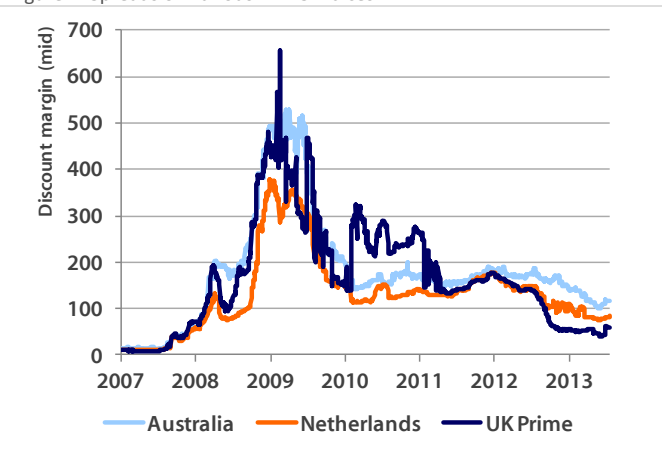


## Dutch RMBS: a primer

### 1. Introduction

What distinguishes Dutch residential mortgage-backed securities (RMBS) from other investment instruments? Resilient structures and strong collateral performance are certainly strong advantages of Dutch RMBS. Even so, the crisis prompted substantial spread widening on the securities, which clearly do not reflect robust fundamentals, for example delinquency and foreclosures rates that have remained very low. Fortunately, this disconnect between market and collateral performance has largely corrected over the last few years. Current discount margins on the senior tranches are still higher than the pre-crisis years, but recent market performance has been strong.

Figure 1: Spreads on various RMBS indices



Source: Markit

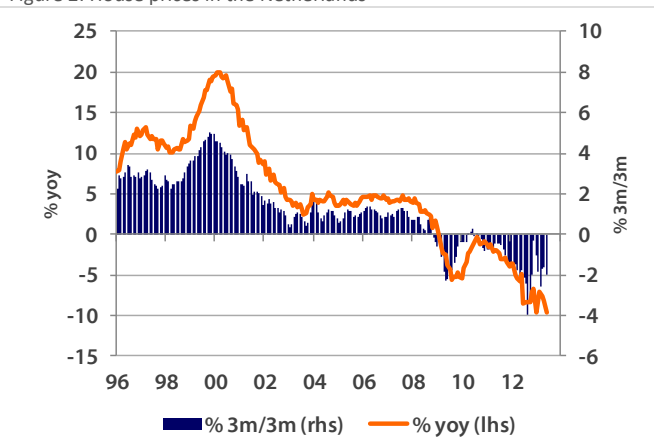
Overall, there appears little cause for concern. Nonetheless investors have closely monitored Dutch RMBS in recent years. Their concerns are likely related to the Dutch housing market, which has faced five years of continuous price declines. After peaking in 2008, the average house price has fallen by 21%. Moreover, the Dutch economy as a whole has been struggling to achieve growth. Unemployment levels are still low by international comparisons, but are nevertheless rising. These factors could potentially affect future performance of Dutch RMBS. Negative experiences in other countries that have been affected by overall malaise in their residential housing markets are neither helpful for confidence.

In our view, these concerns clearly illustrate that RMBS is a credit product in which macro-economic developments do matter. Developments in the global economy cannot be ignored, but typically domestic factors are much more important to consider. As we will discuss later, the current adverse situation in the Dutch housing market is not the result of oversupply (such as in Spain) or large-scale speculation (US and Ireland).

Instead, regulatory and tax changes, and the related uncertainty, appear to be important drivers behind the decrease in house prices in the Netherlands. Fortunately, the tide appears to be turning slowly. The number of housing transactions seems to be stabilising, and affordability is now clearly a positive factor. In our view, stabilisation in house prices could occur from mid 2014 onwards.

This is not to say that there is no reason to be cautious. Materially lower house prices in combination with generally high LTV levels and rising unemployment are resulting in higher credit risks to mortgage loans. Given lags in both the housing and labour market, this process is likely to continue in the next few years. However, the structure of Dutch RMBS are an important strength and should not be ignored. All prime transactions contain ample loss absorbing capacity in their structures, meaning that further deterioration in the housing market is very unlikely to result in losses for senior noteholders.

Figure 2: House prices in the Netherlands



Sources: CBS, Rabobank International

This publication will discuss these themes in more detail. We will give a broad overview of the Dutch RMBS market, take a look at the collateral assets in Dutch RMBS, describe the mortgage market, discuss the structures themselves, and finally focus on credit risks. This discussion will follow a top-down approach, in which the overall economic context and the situation on the housing market dominate, both from a cyclical and structural perspective.

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## 2. Collateral assets

All Dutch RMBS transactions are backed by residential mortgage loans, generally originated in the Netherlands and granted to borrowers with a good credit history ('prime' segment). All mortgage loans in the structures rank as first-lien (or first and sequentially ranked) and are almost exclusively backed by owner-occupied houses.

### General features

Dutch mortgage loans have a typical maturity of 30 years. The legal maturity can be longer (even indefinite), but redemption is often scheduled to take place after 30 years. The actual life of a typical mortgage loan is often shorter. Earlier redemption (prepayment) typically takes place at the interest rate reset date, because penalty-free refinancing can take place at this pre-determined moment. Free prepayment is also possible in case of relocation. Penalty fees are typically involved for other unscheduled prepayments, typically if exceeding 10-20% of the principal amount.

The mortgage loans are secured by vested mortgage rights on real estate property. The originator has the right to foreclose this property if the borrower is no longer able to fulfil their obligations. This right is legally embedded in Dutch mortgage legislation. The recourse to the borrower is in most cases wider than only to the underlying property. If a bank mortgage right is vested, the originator has full recourse to the borrower and can make claims to his or her wealth and even to future income. This recourse is often limited in case of personal bankruptcy of the borrower, which has to be determined by court. Nevertheless, the Dutch personal insolvency regime is rather strict and is a scenario that many borrowers try to avoid by all means.

