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## Re-visiting UK mortgage master trust structures

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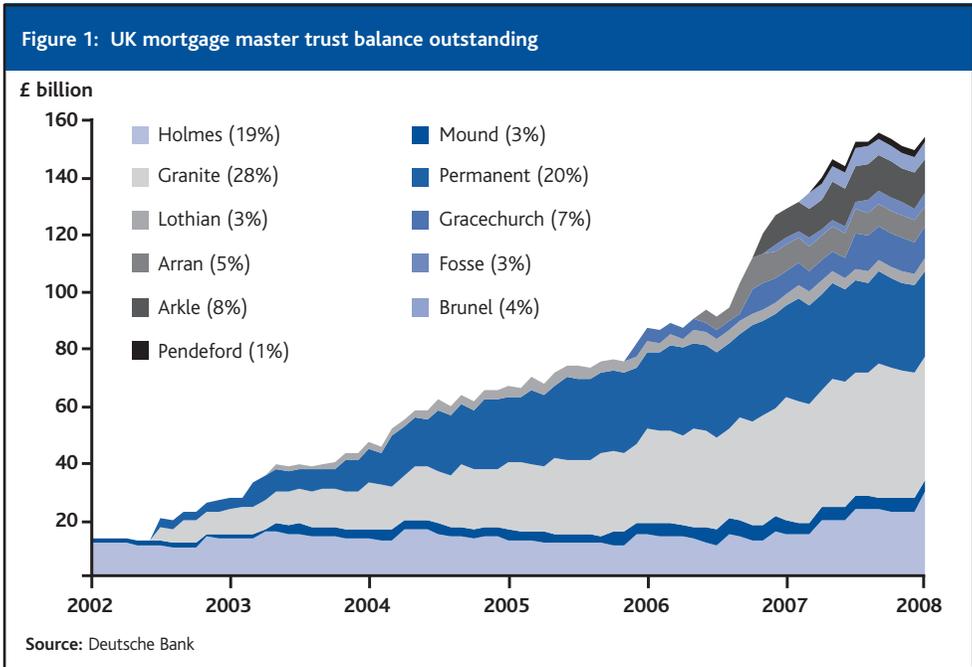
Deutsche Bank

The Northern Rock debacle brought the structural nuances of UK mortgage master trusts into greater scrutiny. The following chapter takes this opportunity to provide an overview of the typical structural template used in the UK prime mortgage securitisation market. UK master trust structures may have become highly intricate, may appear unwieldy and are certainly a complex challenge to understand fully; yet the multitude of structural features and triggers have one clear aim – the preservation of note holders' principal, with a bias to senior bonds.

### The basics

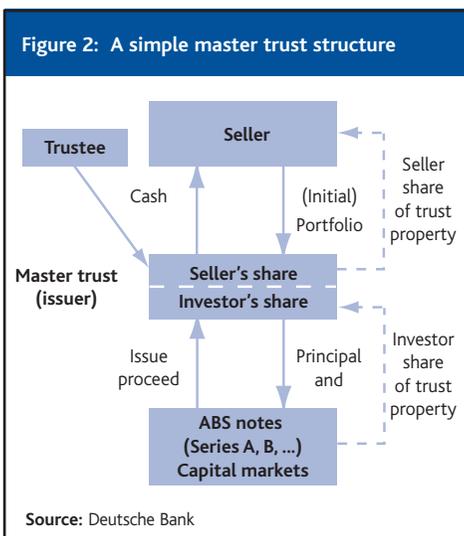
The basic structure of a UK prime residential mortgage-backed securities (RMBS) master trust is theoretically relatively simple, with a revolving pool of mortgages that collateralises both the seller share and the funding share, which have a joint interest in the trust property. However, as any analysis of Northern Rock's Granite trust will show, in reality the mortgage master trust is a complex template that is structured with numerous triggers that serve to capture the risks related to collateral, structure and seller, with breach of these covenants often triggering one or more requirements, such as ceasing trust replenishments, increasing reserve funds or switching to sequential payment of principal.

