion in 2008. Reflecting a generalised loss of investor confidence, most of this remaining issuance was in the US agency sector (ie securities underwritten by US government-sponsored mortgage financing enterprises) and in European securitisations used for refinancing activities with the ECB. The US subprime and Alt-A market, which had peaked at some \$815 billion in 2006, vanished, as did markets for many other securitised instruments (Graph 1, right-hand panel).

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<sup>1</sup> The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS or the National Bank of Belgium. Any errors and omissions remain those of the authors, who thank Emir Emiray for assistance with the data and graphs.

<sup>2</sup> See Chapter II of the BIS *79th Annual Report* (2009) for a five-stage description of the crisis.



Problems in the securitisation process were central to this collapse in activity. Securitisation involves the pooling of assets and the subsequent sale to investors of claims on the cash flows backed by these asset pools.<sup>3</sup> As such, securitisation tends to incorporate a rather long chain of participants and its functioning depends crucially on whether the relationships between these participants preserve discipline and maintain adequate information flows along that chain.

This article sets out measures that could be taken to revive and strengthen the securitisation process, thereby revitalising the flow of credit to sectors such as consumer and mortgage finance. Renewing securitisation has *conjunctural* as well as *structural* elements. Chief among the former is the large overhang of securitised products (ie the so-called legacy assets) sitting on bank balance sheets and the uncertainty regarding future asset performance, both of which are depressing valuations. In order to help markets recover, governments in a variety of countries have taken steps to remove this overhang – either in the form of “bad bank” and similar measures targeting bank balance sheets directly<sup>4</sup> or by reviving investor interest through the provision of government funding in the markets for particular securitisations. One example is the US Term Asset-Backed Securities Loan Facility (TALF), which provides loans on a collateralised, non-recourse basis to holders of certain types of newly issued asset-backed securities.

<sup>3</sup> In the remainder of this special feature, the term securitisation will be used both for “traditional” asset-backed securities (ABS) backed by large homogeneous asset pools, such as credit card and auto loans, and for collateralised debt obligations (CDOs) and related instruments, which are backed by smaller pools of more heterogeneous assets. In addition, it will be assumed that the liabilities backing these asset pools are tranching, forming a three-tiered capital structure of equity/first-loss, mezzanine and senior tranches.

<sup>4</sup> See Fender and Scheicher (2009) for a rationalisation of these measures based on evidence of sizeable illiquidity premia in prices for certain subprime mortgage securitisations.

Overall, these measures may be showing some signs of success. Spreads on securitised products have come down from their peaks (Graph 1, left-hand panel) and volumes have recovered somewhat, though unevenly across market segments. However, while providing temporary relief, these measures are unlikely to attract the stable base of dedicated longer-term investors needed for securitisation markets to recuperate in a sustained fashion. With large parts of the traditional investor community (such as structured investment vehicles (SIVs) and other conduits) having disappeared, more needs to be done.

Key to rebuilding investor confidence is addressing the structural weaknesses in securitisation that have been exposed by the crisis. These, and proposals to eliminate them, are reviewed below, focusing in particular on plans for originators and arrangers to retain some exposure to the securitisations they help to generate. The key finding is that the degree to which the originator's retained stake will be affected by a downturn will significantly influence the impact that the stake will have on incentives to adequately screen borrowers.

The remainder of this article is organised as follows. The next section briefly describes securitisation markets and how they work. This is followed by sections focusing on structural shortcomings revealed by the crisis and ways to address them. The last section concludes by identifying some implications for policymakers and market practitioners alike, including a set of simple "rules" for the design of tranche retention schemes.

## Tackling the structural weaknesses in securitisation

### *Securitisation: a short review of the basics*

#### *(i) What is securitisation?*

Key to  
securitisation ...

The starting point for any discussion of structural weaknesses in securitisation markets is the securitisation process. In general, securitised instruments can be defined through three distinct characteristics: (1) *pooling of assets* (either cash-based or synthetically created); (2) *delinking* of the credit risk of the collateral asset pool from that of the originator, usually through the transfer of the underlying assets to a finite-lived, standalone special purpose vehicle (SPV); and (3) *tranching of liabilities* (ie issuance of claims with different levels of seniority) that are backed by the asset pool.<sup>5</sup>

... is the tranching  
process ...

A key aspect of tranching is the ability to create one or more classes of securities accommodating different investor appetites. One way to achieve this is to generate some tranches whose rating is higher than the average rating of the underlying asset pool (other tranches, in turn, will carry lower ratings or remain unrated) or to generate rated securities from a pool of unrated assets. This is accomplished through the use of various forms of credit support to create securities with different levels of seniority. The main tool in this context is the priority ordering of tranches with regard to the allocation of losses

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<sup>5</sup> See Fender and Mitchell (2005) for a broader discussion of these issues.

(ie subordination): the equity or “first-loss” tranche absorbs initial losses up to the level where it is depleted, followed by mezzanine tranches which take some additional losses, again followed by more senior tranches. As a result, the most senior claims are expected to be insulated – except in particularly adverse circumstances – from the default risk of the asset pool through the absorption of losses by subordinated claims.