### Important changes to tax system

The Dutch mortgage market cannot be described without referring to the Dutch tax code. The Dutch income tax system allows for full deduction of mortgage interest payments. This tax deduction is constrained to owner-occupancy and limited to 30 years in duration, but it is nevertheless very generous. With relatively high marginal income tax rates (up to 52%), the government is effectively subsidising mortgage-servicing costs to a large extent. The tax benefit is not constrained in size, i.e. the larger the mortgage loan (and the bigger the house), the larger the deduction. Other housing-related taxes partially unwind these benefits, but the full deductibility feature still incentivises mortgage lending. In our view, it is also the primary reason why mortgage debt is so high in the Netherlands.

The government has imposed two important changes to this tax system recently.

First, all mortgage loans originated from 1 January 2013<sup>1</sup> onwards must amortise at least on full annuity basis in 30 years in order to benefit from interest tax deductibility. Other types of loans, including those with partial annuity, are not prohibited but no longer qualify for any favourable tax treatment. All mortgage loans originated prior 1 January 2013 are still subject to the old tax regime (no conditions on amortisation). Effectively, the government has created a marked difference between 'old' and 'new' mortgage loans. Benefits on the 'old' mortgage loans can be grandfathered in case of refinancing and/or relocation.

Second, the government has announced to limit to the maximum tax deductibility from 52% currently to 38% in 2042, but this change would be so gradual (0.5% per annum) that its impact is almost negligible. This gradual reduction will commence in 2014.

### Product structure

The Dutch tax system, as it existed prior to 1 January 2013, has resulted in quite a complicated mix of mortgage loan products. In order to benefit from maximum tax deductibility, nearly all mortgage products share the common feature of a bullet principal payment at maturity. As such, interest payments are maximised over the life of the loan (and so is the tax advantage). Except for interest-only loans, capital accumulation for delayed principal payment takes place in linked savings or insurance products. This reserved capital is generally exempt from wealth taxation, making such mortgage product structures very tax-efficient. 'New' mortgage loans (originated after 1 January 2013) will largely consist of plain-vanilla annuity or linear mortgage loans. Still, due to the grandfathering of tax benefits for borrowers before 1 January 2013, 'old' mortgage products can still be originated, but this will only occur in case of refinancing and/or relocation.

Before describing the most used loan products in more detail, it is worth stressing that typical Dutch mortgage loans often consist of a combination of different loan products, being split in different loan parts. A typical Dutch mortgage loan consists of 2 or 3 loan parts, but a higher number is not uncommon. In stratification tables in RMBS reporting, the distribution in product mix is calculated on the basis of loan-parts. For risk calculations however (LTV, delinquencies, etc), the information is usually provided on an overall loan level.

<sup>1</sup> The date of purchase of the underlying property, and not the date of official transfer and mortgage origination, marks the official cut-off date. All houses purchased by 31 December 2012 can still be financed with a mortgage loan with the 'old' tax benefits. This mortgage loan has to be originated by 31 December 2013.

## Interest-only (I/O)

In these mortgage loans, principal is neither being redeemed nor accumulated in linked products. These loans are typically taken in order to reduce servicing costs, or alternatively, to achieve income tax savings. Up to 2010, there were no hard limits on the origination of I/O<sup>2</sup>. In fact, typical loans could consist up to a significant share of interest-only parts, subject to the originator's underwriting criteria. The updated Mortgage Code of Conduct that came into force in 2011 restricted the interest-only part in mortgages loans to 50% of the total loan amount. Until recently, I/O loans were the most used mortgage loan product, with market shares up to 60%. This market share is expected to drop significantly going forward, because 'new' mortgage loans have to amortise in order to get tax benefits

## Bank savings

Until recently bank savings mortgages used to be the second-most popular mortgage product. This structure is largely identical to an annuity mortgage loan, except that principal is not being paid down over the life of the loan, but accumulated in a linked bank savings account. The interest rate on the linked savings account is typically equal to the interest rate on the mortgage loan itself. The bank savings structure was introduced in 2008. Before this date, the tax code only provided tax exemptions to linked insurance products. Bank savings are more transparent and carry a lower cost structure than most insurance products, hence they have gained substantial market share in the last few years. From this year onwards, bank savings loans will only be originated in case of refinancing/relocation of 'old' mortgage loans. Bank savings products in 'new' mortgage loans don't qualify for favourable tax treatment.

## Savings insurance

Before the introduction of bank savings loans, savings insurance used to be the second-most used mortgage product. It is almost equal to the structure of bank savings, but instead of a bank account, a life insurance product is linked to the mortgage loan. The borrower pays a monthly insurance premium, in which capital is accumulated for bullet repayment of principal at maturity. The insured principal can often also be claimed in case of death of the borrower. If there are two borrowers (as is typical in multi-person households), the life insurance is often cross-linked between partners. The interest rate received on the savings insurance is in most cases also equal to the interest rate paid on the mortgage loan. As such, the payout of the life insurance product is guaranteed.

## Life insurance

This structure also uses a life insurance product for separated accumulation of funds for principal repayment. In contrast to

savings insurance, there can be a difference in return of the insurance product and the mortgage interest rates. Hence payouts are not always guaranteed and could be subject to the investment returns of the life insurance company. This structure was the first mortgage product that achieved maximum tax savings by deferring principal payment until maturity.

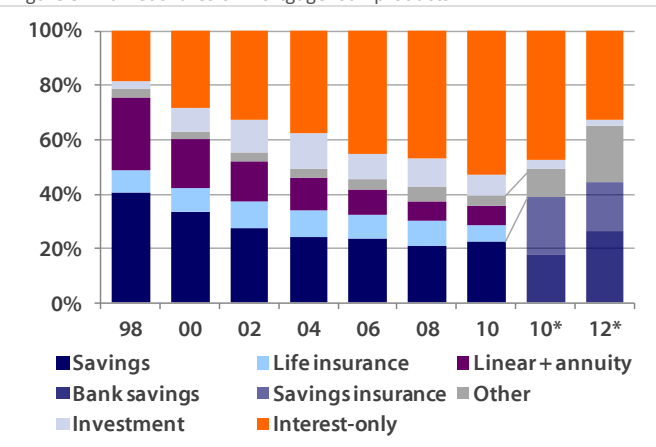
## Investment insurance

This product structure is another variant of the insurance product. The accumulated capital for deferred principal payment is invested in linked retail investment accounts, rather than saved. Investments usually take place at the discretion of the borrower in a range of pre-defined investment funds. Monthly additions to this insurance product are dependent on the assumed rate of return of the investments. Payouts are not guaranteed. Hybrid loans (or switch mortgage loans) are combinations of savings loans and investment insurance.

