# RISK MANAGEMENT OF THE NATIONAL DEBT

EVALUATION OF THE 2008-2011 POLICY

&

2012-2015 POLICY

2011
Dutch State Treasury Agency
Ministry of Finance

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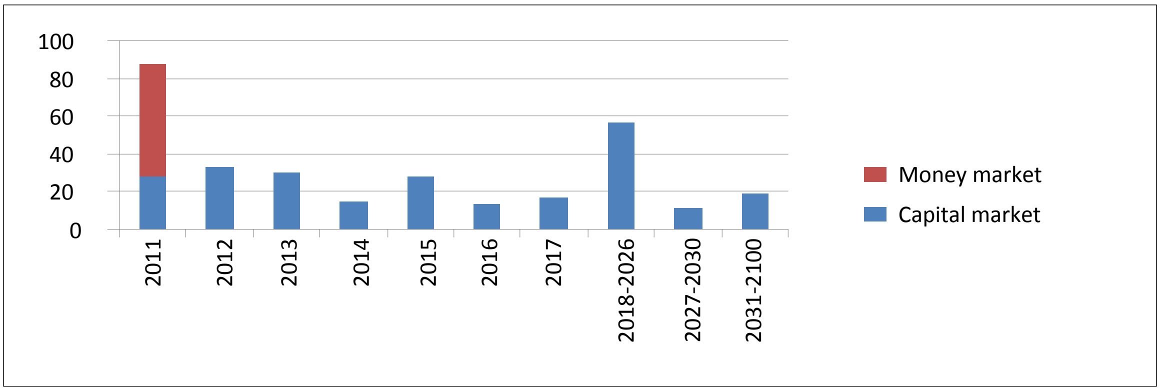
## Executive Summary

### *National debt, funding policy and risk management*

The Dutch State uses a risk framework to finance the deficit and to (re)finance the debt. This risk framework is a set of policy rules focussed on "debt financing at as low an interest rate as possible with an acceptable risk for the budget"[1]. 'Risk' refers to the possibility of fluctuations in interest costs. The Netherlands adheres therefore to the generally accepted objective of debt management: "To ensure that the government's financing needs and its payment obligations are met at the lowest possible cost over the medium to long run, consistent with a prudent degree of risk"[2]. The basic principles of debt management were reaffirmed in July 2010 at the 10th Debt Managers Forum[3].

Funding policy is the cornerstone of debt financing because it controls refinancing risk. Market considerations that indirectly contribute to reputation and lower debt financing costs play an important role in this regard[4]. The main principles are predictability, continuity, transparency, tradibility and flexibility. The total annual borrowing requirement is covered partly by issuances on the capital market and partly by funding on the money market. If the borrowing requirement changes, the call on the capital market will be left unchanged as much as possible, with the money market providing the necessary flexibility. As regards liquidity, the Dutch State has been extending the average maturity of its portfolio since 2009 by doubling the call on the capital market (approx. € 50 billion compared to € 25 to € 30 billion). These funding decisions have produced a specific repayment profile (see Figure 1).

***Figure 1: Repayment profile at year-end 2010 (€ billion)***




The repayment profile as at year-end 2010 shows that there will be a borrowing requirement of approximately € 88 billion excluding the (forecasted) budget deficit in 2011. This is the amount on which there will be an interest rate risk in 2011. The amount that faces interest rate risk in 2012 will be determined by the capital market redemptions already scheduled for 2012 as at year-end 2010, plus an additional amount from issuances in 2011 if applicable, plus the size of the money market as at year-end 2011, plus the (forecasted) budget deficit for 2012.

The interest rate risk is controlled by the interest rate risk framework, which helps to ensure sustainable and predictable public finances in the short, medium and long term. As well as having a direct impact on the budget, fluctuations in interest costs can also be

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[1] General policy objective of the IXA National Debt Budget (*Begroting IXA Nationale Schuld*) for 2008, 2009, 2010 and 2011. *Only in Dutch.*

[2] Guidelines for Public Debt Management, prepared by the Staffs of the International Monetary Fund and the World Bank, amended on 9 December 2003.