Another type of credit support is provided through structural provisions based on triggers and threshold levels. One example is overcollateralisation tests, which, when triggered, divert cash flow to senior note holders, in an attempt to maintain stability of performance for these tranches over time. Another example is rules regarding the use of excess spread, which represents the difference between the income earned on the asset pool and contracted payments to the tranching liabilities. Excess spread tends to be accumulated for the benefit of all investors, but is released to equity holders once certain requirements are met.

... as a way to provide credit support for investors

In principle, these structural provisions can be used interchangeably with subordination. For example, a reduction in the credit support provided to senior tranches via subordination can be compensated through more stringent rules for releasing accumulated excess spread to equity tranche holders. A downside of these trade-offs is additional complexity and the associated analytical burden for investors: the evaluation of a securitised instrument (ie a tranche) cannot be confined to estimating the loss distribution of the asset pool alone. It is also necessary to model the distribution of cash flows from the asset pool to the tranches under different scenarios, based on an assessment of subordination and the deal’s structural features (CGFS (2005)).

#### *(ii) Market organisation and incentives*

One implication of the pooling and tranching that characterises securitisation markets is the need to involve a relatively large number of parties in the securitisation process (Graph 2 illustrates the range of participants for a generic transaction). Organising such a process in ways that maintain incentives (eg in terms of screening asset quality) and the flow of information along the chain of participants can be a challenge. For certain types of securitisations, this is now universally recognised to have gone wrong in the run-up to the current crisis.

Securitisation involves ...

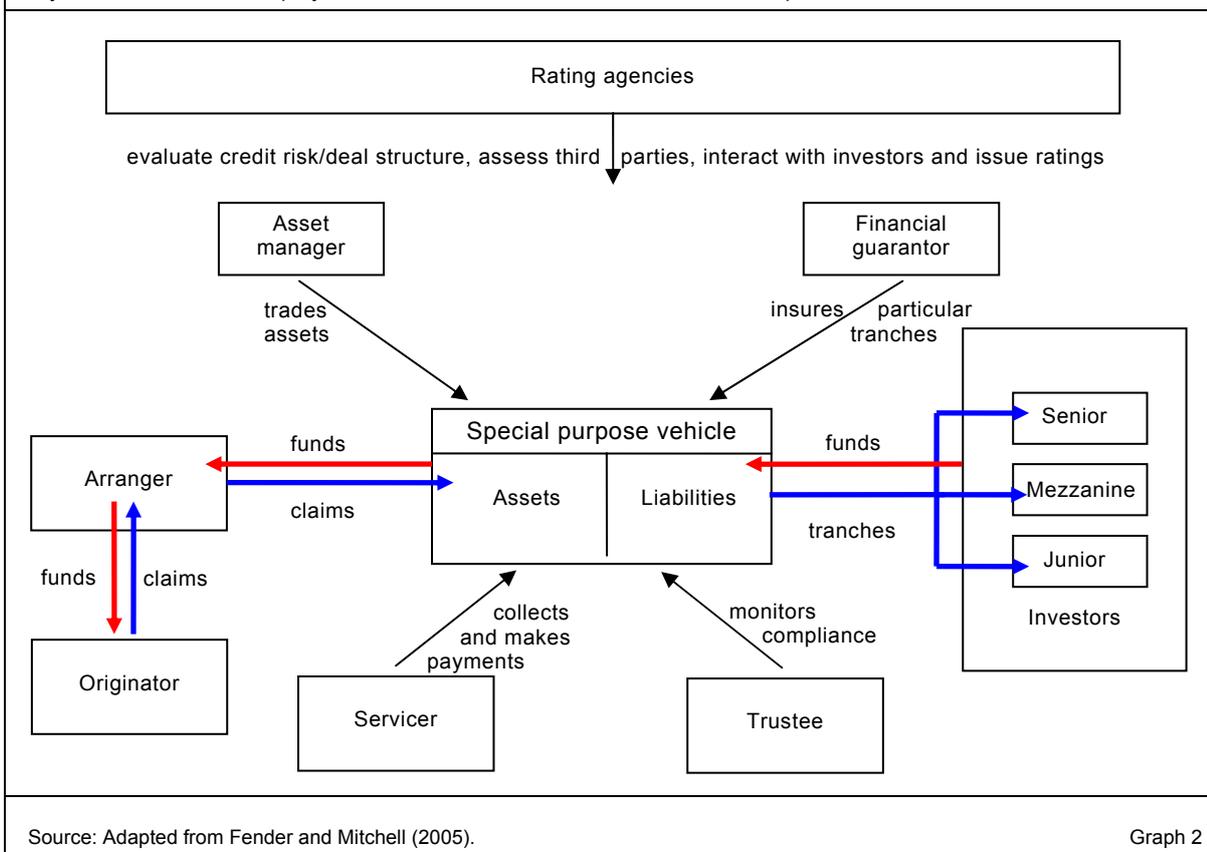
The process starts with the originators, who extend loans or other forms of credit to ultimate borrowers. Those originators who, in the ordinary course of business, do not retain a portion of the loans that they have extended will have weakened screening incentives, something that may be exacerbated by business models emphasising volume over quality. Arrangers, in turn, source assets from originators (or may themselves originate these assets) for the purpose of securitisation, where funding is obtained through the tranches issued against the resulting asset pools. In principle, arrangers employ similar business models as originators and also tend to have compensation schemes that favour transaction volume. A key issue with respect to originators’ and arrangers’ incentives is whether loans are originated more or less exclusively

... originators ...