## Traditional mortgage loan products

Due to the tax incentives, traditional mortgage loans, such as annuity and linear, were not popular at all in the Netherlands. This has changed. Only these loans qualify for tax deductibility for 'new' mortgage borrowers. As such, these loans will become dominant in future RMBS transactions.

Figure 3: Market shares of mortgage loan products



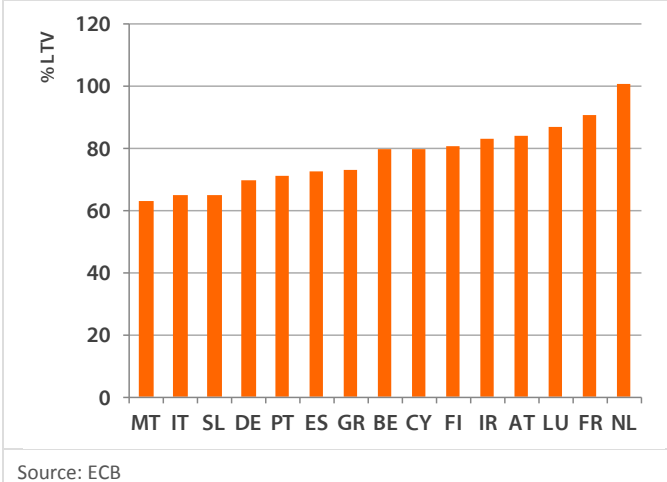
Sources: Dutch Association of Insurers, \*AFM consumer survey, calculations Rabobank International

## Underwriting

Underwriting criteria of different originators are rather homogenous and follow from the industry standard (Mortgage Code of Conduct) or newly introduced underwriting legislation. The degree of leeway to these standards was considerable until 2007, moderate between 2007 and 2011 and virtually non-existent thereafter. Despite this large degree of self-regulation in the past, underwriting standards have always been rather conservative in comparison to other countries. The non-prime segment for example (for borrowers with below average credit scores) has never really taken off.

<sup>2</sup> NHG mortgage guarantee criteria restricted the I/O share to 50% LTV.

Figure 4: Loan-to-value ratios



Source: ECB

### Loan-to-value (LTV)

Dutch mortgage loans are characterised by relatively high LTV ratios. In our view, this fact is mainly caused by tax incentives. In recent years, pressure has mounted to lower LTV ratios. Specific legislative underwriting criteria, including strict LTV restrictions, have been in force since 1 January 2013. This legislation restricts origination of mortgage loans to 105% LTV. This limit is set to decrease further to 100% by 2018, by 1% per annum. Prior to 2013, the maximum LTV was set in the Mortgage Code of Conduct. In the last years the regulator (AFM) has insisted on full compliance to this industry standard. The Code of Conduct sets a maximum LTV of 104%, plus the relevant stamp duty (now 2%, previously 6%). Prior to 2011, deviations from the Code occurred often and loans with higher LTVs were originated. An updated version of the Mortgage Code of Conduct, including the new legislative LTV limits, is likely to apply soon.

### Debt-to-income

Strict debt-to-income limits are now also included in the special legislation on underwriting. These specific limits largely follow from The Mortgage Code of Conduct. In 2007, this code introduced a standardised method to calculate the maximum mortgage amount on basis of a fixed ratio of housing expenditures to total income ('woonquote'). This uniform ratio follows from an annually updated income set calculated by NIBUD, a Dutch consumer advisory body. As a rule of thumb, the maximum mortgage loan amount equals 4 to 5 times gross income for an individual. From 2007 onwards non-compliance to this ratio had to be 'explained'. This often happened, especially for young borrowers with good job prospects. Debt-to-income ratios above 6 have been recorded but were very rare. From 2011 onwards, a stricter regulator has significantly reduced the leeway for non-compliance.

### Mortgage interest rates

The distribution between floating and fixed rate mortgage loans is dependent on the year of origination (vintage), but the overall majority of mortgage loans carry fixed interest rates. Nonetheless, a fixed rate for the full term of the loan is very uncommon. Instead, interest rates are usually fixed for a specific period, often ranging from 5 to 15 years. At this specified date the interest rate is reset. The originator pre-announces this event and has to provide an offer for a new rate (and term).

For the borrower, there is interest rate risk involved in the mortgage loan. In case of a higher rate environment, the servicing costs of the mortgage could rise materially at the reset date. This risk is much lower than in floating mortgage rate regimes that exists in other countries. Moreover, such resets are usually known in advance, so conversion of an entire portfolio will be very gradual. RMBS structures are not directly exposed to mortgage interest-reset risk because of the interest rate swap that is (often) embedded in the structure.

### Nationale Hypotheekgarantie

'Nationale Hypotheekgarantie' (NHG) is the public-run mortgage loan guarantee system in the Netherlands. The insurance is managed by the 'Waarborgfonds Eigen Woningen' (WEW) and was established by the government in order to stimulate home-ownership among lower-income households and first-time buyers.

The insurance protects the borrower from any residual debt that may exist after a forced sale of the house, conditional that it has been caused by unforeseen life events such as death, unemployment, long-term illness, and most importantly, divorce. In reality, the protection is mainly for the creditor, who has to claim the credit loss at WEW.

The insurance system is fully funded. Borrowers pay upfront a lump-sum insurance fee (currently 85 bps of the loan value). There is an incentive for the borrower to do so, because the lower credit risk results in a lower mortgage interest rate. Moreover, the insurance fee can often be financed through the mortgage loan itself.