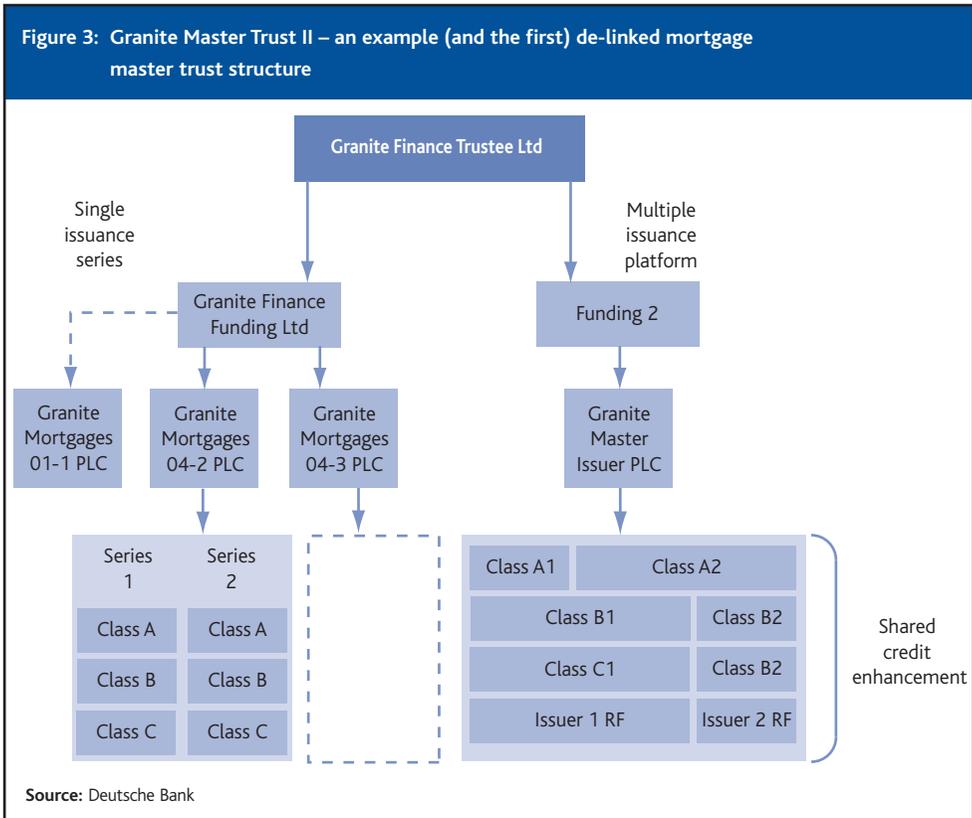
Before moving further, it is worth recapping on a number of terms. The investors' or funding share is equivalent in value to all the RMBS tranches outstanding (less principal deficiency ledger (PDL) debit balances), the proceeds of which are used to purchase a portion of the receivables from the originator. The seller share is equivalent in size to total mortgage pool less funding share. The classification of individual tranches is by issuer (eg, RMBS deal), then by series (eg, three-year maturity), then by class (eg, rating) and lastly by individual tranche, which may be of a specific currency and coupon



type. An example of this is Granite 2007-2 2C2, which is Granite 2007 issue 2 series 2 class C tranche 2, which is euro-denominated, BBB-rated and has a three-year weighted average life.

In 2005, the UK prime RMBS market took one step further forward with the introduction of the first de-linked master trust in the United Kingdom (Granite Master Issuer), backed by the same pool of mortgages as the original structure, but requiring a second 'funding' (see Figure 3). 'De-linked' refers to the fact that it is possible to issue individual tranches rather than the full capital structure as long as following the issuers' requirements – there remains sufficient credit enhancement for each class of bonds. The term 'master issuer' refers to a shelf issuance programme, which is familiar to many investors from medium-term notes programmes and is both time and cost effective. In theory, both the ability to issue advance issuance of subordinated bonds followed by subsequent independent issuance of senior notes and the advantage of using a shelf issuance programme enable a quicker response to reverse enquiries. This has yet to materialise in a way that has been common in US credit card asset-backed securities de-linked trusts, however.





Still, two obvious benefits to date have been the reduced costs associated with no requirement to incorporate a new special purpose vehicle for each issuance and also a leaner shelf issuance documentation process, which uses a base offering circular together with a pricing supplement, the latter the only requirement for each new issuance.

**Concept of the seller share**

The seller share is a form of overcollateralisation rather than credit enhancement and ranks *pari passu* with the investor share. It not only mitigates certain risks including set-off risks but, subject to size, may also facilitate the issuance of time-tranched soft bullet and hard bullet bonds. These tranches of different maturity,

currency, rating and coupon type enable the seller to maximise demand for its bonds and, therefore, both minimise cost and diversify its funding base. The minimum seller share requirement imposed by rating agencies is in place to mitigate a number of non-credit risks. These include:

- borrowers offsetting deposit accounts, which are also held with the seller, against their mortgage following the insolvency of the seller;
- uncertainty regarding the enforceability of flexible mortgages; and
- the possibility of the lender being unable to make further advances on flexible mortgages following insolvency.