... arrangers ...

## Securitisation markets: key participants

Stylised overview of the “players” involved in securitisations and of their respective roles



for the purpose of securitisation (ie whether the “originate-to-distribute” model applies) or whether only portions of portfolios are securitised and it is not known at the point of origination which loans will be securitised (ie “originate-and-distribute”). The former model appeared to be a distinguishing feature in US residential mortgage markets (Kiff and Mills (2007)), whereas banks in other countries often seem to securitise only relatively small parts of the loan and mortgage portfolios they originate.

... rating agencies ...

Credit rating agencies have been another important part of the process, supplying investors with assessments of the credit risk (expressed as expected loss or probability of default) of securitised instruments. Because of the high proportion of their rating revenues derived from structured finance prior to the crisis, rating agencies may have been encouraged to rate highly complex products for which little or no historical performance data existed. For the same reason, the agencies may have failed to make their methodologies and related risks transparent enough (at least to investors), and to highlight the limits of ratings in measuring risks beyond expected loss (CGFS (2005, 2008)).

... and investors ...

At the end of the securitisation chain, investors are usually expected to exert discipline on other parties involved in the production process through the price mechanism. However, the degree of discipline effected by investors critically depends on the availability and quality of information, and their ability to analyse securitised instruments using that information. As such, investor influence also tends to depend upon where in the capital structure they invest

(ie the degree of seniority of the tranche). Theory suggests<sup>6</sup> that more sophisticated investors (ie those more capable of analysing the risk of the underlying asset pool and of the tranching securities) would tend to buy the riskier and more information-sensitive tranches. By and large, these are the tranches at the lower end of the capital structure (ie equity and mezzanine), which will also pay the highest interest rates to compensate investors for their risks and the costs imposed by their due diligence efforts. Less sophisticated investors, in turn, would be expected to populate the more senior end of the securitisation market – and would receive lower interest rates in return.

... at different levels of seniority

Some market observers have argued that shifts in investor interest across tranches and instruments provided early signs of declining origination quality. One example is the disappearance of traditional mezzanine investors in the subprime market and the resulting placement of mezzanine tranches in complex instruments known as ABS CDOs (collateralised debt obligations backed by tranches of other asset-backed securities), which were themselves funded by a high proportion of AAA-rated tranches. There are also signs that, over time, arrangers found it increasingly difficult to place the most senior, AAA-rated tranches of mortgage-related securitisations at the prevailing spread levels. As a result, many of these tranches remained on banks' balance sheets or were financed through leveraged off-balance sheet entities (with implicit recourse via liquidity guarantees). This allowed banks to transform low AAA spreads into the relatively high equity returns required by investors.

### *(iii) Complexity, transparency and ratings*

Given the market organisation reviewed above, the recent crisis brought to light at least three key structural weaknesses: too much complexity, insufficient transparency and an over-reliance on ratings. All of these tend to exacerbate existing incentive misalignments, while creating various information problems of their own.

**Complexity.** A key driver of complexity is the practice of tranching, which allows for the bulk of a given securitisation to be financed by AAA investors. The tranching of payoffs increases the layering between the performance of the underlying assets and the risk-reward profiles of the tranches held by final investors. As discussed above, links between tranche payoffs and the underlying asset pool performance are further complicated by existing trade-offs between the protection provided by subordination and other structural features. Additional complexities arise when a structure itself contains tranches of other securitisations (ie resecuritisations, including ABS CDOs). By implication, more complicated links between tranche payoffs and pool performance will also increase the difficulty for final investors to obtain a clear picture of the risk and return profile of their stakes. Overall, assessments of value and risk will tend to become increasingly dependent on models, which themselves are subject to uncertainty, as small changes in assumptions can lead to major differences in the risk assessments.

Deal complexity ...

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<sup>6</sup> See, for example, DeMarzo (2005). Related papers are reviewed in Mitchell (2005).

... transparency ...

**Transparency.** Securitisation, while increasing the distance between borrowers and lenders, essentially assumes that incentives – for activities such as the proper screening of borrowers – are preserved along the securitisation chain. Historically, reputational considerations have been assumed to act as a control mechanism for the behaviour of originators, but the crisis has illustrated that this did not work sufficiently in the US mortgage context. This type of failure, in turn, puts a premium on the availability of information for proper deal analysis, particularly for those securitisation markets that have historically not provided such information.

... and undue  
reliance on  
ratings ...

**Ratings.** One result of increasing complexity and limited transparency has been an over-reliance on ratings. A key issue in this context is that tranching causes ratings of structured securities to behave differently from traditional corporate bond ratings. Specifically, once downgrades of a tranching security occur, they will tend to be more persistent and severe than for corporate bonds. This results in a non-linear relationship between the credit quality of underlying assets and that of tranching products, which will tend to magnify changes in the valuation of securitisation tranches relative to those observed for the underlying asset pool. Investor reliance on ratings, unless supported by other measures of risk, can thus lead to mispriced and mismanaged risk exposures as well as unfavourable market dynamics if these exposures have to be unwound (Fender et al (2008)).