The NHG fund is currently EUR 787 mn in size. WEW guarantees a notional mortgage principal of EUR 159 bn. The capital ratio of 0.49% of the fund seems a bit low, but WEW has an explicit back-stop agreement with municipalities (50% of mortgages originated until 2011) and the government (50% until 2011, 100% of mortgages originated thereafter). If the fund appears to be running empty, the government is obliged to provide interest-free loans to the fund. In this way, the government is effectively guaranteeing mortgage loans with a NHG guarantee.

Strict underwriting criteria do apply to NHG, of which the maximum value of the house is the most important. Currently, the maximum guaranteed amount is EUR 290,000. During the crisis the government temporarily increased this cap from EUR 265,000 to EUR 350,000 in order to stimulate the housing market. This cap is being lowered back in several steps to the original value of EUR 265,000, which will apply again on 1 July 2014. Several strict checks, such as on credit history and income, have to be applied prior to origination. Since 1 January 2013, the mortgage loan has to amortise completely within 30 years. This is in line with the updated tax code. Prior to this date, a 50% LTV restriction did already apply on interest-only loans, as was the LTV cap of 104% plus stamp duty.

The originator, and if securitised, the RMBS noteholders, are better protected against credit risks with the NHG guarantee in place. There are some caveats however. If a claim is made to NHG, WEW will check whether underwriting criteria of the relevant loan were in line with policies. In other words, this check is made *ex-post* and could potentially result in a rejection of the claim. This does happen. In most RMBS structures, rejection of a NHG claim implies a breach of the *representations & warranties* and the seller is often obliged to repurchase the (delinquent) loan from the structure. Another important consideration is that NHG covers losses on basis of full amortisation in 30 years, irrespective of the amortisation profile of the loan product itself. This implies that loans involving an interest-only part, the pay-out ratio could be below 100%. Last, but not least, WEW enjoys the same rating as the Dutch government (Aaa/AAA). As such, there could be credit rating risk involved to the government.

### 3. Structure

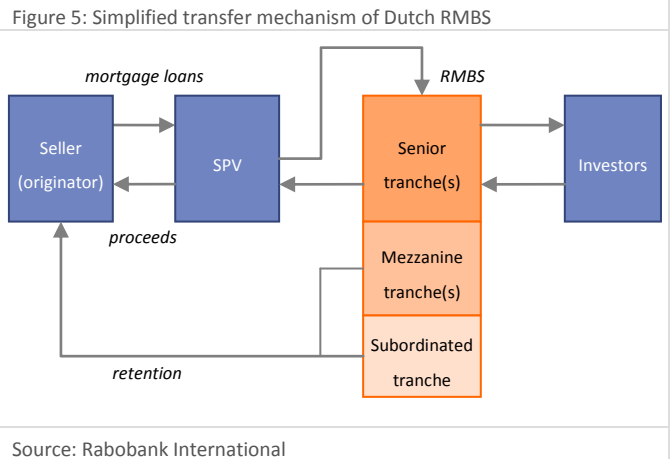
Dutch RMBS are pass-through securitisation structures, in which a dedicated special purpose vehicle (SPV) buys the collateral assets from the seller's balance sheet via a *true-sale* transaction. In most structures, borrowers are not being notified of this transaction and continue to make their mortgage payments to the originator. The SPV funds itself by issuing different notes to investors, constituting various senior, mezzanine and subordinated (equity) claims. These notes are also referred as tranches and typically carry coupons that consists of a floating rate (i.e. 3-month Euribor) plus a mark up (called the margin). The margin is set on the pricing date, whereas the true sale of the mortgages takes place at the closing date.

Unfortunately, details of the structures differ across transactions. Some degree of harmonisation has however occurred in recent years. On a European level, most new Dutch RMBS transactions are compliant with the European PCS<sup>3</sup> standard. Harmonisation of Dutch structures has also been achieved through the Dutch

<sup>3</sup> Prime Collateral Securities

Securitisation Association (DSA)<sup>4</sup>. Among other things, members of this industry group use a similar template for prospectuses and investor reporting.

Even though identical structures are rare (loan portfolios are, by definition, different for stand-alone transactions), it is still possible provide a general outline of Dutch RMBS structures. The most important elements are discussed below. It has to be stressed that this description is not definitive or fully complete. Thorough analysis of each individual structure is important.



#### Recourse

All tranches have recourse to the SPV following specific subordination. In most structures, non-subordinated tranches have also recourse to underlying collateral assets. Most Dutch transactions are stand-alone, implying that each securitisation transaction involves a dedicated pool of mortgage loans. Only one seller uses a master issuer trust framework in its RMBS programmes. In such structures, multiple securitisation transactions have recourse to one larger collateral pool of mortgage loans.

#### Interest and principal cash flows

Payments in the securitisation follow sequential structures. This means that after incurring third party costs (to maintain the structure), the notes are paid in order of seniority. In general, interest (revenue) and principal payments on the mortgage loans in the structure are separated in two distinct 'waterfalls'. Only if the SPV cannot meet its obligation to the most senior noteholders (enforcement), are these two waterfalls replaced by one cash flow sequence for both interest and principal payments.

#### Revenue waterfall

Interest payments on the mortgage loans and other non-principal related cash flows in the structure are channelled to take care of coupon payments on the tranches. This channelling often involves the usage of a swap structure. In most RMBS

<sup>4</sup> See [www.dutchsecuritisation.nl](http://www.dutchsecuritisation.nl)



transactions, coupon payments occur quarterly on an accrual basis and consist of a pre-determined margin above the 3m-Euribor fixing at the beginning of the accrual period.

### **Principal waterfall**

Principal payments on the tranches follow the amortisation behaviour of the underlying mortgage loans. Prepayment risk is directly passed-through to investors, subject to specific subordination. In general, the most senior tranche is amortised at full first, before the next senior tranche starts to amortise. Principal losses are recorded in reverse order.