Each trust has a different minimum seller share requirement and may in practice choose to have a seller share as high as 50 per cent, depending on the seller's business model. A much larger seller share enables a master trust to generate sufficient cash flows to issue bullet repayment tranches in addition to controlled amortisation tranches. Bullet repayment is favoured by investors and may contribute to tighter spreads plus the additional benefit to the seller of more competitive interest rate and currency swap pricing. However, a large seller share is really economically viable only for a bank lender that has access to cheap and plentiful retail and wholesale funding sources that are used to fund the seller share.

### Trust cash-flow waterfalls

Master trusts have separate interest and principal cash-flow waterfalls, which direct cash flow to the multitude of tranches. The master trust structure and its safety net of triggers (see below) enable both principal to be allocated 100 per cent to the investor share and subordinate tranches to have shorter maturities and therefore to pay down prior to more senior tranches. On the other hand, in the cash-flow waterfall, revenue is always allocated according to the respective seller and investor or funding shares. At the investor level, revenue is allocated depending on the type of trust. Within a capitalist trust, the *pro rata* allocation for each issuing vehicle is calculated based on total outstanding note principal less PDL debit balances for each issuer, but in socialist trusts revenue flows down the waterfall in order from one class to another. In capitalist trusts individual issuing vehicle can be thought of as looking after themselves before other issuers, while in socialist trusts cash flows are shared equally in turn by rating level.

In capitalist master trusts (eg, Granite 01-1 to 04-3), each issuing vehicle is legally separated in a way that means that an issuer will 'selfishly' take all it needs from its *pro rata* allocation of interest and principal before passing on the excess spread to other issuing vehicles, should those issuers have a shortfall, before the remainder is finally passed on to the seller. Therefore,

within each standalone issuing vehicle, principal and interest are then allocated sequentially 'downwards', while losses are allocated sequentially 'upwards' from the issuer reserve fund up to the triple-A bonds. Surplus interest (excess spread) or principal is then shared *pro rata* between those issuers with a shortfall.

On the other hand, socialist trusts (the bulk of master trusts including Granite de-linked from 05-1 onwards) are based on a more sharing environment where interest and principal is allocated by class (or rating level) rather than by distinct issuing vehicles, and then within each class by revenue or principal due to each tranche scheduled for payment in that specific period; only then is the excess cash flow passed on to the next lower-rated class, where it is again shared between the tranches of that class. One can think of revenue flowing through one class before flowing down to the next class and so on. This means that exposure to losses will be almost identical for a given class or rating level in a socialist trust because cash flows are not passed to subordinate classes until all tranches have received the amounts due to them. Therefore, unlike capitalist trusts, there is no requirement for excess spread to pass back round the cash flow waterfall, as all available revenue is taken on its path through the classes

### Credit and structural support

The two types of trust differ materially in terms of reserve funds. In capitalist trusts each standalone issuing vehicle has its own specific reserve fund and that issuer benefits if senior tranches have paid down or if pool quality has improved. On the other hand, in socialist master trusts all issuing vehicles share a single reserve fund. So, in times of weakening pool performance older issuers benefit from the fact that the reserve fund is re-assessed each time the trust is re-rated for the launch of a new issue and therefore increases in size. There are also other reserve funds in the complex world of the UK master trust. Should excess spread drop below a specified level, there may be a requirement to trap remaining excess spread into an additional reserve fund. Furthermore, should the seller

rating drop below a defined rating level, excess spread may be trapped into a liquidity reserve, as we briefly describe below. Interestingly, in the last remnants of capitalist master trusts, Granite Funding 1, there is in fact a second reserve fund, which was structured initially to trap excess spread to fund the issuer-specific reserve funds of future issuers, but has built up considerably since the launch of the socialist de-linked master trust in early 2005.

Reserve funds aside, the credit enhancement for RMBS tranches is provided by subordinated tranches, reserve funds and excess spread. However, how this is achieved in mortgage master trust structures is exceptionally complicated. Under normal circumstances, prior to a trigger event, tight substitution criteria are in place to maintain the credit quality of the underlying portfolio, and the investor share receives all principal receipts up to its target amount and the remainder is passed to the seller. Under stressed scenarios such as insolvency of the seller or under-performance of the securitised mortgages, early amortisation may be triggered in order to preserve triple-A note principal. Stressed scenarios may cause two types of trigger event. An asset trigger event occurs when an amount is debited to the Class A principal deficiency ledger. Following an asset trigger event, principal is distributed *pro rata* and *pari passu* to the seller and investor shares according to their respective shares. A non-asset trigger event occurs upon insolvency of the seller, breach of the minimum seller share or minimum trust size or failure to appoint a new administrator following termination of the administration agreement. Following a non-asset trigger event, the mortgage trustee allocates principal 100 per cent in favour of the investor share until this is reduced to zero in order to return note principal as quickly as

possible, but revenue continues to be allocated *pro rata* between the seller and investor shares.