... have been  
exposed as  
weaknesses

It is now clear that many investors (including the arranging banks and their risk managers) were not fully aware of the fundamental differences in corporate bond and structured finance ratings, or of the nature of the risks they were taking on with structured products. That is, the disciplining function of investor scrutiny that would have been necessary to align incentives along the securitisation chain was not exercised. An important question is to what extent investors' lack of understanding was due to too little information being available or, rather, to their failure to demand and appropriately process the information that would have been necessary to conduct appropriate risk analysis. Much of the surprise in terms of the performance of securitised instruments occurred among investors in AAA securities, who were probably relying excessively on ratings. Interestingly, some of the most sophisticated institutions were found to be holding AAA-rated tranches and have taken the most severe valuation losses. This included tranches that these institutions themselves had originated, but which were considered "safe" or appropriately hedged (eg via "wraps" sold by specialised insurers).

#### *Proposals for changes to the structure of securitisation markets*

Measures to  
address these  
weaknesses  
include ...

Several sets of measures have been proposed to address the structural weaknesses revealed by the crisis. The ideas underlying these measures are twofold: first, they should address the problems that have led or contributed to loose underwriting standards in securitisation, particularly in the residential mortgage market; second, they should rebuild confidence for those markets that have not seen a relaxation of credit standards but have nevertheless suffered from the broad investor retreat from securitisation. One of these proposals, required tranche retention, relates directly to the alignment of

incentives between originators and investors and is discussed in more detail in a separate section below. Additional measures relate to reduced complexity, increased transparency and improved ratings. As many of these have been discussed in more detail elsewhere,<sup>7</sup> the following discussion provides a brief summary.

*(i) Reduced complexity*

The dramatic losses suffered on exposures to ABS CDOs and other resecuritisations by even the most sophisticated financial institutions illustrate that the riskiness of complex products was vastly underestimated. Part of this problem has been fixed by the markets in that these structures have vanished, and more onerous bank capital requirements for resecuritisations are due to significantly change the economics of these instruments. At least in the near future, investors are likely to insist on simpler structures that are less vulnerable to model risk (ie risks arising from model selection and parameter choice) and easier to analyse.

... simpler deal structures ...

In this context, simplicity could mean increased standardisation of structures, based on a smaller number of tranches and less reliance on structural features (other than subordination) for credit enhancement. There are early indications that such simpler deals are now starting to appear. Continuation of this development would aid analytical tractability and might thus help to bring investors back into the market. Eventually, additional standardisation would also be expected to support liquidity in secondary markets.

*(ii) Increased transparency*

Credit analysis of even “traditional” securitisations can be a demanding and information-intensive task. This puts a premium on the speed and quality of the information flow along the securitisation chain. Clearly, shorter chains would help, which argues against a revival of resecuritisations. In addition, better and more timely information, relating both to the riskiness of the underlying assets and to their performance over time, together with standardised reporting of this information, would assist investors in their due diligence efforts. This applies particularly for those market segments that have so far lagged behind in terms of information provision.

... shorter securitisation chains ...

Examples of measures to improve the information flow along the securitisation chain include the American Securitization Forum (ASF) project RESTART. Scheduled to be implemented by end-2009, the proposal will introduce new procedures for disclosure and reporting by issuers and servicers for both new and outstanding securitisations. This includes a standardised disclosure package for use at the initiation of residential MBS, consisting of

... and standardised disclosure of asset-level data

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<sup>7</sup> See, in particular, ASF et al (2008), CGFS (2008), ECB (2008), Franke and Krahen (2008) and Issing Committee (2008). See Gorton (2009) for a more controversial approach aimed at supplying repo markets with a reliable source of collateral, based on regulating and supervising SPVs as banks and providing government guarantees for senior tranches of securitisations to facilitate their use as repo collateral.

pool- and loan-level information (such as loan-to-value ratios (LTVs), mortgage rates, location of property, maturity, monthly borrower incomes and payments on other debts). Similar data are to be provided as part of monthly reporting packages and made available to all investors, rating agencies and market participants. Similar proposals have been put forward in Europe, though with less detailed disclosure requirements. This contrasts with the traditional method of data provision, which tended to be pool-level and focused on a limited number of quality indicators. In principle, investors were able to alleviate these information problems if they chose to separately purchase loan-level data and related analytical tools from specialised vendors. However, in the past, data vendors themselves found it difficult to obtain detailed information for some markets and jurisdictions. In Europe, for example, concerns about the confidentiality of borrower data may have interfered with investor needs for more detailed information.<sup>8</sup>

*(iii) Improved (use of) ratings*

Mechanistic  
reliance on ratings  
needs to be  
reduced ...

Over-reliance on ratings has been a key factor behind the crisis, which suggests a two-pronged approach to fixing related problems. First, to the extent that existing regulation encourages mechanistic use of ratings (ie in the form of regulatory ratings-based investment constraints or related privately imposed guidelines), authorities and trustees need to review these ratings-based rules and make any necessary adjustments.<sup>9</sup>

... and more  
information should  
be provided along  
with ratings

Second, better ratings might be required. Many observers have thus called for the rating agencies to improve their rating methodologies. Proposals have differed in depth and scope, and include: requirements to clearly distinguish structured product ratings from corporate debt ratings; provision of information on the sensitivity of structured product ratings to modelling assumptions; and specific demands for changes in rating methodologies, such as more conservative assumptions regarding key model parameters (eg asset-level probabilities of default, recovery rates or default correlations).