### **Loss recording**

Not only are cash-flows of the mortgage loans passed-through to the different tranches, but also losses to the underlying mortgage loans are captured in the structure. In general, realised principal losses are debited on a special ledger, called the Principal Deficiency Ledger (PDL). Each tranche has its own PDL. Losses accumulate sequentially, with the PDL of the most junior tranches being debited first. The PDL accumulates with realised losses over time, but is usually also depleted by the revenue waterfall using the excess spread (see swap structure). As such, the excess spread is an important source of credit enhancement and usually ensures that PDLs remain at zero balance.

The PDL is settled with the principal amount of the tranche at maturity. As such, principal losses are only incurred by note holders at redemption of the tranche.

### **Credit enhancement**

Senior tranches of Dutch RMBS transactions benefit from a considerable degree of credit protection. Direct credit enhancement is achieved by excess spread in the swap structure, subordination of junior tranches and the instalment of a reserve account fund. Typically, liquidity protection is created by the presence of a cash advance facility.

### **Excess spread in the swap structure**

Most transactions make use of a swap structure, in which most non-principal based cash flows from the underlying mortgage loans are swapped into coupon payments of the tranches. The counterparty of the swap is typically the seller, and if the rating is inadequate, another (investment) bank with sufficient ratings. The latter has often a back-to-back swap in place with the seller.

The margins on the mortgage loans often exceed the margins paid to the tranches. As such, the swap structure results in a retained interest in the revenues of the mortgage portfolio by the seller. The SPV's stake in these revenues is not zero. Extra credit enhancement is achieved by an excess spread in the swap structure, typically consisting of a guaranteed 35-50 bps of the

notional balance per year. In most cases, this excess spread is deducted from the fixed leg of the swap (i.e. the SPV's payments to the counterparty). The extra amount of liquidity that remains in the structure is used to cover costs, shortfalls in coupon and principal payments (through reductions of PDLs), and, if needed, to replenish the reserve account. Excess spread is a strong form of credit protection because it is continuously present as long as the interest swap is in place.

### **Reserve account**

The reserve account is an extra amount of liquidity and credit enhancement in the structure and can potentially be used to fulfil interest (and in some cases also principal) obligations to the tranches, again following subordination and sequential pay. At origination, the reserve account is typically credited with the proceeds of the subordinated tranche. Typically, this reserve account equals between 1% and 2% of mortgage principal balance at closing date. In some structures, the reserve account is lower (or even zero) at closing of the transaction. Excess spread is used to replenish the reserve account to a specific target level. The reserve account typically does not amortise over time.

### **Subordination**

Subordination offers a large degree of credit enhancement for senior notes. It does not only result in loss allocation to the most junior tranche first, but also that senior noteholders have first-ranking claims on both interest and principal payments. Moreover subordination often also ensures that replenishment of principal losses in senior tranches rank senior to interest payments on junior tranches.

In some transactions, the senior class notes are split into a fast and slow paying tranche (typically labelled as A1 and A2). The former amortises quickly and typically has an expected life shorter than the first optional redemption date of the complete transaction. The expected life of the A2 tranche is typically much longer than the A1 tranche (e.g. 5 vs. 2 years). In a few transactions, the senior tranche is even split in three. In this case, the A3 notes are labelled as 'very slow paying', since amortisation only kicks in if the A1 and A2 notes are fully redeemed. Extension risks are bigger in such tranches due to possible non-exercise of the issuer's call.

### **Retention**

The seller typically retains the mezzanine and subordinated tranches. As such, the seller retains a significant economic interest in the transaction. This is one of the methods to comply with CRD<sup>5</sup> regulations in Europe. First-loss risks remain with the seller and possible principal/agent problems are largely eliminated.

<sup>5</sup> Capital Requirements Directive, i.e. the European versions of Basel 2.5 and Basel 3



## Liquidity enhancement

The cash advance facility is an extra liquidity line that is present in most Dutch RMBS transactions. This facility is merely a stand-by agreement with the provider to enable the SPV to make coupon payments on the tranches on, and only on, a temporarily basis. Although this risk is remote, it could be the case that in a certain period the cash flows are insufficient to cover interest payments. In this case, the SPV can draw on the liquidity facility. Repayment to this vehicle has to occur however and eventually such cash flows rank senior to note holders in the revenue waterfall.

## Embedded risks

The transfer of the mortgage loan loans from the seller's balance sheet, as well as the complex product nature of Dutch mortgage loans, results in some embedded risks in the RMBS structure. Commingling and set-off are the most relevant risks.

### Commingling risk

Commingling refers to the risk that cash flows of different assets and liabilities cannot be properly separated in an insolvent structure. Although the legal and economic ownership of the underlying mortgage loans has been transferred to the SPV, the cash flows of the underlying mortgage loans often remain with the seller. Borrowers continue to pay the seller in its capacity as servicer. If the seller were declared bankrupt there is a risk that the cash flows belonging to the SPV will be interrupted. Commingling is ultimately a temporarily risk, but it can have quite negative effects on liquidity in the RMBS structure.

Installing a commingling guarantor in the structure, who guarantees proper liquidity flows following an insolvency of the issuer, can mitigate commingling. Stand-by agreements on servicing and/or separated accounts for revenue collection of the mortgage loans are other ways of mitigating commingling risks.

### Set-off risk

Set-off risk also follows from a bankruptcy situation. In case of insolvency, an affected person or entity is entitled to net credit and debit claims (subject to certain conditions). This is a risk for the RMBS structure, because only the borrower's liabilities (mortgage loans) are transferred to the SPV and held as collateral. Netting by the borrower could result in principal losses. Set-off in Dutch structures is especially relevant given the complicated product structure and the presence of linked bank and insurance products.

Set-off risk can be split into two segments.

1. **Product set-off** could occur in the linked accounts that are used for capital accumulation. If the bank or insurer becomes insolvent, the borrower could attempt to offset losses in accumulated capital (e.g. in a insurance product) by decreasing the mortgage loan.