Following both types of trigger event, in order to protect AAA-rated tranche principal, the notes then redeem sequentially by class, starting with the Class A notes, typically in order of legal final maturity for a non-asset trigger and *pro rata* for an asset trigger. This is a particularly onerous event for short-dated subordinate tranches, as we articulated in our recent report on Granite.

There are numerous additional triggers and conditions that have been designed to protect AAA principal. Triggers that may limit *pro rata* payment of principal or redemption of subordinated tranches include arrears, reserve and subordinated principal tests and – in de-linked trusts – a test of sufficient credit enhancement before redeeming subordinate bonds. A number of triggers will also lead to the cessation of replenishment and perhaps increase in reserve account requirement. These include the seller's rating, notes not being called after a step-up in coupon and the extension threshold trigger.

Finally, mortgage master trusts are also typically structured with liquidity facilities to cover any temporary interruptions to cash flow. Most trusts are structured with committed external liquidity facilities. However, in a number of trusts such as Granite and Lothian, liquidity is derived 'internally' - that is, by using excess principal in any given period. Rating agencies adjust the credit enhancement for such deals by sizing for the potential internal liquidity requirements.

(See Table 1 comparing key features of UK mortgage master trusts outstanding.)

*This chapter is taken from previously published Deutsche Bank research.*

**Table 1: Comparing UK mortgage master trust structures**

	Granite	Permanent	Mound	Pendeford	Holmes	Lothian	Aire Valley	Fosse	Arkle	Gracechurch
Originator	Northern Rock	Halifax (HBOS)	Bank of Scotland (HBOS)	Bank of Scotland (HBOS)	Abbey	Standard Life	Bradford & Bingley	Alliance & Leicester	Lloyds TSB	Barclays
AAA credit enhancement	11.60%	8.30%	14.20%	9.70%	8.00%	8.50%	13.20%	8.50%	11.00%	10.50%
De-linked socialist structure	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes
Multi-issuance master issuer programme	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Basis swap provider	Northern Rock	HBOS TS	Bank of Scot.	Halifax Plc	ANTS	Standard Life Bank	B&B	A&L	Lloyds TSB	Barclays
Basis swap rating trigger (Fitch)	F1/A	F1/A	F1/A	F1/A	F1/A	guar. BY DB	F1/A	F1/A	F1/A	F1/A
GIC provider	Northern Rock	Bank of Scot.	Bank of Scot.	Bank of Scot.	Abbey National	Barclays Bank	HSBC Bank	A&L	Lloyds TSB	Barclays
Liquidity support	3% liq. res. fund build up from principal if seller below A-	Liquidity facility	Liquidity facility (Mound 1 to 3)	Liquidity reserve subject to a rating event	Liquidity Facility	Liq. res. fund build up from principal if seller below A3	Liquidity facility	Liquidity reserve fund	3% liq. Res. fund build up from principal if seller below A-	3% liq. res. fund builds up from principal if from principal if seller below A-
Liquidity facility provider	NA	JP Morgan Chase Bank	Barclays	NA	RBS	NA	Rabobank	NA	NA	NA
CCY swap rating trigger (Fitch)	F1/A+	F1/A+	F1/A+	F1/A+	F1/A+	NA	F1/A+	F1/A+	F1/A+	F1/A+
Min/seller share	7.10%	5.00%	21.60%	6.00%	4.70%	15.20%	5.00%	4.00%	4.40%	6.50%
Substitutions rating trigger (Fitch)	A-	F1	F1	F1	F1	Baa2 (Mdy/s)	F2	F2	F2	A-
Arrears threshold for substitutions	90+ arrears 4%	90+ arrears 5%	90+ arrears 6%	90+ arrears 5%	90+ arr >4% or 12m arr gross int > 2%	90+ arr >4% or 12m arr gross int > 2%	90+ arrears 5%	90+ arr >4% or 12m arr gross int > 2%	90+ arrears 4%	90+ arr >4% or 12m arr gross int > 2%
All principal receipts direct to outstanding AAA tranches if PDL debit, reserve account below required amount OR ...	90+ arrears >4%	90+ arrears >5%	NA	90+ arrears >5%	CE < required amount or > 90 arrears >5%	90+ arr >4% AND last 12m arr as % gross int > 2%	90+ arrears >5%	shortfall on cash accum req AND 90+ arrears >4%	90+ arrears >4%	CE < req amt, 90+ arr >4% or last 12m arr as % gross int > 2%

Source: Offering Circulars, Source: Deutsche Bank. As at end 2007