Each of the three major rating agencies has already introduced changes along these lines and taken steps to increase transparency in the rating process. A key point in this context is the one-dimensional (expected loss-based) nature of ratings, which implies that like-rated products can have very different risk properties. Multidimensional ratings or disclosures aimed at providing information on risks not covered by expected loss estimates can thus enhance the information content of ratings, while also encouraging more informed use by investors (CGFS (2008)).

In addition, the European Commission recently adopted legislation that will require registration of rating agencies by a competent member state authority and which gives authorities the power to supervise rating agencies, including

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<sup>8</sup> The information gap between Europe and the United States may now be narrowing due to new information and monitoring requirements for securitisations contained in recently passed amendments to the Capital Requirements Directive (European Parliament (2009)).

<sup>9</sup> See Joint Forum (2009) for a survey of the uses of credit ratings for regulatory purposes.

the right to enforce “the use of methodologies that are rigorous, systematic, continuous, and can be validated based on historical experience”.<sup>10</sup>

### Aligning incentives in securitisation markets: tranche retention

The measures discussed so far, while essential, are not likely to be sufficient to revive securitisation markets on a sustained basis. Although investors need to be able to adequately assess the risk of securitisations in order to exercise market discipline, measures aimed more directly at aligning the incentives of originators and arrangers are also desirable, for two reasons. First, it is unclear whether market discipline alone will be enough to align incentives in ways that would avoid an erosion of underwriting standards during a future upswing. Second, as a new investor base needs to be developed to replace, at least partially, the loss of leveraged demand in the market, a clearer commitment by originators and arrangers to underwriting quality may be needed to draw these new investors into the market. This also applies to segments of the securitisation market that have not suffered from quality erosion (ie those in which misaligned incentives may have played less of a role) but which have nevertheless been hit by concerns about securitisation more generally.

Along these lines, several recent proposals have focused on retention by the originator and/or arranger of some portion of the securitisation.<sup>11</sup> Such a requirement would guarantee that the originator or arranger has some “skin in the game”, providing a direct incentive for prudent behaviour (eg to reliably originate loans based on agreed underwriting standards). The proposal most commonly advanced is to require retention of the equity/first-loss tranche. The idea underlying this requirement is that, by forcing the originator to bear the first losses on the underlying asset pool, the equity tranche will create “high-powered” incentives to exercise due diligence. At the same time, some recent proposals have specified that the originator should hold a share, or vertical “slice”, of the portfolio, perhaps with the idea of balancing the originator’s interests across all tranches with those of the different investor classes.<sup>12</sup>

It should be noted that the idea of tranche retention is not new. In fact, originators in many types of securitisations have traditionally held on to the equity tranche. Over time, however, investors appeared – rightly or wrongly – to become more comfortable with securitised products, leading to a relatively active market in equity tranches. In addition, use of credit derivatives made it possible to at least partially hedge existing equity tranche exposures. As a result, equity tranches, even when originally retained, were increasingly sold or

Tranche retention requirements ...

... have been proposed to align incentives

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<sup>10</sup> Similar requirements are also under consideration in other jurisdictions (European Commission (2008), US Treasury (2009)).

<sup>11</sup> See European Parliament (2009), US Treasury (2009) and IOSCO (2009).

<sup>12</sup> See European Parliament (2009). Investors in different tranches do have conflicting interests in certain dimensions. For example, equity tranche holders will favour assets with higher default correlations, which would tend to benefit them at the expense of investors in the more senior tranches. Such conflicts of interest, however, are likely to be of second-order importance relative to the determinants of overall asset pool quality.

hedged, weakening any incentives that might otherwise have been created for arrangers and originators. While this was known, it was also believed that reputation would play a role in aligning interests, as originators faced the business risk of having investors shy away from their loans if these were deemed to have been originated on the basis of weak underwriting standards.

But what should these requirements look like?

To the extent that a retention requirement is judged desirable, key policy questions are: how much should be retained, and what form should the retention take? Implicit in the latter question is a judgment on the degree of discretion originators should be given in choosing the form of retention, if a quantitative retention requirement exists. The answers to these questions will depend upon the impact of differing retention mechanisms on, among other things, the effort originators exert to screen borrowers or otherwise perform due diligence on the quality of the underlying assets in a securitisation.

#### *Making tranche retention work: results from a simple model*

It will be argued in this section that care must be taken in the design of any required retention scheme. The analysis for this purpose draws on results from recent research on the economics of tranche retention,<sup>13</sup> which shows that different retention mechanisms can have significantly differing impacts on the effort that an originator will exert to screen borrowers. In particular, while increasing effort relative to the case of non-retention, having the originator or arranger retain the equity tranche of a securitisation may lead to lower screening effort than other retention schemes.

Various retention mechanisms are possible ...