Product set-off in savings-based mortgage products can be mitigated by the use of sub-participation agreements. In these structures, the mortgage loan (liability of the borrower) and the accumulated capital in the dedicated savings account or insurance product (asset of the borrower) will be wrapped into an artificial annuity mortgage loan, so that one net-liability of the borrower will occur in the SPV. Set-off by the borrower is still possible, but these risks are then completely transferred to the relevant insurer or bank.

2. **Deposit set-off** transcends mortgage loans and refers to potential netting of all assets and all liabilities of an individual at a bank in case of insolvency. This risk is especially relevant for deposit-taking mortgage originators.

## 4. Investment risks

Like any other investment product, Dutch RMBS leave certain risks with investors. Currently, regulatory risks seem to be most important aspect to consider. Liquidity risks are currently also highly correlated with regulation. Discussing these topics goes beyond the scope of this publication. 'Normal' investment risks of investing in senior Dutch RMBS tranches are mainly related to maturity (prepayment and call risk). Ultimately, credit risks are important considerations as well, even though the likelihood of credit losses in senior tranches is very small. Because of the pass-through nature of the instruments, the credit risks are solely related to the credit risks of the underlying mortgage loans. The current condition and structure of the economy, the housing market and underwriting criteria are the most important determinants of credit risk.

### Prepayment risk

The most direct risk follows from the pass-through nature of the securities. Principal payments on the mortgage loans are used to redeem the class notes following the waterfall structure. Most structures assume a specific *conditional prepayment rate* (CPR) at origination. Differences in actual prepayment rates could lead to shortening or extension of the assumed maturity date (life) of the notes. This risk is the largest for fast-paying (A1) senior tranches. This maturity risk is purely embedded in the structure.

### Call risk (extension)

The maturity of the other tranches is often dependent on usage of the call option which allows the SPV to fully redeem the notes (typically 5 years after closing). If the SPV cannot find a buyer of the mortgage portfolio and it cannot generate enough funds for such redemption, the call will not be exercised and the effective maturity of the securities will be dependent on the amortisation profile of the underlying loans. The call can still be exercised at each following payment date, but extension risks do clearly

occur. This maturity risk is structured in the RMBS, but is in reality mainly related to the strength of the seller. As such, the strength of the seller still fulfils an important role in RMBS, despite the fact that the underlying collateral assets are truly separated. Credit analysis of the seller is therefore required on an ongoing basis.

### Constant prepayment rate (CPR)

The maturity of RMBS tranches is usually expressed as *weighted average life* (WAL) of the underlying mortgage loans. This method assumes that mortgage loans are being redeemed before their legal maturity date. The maturity concept also incorporates specific assumptions, such as on automatic principal payment and non-scheduled prepayments.

The latter is often expressed as the *constant prepayment rate* (CPR) and measures what share of principal is prepaid over a given period (typically a year). Most transactions assume a specific expected fixed CPR (e.g. 5%) to calculate the WAL of RMBS tranches. This expected CPR is often based on the historical performance of the mortgage portfolio. CPR is especially relevant for the expected life of the fast-paying A1 tranches. A higher than expected prepayment rate results in more principal payments and therefore to an earlier redemption of the tranche. The WAL of the other tranches is usually constrained by the first optional redemption. In other words, the WAL assumes that the tranches are called at a specific date. If this call redemption is not exercised, extension occurs and the actual CPR will determine the true life of the tranches.

### Credit risk

Credit risks of senior Dutch RMBS tranches are largely mitigated by excess spread, subordination and other forms of credit enhancements. Despite the presence of these high firewalls, collateral risk cannot be completely ignored by investors in senior tranches. The collateral risk ultimately refers to the ability of borrowers to pay. Late payments (arrears) and ultimately foreclosure are the main risks. There are three main factors that determine these credit risks on an aggregate level:

#### 1. Macro-economic context

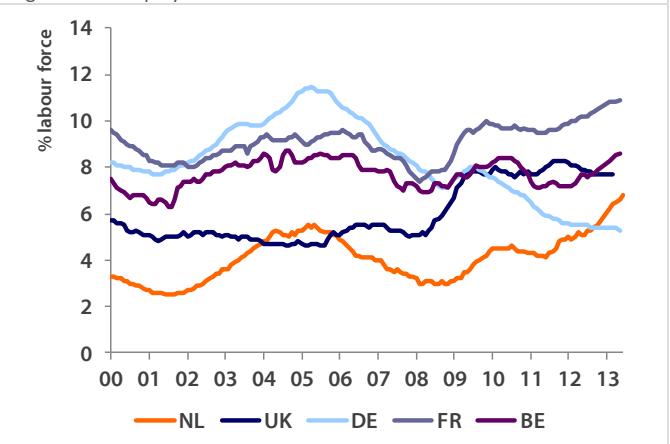
Default behaviour in mortgage servicing is largely related to unforeseen life events, of which divorce is the biggest factor. Divorce rates appear to be relatively steady over time and are yet hard to forecast. Unemployment is the next important driver. This factor is clearly more subject to macro-economic developments. As such, the macro-economic context is important to consider for assessing the *probability of default*.

### Dutch economic outlook

Historical data on Dutch economic growth show a large correlation to growth numbers in neighbouring countries, with Germany in particular. Recently, this correlation appears to have broken down. The Dutch economy has been faced with headwinds that are mainly driven by domestic forces. Especially private consumption has been very weak in recent years. This fragility can be attributed to the rather sluggish post-crisis economy in general, but uncertainty over government policies, pensions and also the adverse situation on the housing market also have taken their toll.

The economy appears to be stabilising slowly. But increased fiscal consolidation, in the current and the next years, will likely prevent a quick rebound in terms of economic growth. For 2013 we foresee a GDP growth rate of -1.0%, whereas stabilisation (0%) is pencilled in for 2014. Unemployment is gradually on the rise, and given the usual lags, it is expected to rise even further in the near future. According to the international definition, the unemployment rate is currently 6.8% (June 2013). For 2013 as a whole, we foresee an average rate of 6.7%, which will likely increase to 7.6% in 2014. While these unemployment levels are still relatively low compared to other European countries, they are markedly higher than the average rate of 3.9% recorded between 2006 and 2010.

Figure 6: Unemployment rates



Sources: Eurostat, Bloomberg

Cyclical developments and the economic outlook are important to consider in assessing credit risks on mortgage loans, but structural elements of the economic structure should not be ignored. In the Dutch macro-economic context, the following elements are strong mitigating factors to debt servicing risks.





- Strong competitive position economy**  
 Largely thanks to its unique geographical situation in Europe, the Netherlands is a very open economy. International trade plays a very important role, with exports and import equalling 88% and 80% of GDP respectively (2012). A huge surplus on the current account (8.2% of GDP in 2012) does not only show a strong competitive position, but also implies that the economy as a whole is achieving a surplus of savings. From a national wealth perspective, this is clearly a positive factor. The drawback of this structure is that economic growth is highly dependent on growth in international trade flows.

- Generous social security**  
 Rising unemployment results in higher loan servicing risks and ultimately to a higher probability of default, *ceteris paribus*. But for the majority of borrowers, unemployment does not result in a sudden stop in mortgage servicing. The social security system offers a large safety net.

Employed people are entitled to receive unemployment benefit payments. On an international comparison basis, Dutch unemployment insurance is relatively generous, both in the amount (up to 70% of last earnings) and in duration (up to 38 months). Regulatory change is likely to result in sobering of this system. There are already some proposals to reduce these benefits, but there seems political agreement to postpone implementation until the labour market recovers.

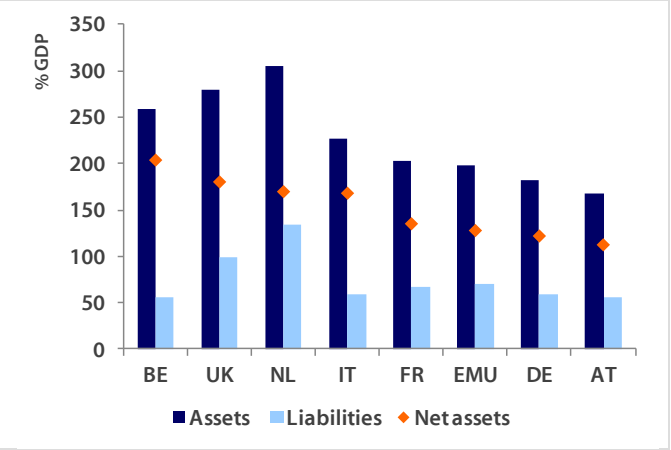
After the expiry of the benefit entitlement period there is another form of social security called income assistance. In contrast to unemployment benefits, this aid is means-tested and only ensures minimal living standards (fixed low benefit payment). Under certain conditions, even homeowners are entitled to receive this form of support.

- Flexible household income**  
 Another risk mitigating factor in mortgage servicing is typically the partner. Part-time employment is very common in the Netherlands. Income losses due to unemployment can in some cases be partly offset by longer working hours by the spouse. As such, dual incomes provide a degree of leeway. In fact, part of the rise in unemployment recently can be attributed by an increase in the workforce. More people are actively looking for work, in order to offset the negative income effects of (possible) job losses of their partners.

Mortgage loans which are originated on the basis of two full-time incomes logically do not benefit from this risk mitigation.

- Wealth**  
 Depletion of assets is another way to service mortgage obligations, although this is for many borrowers often a measure of the last resort. In international comparisons, mortgage debt (expressed as percentage GDP) ranks firmly as highest in Europe. At first sight, this might be considered a problem, especially in a deleveraging economy. The other side of household's balance sheets is often ignored. As a matter of fact, the Dutch hold quite an asset base. The net wealth position of Dutch households is also one of the highest in Europe.

Figure 7: Aggregate financial balance sheets of households (2011)



Sources: Eurostat, Rabobank International

Unfortunately, the majority of household wealth holdings is relatively illiquid. It largely consists of pension or insurance funds and holdings in residential estate itself. In contrast, money on current and savings accounts is relatively modest and clearly less than level of mortgage debt. In recent years however, the level of savings has been rapidly rising. This partly reflects very weak consumption, but also the precautionary build-up of a liquidity buffer.

Macro-economic credit risks to mortgage loans have risen over the last few years. This is likely to continue in view of our expectation that unemployment will increase further in 2013 and 2014. The risk mitigation structures embedded in the economy should counter these negative developments to a large extent, but the probability of default is expected to increase. Future decreases in the social safety net are not an imminent threat, but these developments should be monitored closely.



## 2. Housing market

The condition of the housing market does not have a huge influence on the probability of default. Full recourse to the borrower and the lack of a (speculative) buy-to-let segment make 'walk aways' by borrowers very rare. In most countries the LTV level is an important indicator for assessing the probability of default of a borrower. In the Netherlands, this relationship is far from straightforward given the generous tax incentives. In fact, debt-to-income is a much more relevant indicator.

Still, the health of the housing market is important to consider, because the *loss-given default* is highly dependent on the development of house prices. Rising house prices do result in higher recovery values of delinquent loans, whereas a situation of declining house prices do result in less proceeds from the sale of the property of a delinquent borrower.

### Structure

The large amount of mortgage debt in the Netherlands suggests that the owner-occupied sector is relatively large. While this conclusion is true compared to some European countries (such as Germany), the owner-occupancy rate of 59% (2011) is not particularly high. The remainder of the housing stock is used for rental purposes. Of this, the lion's-share is owned by social housing associations. The public housing sector encompasses 33% of the total housing stock. The government (and the European Commission) are attempting to reduce the size of this sector. According to them, social housing associations should focus exclusively on lower-income households. The remainder of the housing stock (8%) is owned by the private-rental sector. Also this rental market is highly regulated, in particular to the level and rates of increase of rents. Going forward, market liberalisation is also expected in this segment.