Three types of retention mechanisms are considered: vertical slice, equity tranche and mezzanine tranche. As discussed in the accompanying box, the various retention mechanisms have different sensitivities to business cycle risk, which implies that the effectiveness of tranches in aligning incentives will be a function of tranche thickness and the economy's position in the cycle. Specifically, retaining the equity tranche yields lower screening effort than other retention schemes if the tranche is "thin" enough to be exhausted in a downturn and if that downturn is relatively likely (ie the equity tranche is likely to be "wiped out"). That is, the "loss cap" provided by the upper boundary of the equity tranche reduces screening incentives if the tranche becomes more likely to be exhausted.<sup>14</sup> Thus, a seeming paradox arises: the more likely screening is to be valuable (ie if a downturn is likely), the less desirable it may be to have the originator retain the equity tranche – or the thicker the equity tranche may have to be in order to generate adequate screening incentives. On the other hand, if the equity tranche is thick enough not to be exhausted in a downturn, this form of retention will dominate the others.

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<sup>13</sup> See Fender and Mitchell (2009) for a more detailed analysis.

<sup>14</sup> Another way to think about this is in terms of loss timing. To the extent that assets in the collateral pool have very backloaded default profiles, thin equity tranches can capture sizeable returns before taking losses.

## Incentives in securitisation – a simple model

The simple model described in this box focuses on an originating institution that extends loans, with the option to either carry them on balance sheet or pass them on to investors in the form of a securitisation.<sup>9</sup> The originator has an amount  $Z$  in funds and extends  $Z$  loans of value one each and with maturity of one period. Loans that default have zero recovery, and non-defaulting loans repay  $R > 1$ . The risk-free interest rate is assumed to be zero, and all decisions – by investors and the originator – are made under risk neutrality. Lending and financing relationships are one-off, with no reputation effects.

**Borrowers and screening.** There are two types of borrowers: bad ( $B$ ) and good ( $G$ ). Bad borrowers have projects with negative net present value; therefore, if the originator believes it is facing a type-B borrower, it will not extend a loan. However, type-B borrowers cannot be identified in the absence of screening. Costly screening effort exerted by the originator will influence the proportion of type-B borrowers in the loan pool: the higher the screening effort, the lower the proportion of B borrowers.

**Systematic risk.** The loan pool is assumed to be highly granular (ie  $Z$  is large), implying that idiosyncratic risk is diversified away. Default frequencies will be determined by the realisation of a systematic risk factor, which can take two possible values: low ( $L$ ), corresponding to an unfavourable state of nature, or high ( $H$ ), corresponding to a favourable state. Systematic risk affects borrowers' probabilities of default ( $PD$ ) in the following way. If the low state is realised, all type-B borrowers default, but type-G borrowers default only with some probability  $PD_G(L) < 1$ ; if the high state is realised, none of the type-G borrowers default, but type-B borrowers default with probability  $PD_B(H) > 0$ . The probability that the low state occurs is given by  $p_L$  and the probability of the high state is  $p_H$ .

**Benefits of securitisation.** Securitisation provides the originator with cash prior to loan maturity. The originator's profit then incorporates two potential sources of revenue: cash flows at maturity from loans (or portions of securitisations) retained on balance sheet, and cash received up front from investors when loans are securitised. The presence of market frictions implies that the cash generated through securitisation has value to the originator. In addition, securitisation often confers indirect benefits on originators through, for example, lowering of capital requirements (regulatory or economic) or remuneration schemes whose value depends on short-term profit. These direct and indirect monetary benefits of securitisation to the originator are captured by multiplying the cash received from securitisation by a parameter  $\Omega > 1$ .

**Securitisation and expected profit.** The originator is assumed first to choose whether to securitise the loan portfolio and what form of retention, if any, to use. The originator then chooses its screening effort, originates the loan portfolio and sells the securitised portion to investors. The effort is chosen to maximise expected profit, which has the following general form:

$$\Pi(e) = \Omega S + F(e) - c(e)Z - Z$$

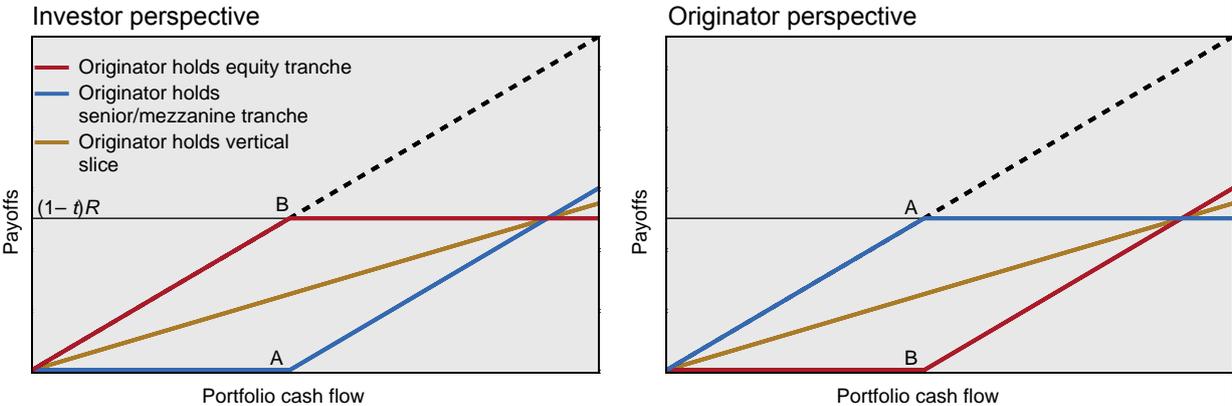
where  $e$  is the level of screening effort,  $S$  is the cash received from securitisation,  $F(e)$  is the expected cash flow from loans (or part of a securitisation) retained on balance sheet,  $c(e)$  is the (per loan) cost of screening effort, and  $Z$  is the size of the loan portfolio. Note that since screening effort is assumed to be unobservable, the amount of cash investors pay for a securitisation cannot be made contingent on a particular level of screening effort. Thus, once the form of securitisation has been chosen, the originator's choice of effort will be determined solely by the impact of effort on the cash flows  $F(e)$  from the retained part of the securitisation, together with the cost of screening. (Investors, when deciding the price to pay for the securitisation, will nevertheless take into account the originator's optimal choice of effort, given the retention mechanism.)