Figure 8: Projections for growth in number of households



Source: CBS

### Current developments in Dutch housing market

Recent developments in the Dutch housing market have not been positive. Both the number of transactions and house prices have come under pressure. Almost without interruption, house prices have declined since August 2008. In the past 5 years, an average house has lost 20% of its value. The pace of decline was quite gradual until last year and was mostly the result of the post-Lehman crisis. Since last year however, the pace of price declines has gained momentum, with yearly annual declines up to 9.3%. The number of transactions has also slowed down markedly. In 2006, approximately 18,000 transactions took place per month, whereas this figure has fallen to slightly below 10,000 now.

This pattern resembles the deflation of an asset price bubble, but closer examination reveals this impression is mostly incorrect. First, the speculative buying element is largely missing due to the absence of a buy-to-let market. The behavioural finance bias is however present: most people believed that house prices would keep rising forever. This 'momentum' factor has now reversed, i.e. potential buyers can afford to wait because house prices are expected to drop even further. Large increases in Dutch house prices have also been absent in the last decade. In the late nineties double digit house price growth were recorded, but these increases can be largely explained by fundamental factors (limited supply of new constructions, positive economic climate, low interest rates, tax innovation in mortgage products, etc.)

Increased uncertainty appears to be an important driver behind this current adverse situation. Housing market reforms have been delayed for a long time, but in 2012 it was very clear that something was going to change. Changes in the tax system were the most important source of uncertainty. Clarity on this issue only emerged at the end of last year, when the government applied a less generous tax regime for 'new' mortgage loans. Although this new tax code will result in lower affordability for new entrants to the housing market, it also brings clarity. This should result in some recovery.

The decline in house prices has already resulted in a major improvement in housing affordability, which has correspondingly improved sentiment among potential buyers, which will ultimately translate into more transactions. Indeed, some early signals of stabilisation are already visible. Stabilisation of prices could occur in 2014, although the weak economic outlook still poses a threat to this forecast.

## Long term drivers

Eventually, long-term drivers of house prices will become more dominant. The long-term outlook for housing demand is mixed and uncertain, but long-term supply imbalance appears to be a positive factor for house prices.

Long-term **demand** in the housing market is primarily driven by the growth in population, and more importantly, by the growth in the number of households. A smaller average household size has been a structural demand driver in the past and is unlikely to disappear in the future. Regulatory changes will have a mixed impact on long-term demand. On the one hand, the (public) rental market will become less attractive and could result in more demand for owner-occupied housing. On the other hand, lower tax incentives, incidence of negative equity among younger households for a longer time and a general tightening in mortgage lending standards will reduce housing demand in the long run.

Housing **supply** in the owner-occupied sector has been very inelastic to price changes in the past. Strict building regulations and zoning requirements have resulted in limited construction activity. Oversupply of new homes has never existed. In contrast, there has been a long-term supply deficiency, which is currently only getting bigger due to the very low level of construction activity in recent and which will likely persist for some years.

## Regional differences

Regional differences are present in the Dutch market, but in most RMBS structures concentration risks to specific regions are limited. All major mortgage originators operate nationally.

## Negative equity

The material decline in house prices automatically results in a higher loss-given default of Dutch mortgage loans. This does not imply that each mortgage loan in foreclosure will see a lower recovery amount. Only loans with negative equity are at risk. Still, the amount of negative equity is growing. According to recent estimates by the Bureau of Economic Policy Analysis (CPB), 35% of home-owners are currently in negative equity. Further decreases in the price level are not ruled out, so this risk factor is likely to increase further as well. Eventually house prices should recover, but it could take years before the problem of negative equity will disappear.

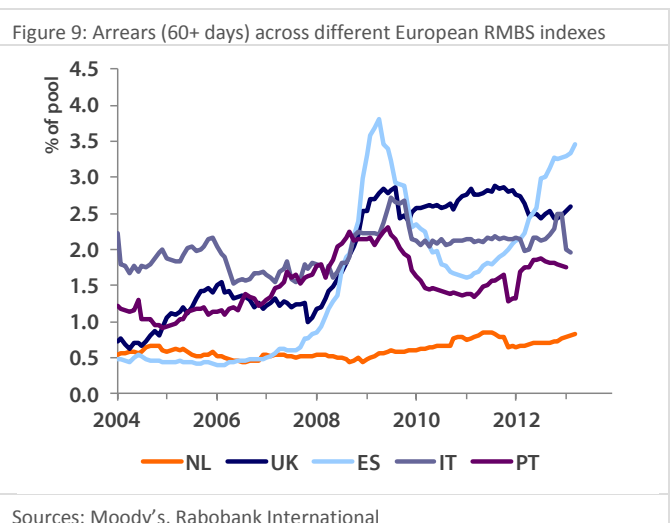
## 3. Underwriting

Whereas the macro-economic context and the situation on the housing market determine credit risks of overall Dutch RMBS structures, performance differences between individual Dutch RMBS transactions are mainly caused by different underwriting criteria. As extensively discussed in the chapter on collateral,

underwriting criteria are relatively homogenous and largely follow from the Mortgage Code of Conduct. Still, differences between originators do occur. Different risk tolerances and business models result in differences in credit quality across mortgage pools. Underwriting criteria are also dependent on time (vintage). In very competitive origination environments, loosening of underwriting standards might have occurred, especially if originators were looking to expand market shares. Unfortunately, underwriting criteria have been tightened after the peak of the housing market has been reached (2007-2008). As such, the mortgage loans originated close to this peak carry also the most credit risk in terms of underwriting. Underwriting criteria determine both the *probability of default* and the *loss-given default*.

## Summing up

Credit risks of Dutch mortgage loans are rising, because both the probability of default (related to rising unemployment) and the loss-given default (related to declining house prices) are increasing. As such, credit losses are edging up. This is likely to continue for a few years. Despite these negative collateral performance issues, the overall level of losses is likely to remain small. Full recourse and nearly full owner-occupancy implies that borrowers will do their utmost to prevent foreclosure. Strong risk-mitigating factors often embedded in the economic structure make this possible. This good loan servicing behaviour is not likely to change. As such, it is not surprising to observe that credit losses in Dutch RMBS structures are still much lower than in other countries, despite all headwinds in the economy and housing market. Even with an outlook of less positive performance figures going forward, credit losses in senior RMBS tranches remain a long way off.





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