**Originator's payoffs with different retention mechanisms.** The model is used to consider securitisation of the entire portfolio (where a proportional "slice" of the portfolio is retained by the originator) as well as tranching securitisations, which are assumed to consist of three tranches: equity/first-loss, mezzanine and senior. Retention by the originator of the equity tranche is then compared with retention of the mezzanine tranche and that of the proportional "slice". Key to understanding the differences in these tranches on the originator's choice of effort is the observation that the equity tranche payoff resembles that of a firm's equity investor: the cash flow to the equity tranche is a residual, paid only after the senior and mezzanine tranches have received

their promised payments. The payoff to the holder of mezzanine tranche, in turn, resembles that of (subordinated) debt: the tranche holder will receive a fixed payment unless the portfolio cash flow is too low to meet this payment, in which case the mezzanine tranche holder becomes the residual claimant (implying that the equity tranche is exhausted).<sup>Ⓔ</sup>

**Originator’s effort choices with differing retention mechanisms.** The logic of the argument is illustrated in Graph A below. The coloured lines depict the payment profiles across different retention schemes from both the investor’s and the originator’s perspective. Requiring the originator to retain the equity tranche (indicated by the red line in the right-hand panel) makes it the residual claimant with respect to the cash flows from the underlying portfolio. The investor (for simplicity, the graph assumes that there is only one combined mezzanine/senior tranche), then, holds a claim that has the familiar properties of standard debt (the red line in the left-hand panel). That is, the investor will receive the cash flows from the underlying pool of assets up to the point where he/she is being repaid (ie receives his/her share of the promised returns on the pool  $(1-t)R$ , where equity tranche width is assumed to be  $t\%$  of the pool). Only from that point onwards will the originator begin to receive payouts. Mezzanine tranche retention works in a similar fashion (with the payoff profiles in the two panels reversed, as indicated by the blue lines), while a share in the overall pool generates a linear payoff profile for both the originator and investor (as suggested by the brown lines).

**Retention mechanisms: payoff profiles**



Source: Authors, based on Fender and Mitchell (2009).

Graph A

In this simple setup, originator incentives for proper screening will depend on expected economic performance and the thickness of the retained tranche. This works as follows. If a downturn is likely ( $p_L$  is high) and the equity tranche is thin enough to be depleted if the downturn materialises, then cash flows generated by the asset pool are likely to imply tranche payouts to the left of points A and B in both panels of the graph. As a result, for the case of equity retention (red lines), the originator will expect zero payout. Knowing this prior to loan origination, when screening effort is chosen, reduces its incentives to exert effort. In contrast, both mezzanine tranche and vertical slice retention will tend to generate positive originator payouts for cash flow realisations to the left of points A and B (as indicated by positively sloped payoff profiles). Depending on parameter values, other retention schemes may thus dominate equity tranche retention. (The more standard case of equity tranche domination arises for the relatively high cash flow realisations to the right of A and B, ie situations where a downturn is relatively unlikely and/or the equity tranche is thick enough not to be exhausted in the downturn).

<sup>Ⓔ</sup> See Fender and Mitchell (2009) for specification and analysis of the model. <sup>Ⓕ</sup> While the model assumes that the equity tranche may be thin enough to be exhausted in the low state, it also assumes that income is always high enough in the high state for the equity tranche not to be exhausted. This assumption, which can be rationalised by rating agency requirements on subordination levels, excludes certain ranges of outcomes where the equity tranche holder may not receive a payout in either the low or the high state, but this is without loss of generality.

These results suggest that imposing a particular form of retention scheme, while increasing effort relative to the case of non-retention, might generate unintended costs. Specifically, equity tranche (or any other form of) retention is not necessarily the most effective form of incentive alignment, implying that flexibility may be needed with regard to the position of any retained piece in the capital structure. At the same time, specifying the right retention amount will be difficult in that “optimal” amounts will differ across specific transactions and market segments. While this may not matter from an investor confidence perspective (where any amount of retention tends to help), broad minimum requirements (such as the 5% threshold currently contemplated in a number of jurisdictions) are likely to be either too high or too low. If quantitative retention requirements are too low, screening incentives would not be aligned as desired, while requirements that are too high could significantly raise the costs of securitisation in at least some market segments, potentially undermining the goal of market revival.

... but their effects depend on a variety of factors

Given these difficulties in choosing the size and position of any retention requirement, it may thus be desirable to keep such requirements flexible. One possibility might be to avoid fixing any retention amounts or their position in the capital structure, while mandating detailed disclosures of all relevant information regarding retention (at issuance and over time, including information on whether retained exposures have been hedged). If such information were supplied in a standardised and centralised fashion, in an easily accessible and understandable way, then all investors would be given the possibility to choose the form and volume of retention that they were comfortable with, at least in principle. Moreover, the provision of such information would permit both investors and authorities to track developments in the market, ie the importance of structures with and without retention and the size and position of any retentions. This information could be a valuable macroprudential surveillance tool and could also aid in the design of regulatory requirements (eg differentiated capital charges for securitisations with less retention) or any future supervisory measures aimed at securitisation markets.

As a result, flexibility may be required ...

Disclosures like this could be achieved in various ways. One would be to incorporate such a requirement into the legal language for securitised instruments, ie by making them a mutually agreed covenant of the transaction between originators and investors. Another would be to use legislative means to require retention and related disclosures, eg via (banking) regulation, as recently agreed by the European Parliament. A third possibility would be for central banks to establish best practice principles via the eligibility requirements of their refinancing operations – an approach that could also be used to change current market standards with regard to deal complexity and availability of asset-level information. In all of these cases, third-party mechanisms will probably be necessary to verify any retentions and disclosures. Such services could be provided by either the supervisory authorities or, in the case of a covenant-based solution, specialised service providers.

... with mandated disclosures one possible solution

### *Supporting measures*

Supporting measures can include ...

Retention and disclosure requirements alone may not be enough to guarantee that incentives are indeed aligned along the securitisation chain. As illustrated by the discussion in the box (ie the role played by the omega parameter), a host of factors can be expected to influence the economics of securitisation from an originator perspective. For example, accounting and regulatory features of securitisation, together with remuneration systems in financial institutions, have tended to generate “indirect benefits” to securitisation (going beyond those related to funding) relative to holding loans on balance sheet. These indirect benefits often represent “private” rather than “social” factors, and can encourage originators to favour mechanisms with low (or zero) amounts of retention in order to maximise the private benefits from securitisation.

... modified remuneration systems and accounting rules ...

On this basis, current practices and the experience of the crisis may also offer support for initiatives to modify banks’ remuneration systems and to adjust regulatory and accounting measures that make securitisation artificially more attractive than other sources of funding. This could include changes to accounting standards that would eliminate immediate recognition of gain on sale by originators at the inception of securitised instruments. Similarly, capital regulation might be adjusted to cover all originating institutions and to grant capital relief to originators only to the extent that true third-party risk transfer has taken place (reducing incentives to “sell” securitisations to vehicles such as SIVs with their implicit recourse to originators).<sup>15</sup>

... as well as capital regulation

### **Conclusion**

The material reviewed in this special feature suggests that a sustained resurgence of issuance activity in securitisation markets will require active steps to address certain structural shortcomings revealed by the financial crisis. In particular, a revival calls for the entry of new investors into the market, which can happen only once confidence has been restored. As a result, action will need to be taken with respect to all market segments, including those that have not suffered from the same misaligned incentives as US subprime mortgage markets.

Many of the measures proposed for this purpose target investors, with the rationale of improving their ability to make informed decisions. Key among these proposals are initiatives aimed at reducing the complexity of securitised instruments, enhancing the availability and quality of information, and improving the reliability and use of ratings. Yet, by placing the burden of effective incentive alignment along the securitisation chain almost exclusively on investors, these measures alone may not be sufficient to fully rebuild confidence and revitalise the market. For such a revival to occur, more direct measures may be necessary. Along these lines, regulation requiring tranche retention by originators or arrangers is currently under consideration. However,

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<sup>15</sup> See US Treasury (2009) and Goldman Sachs (2009).

in devising such schemes, care must be taken to appropriately account for trade-offs between market-based and regulatory approaches. In particular, while representing a valuable tool in principle, regulation that imposes a specific retention mechanism is unlikely to adequately align incentives for all transactions. Specifically, retaining equity tranches may not provide strong enough incentives for originators to screen borrowers if downturns are likely and if the retained tranche is thin enough to be exhausted in downturns (ie equity tranche retention is a more effective “fair weather device”). For example, even if originators had expected that housing prices would fall significantly, having them retain the equity tranche of subprime mortgages might not have had the intended effect, unless the equity tranche were very thick. As a result, rigid, “one size fits all” retention requirements that specify both which tranche to retain and how much retention to hold could end up being ineffective or raising costs in ways detrimental to the goal of a sustained market revival.

These observations suggest that forcing originators to disclose the size and nature of any retention may be an alternative to specifying retention amounts. To make such a mechanism work, and irrespective of any formal requirement to actually retain tranches, originators (or arrangers) could be required to disclose the details of any retained exposures, while being granted flexibility regarding tranche width and location in the capital structure. Ideally, such disclosures would then be mandated both at issuance and over the lifetime of any transaction, with a third-party mechanism to validate the information. This, then, would allow markets to flexibly determine the form and size of retention, though with the downside of leaving much of the burden of setting minimum retention amounts with investors.

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