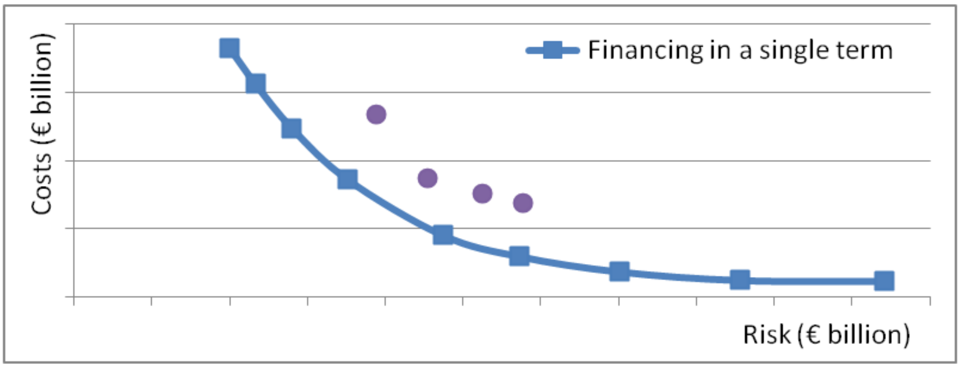
[3] http://www.imf.org/external/np/mcm/stockholm/principles.htm, September 2010.

[4] A detailed explanation of the Dutch funding policy and the associated considerations can be found in the letter from the Minister of Finance to parliament (*Kabinetsbeleid Financieringskeuze Staatsschuld)* 25 March 2011. *Only in Dutch.*

seen in the contribution made by interest costs to the EMU-balance. The interest rate risk framework is assessed in principle once every four years.

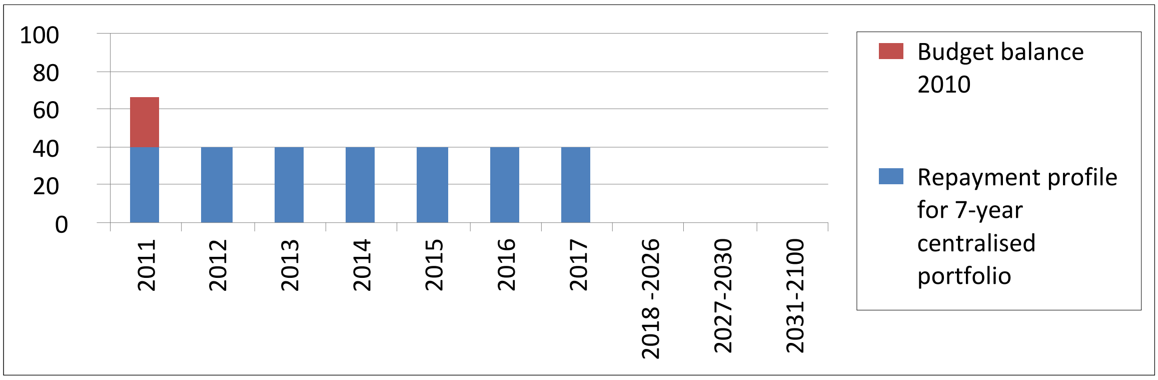
The risk framework for the national debt is about the trade-off between costs and risk. The trade-off can be illustrated on a graph showing the risk (€ billions) over a particular period of time on the horizontal axis and the costs (€ billions) over that same period on the vertical axis (see Figure 2).

***Figure 2: Trade-off between costs and risk over a specific period of time***




Each point on the graph corresponds to a specific financing strategy which results in a specific composition of the debt portfolio. Strategies consisting of financing in primarily short terms are characterised by low costs and high risk (bottom right in the figure), while strategies where financing is primarily in longer terms are characterised by high costs and a low level of risk (top left in the figure). A strategy is efficient if it entails the lowest level of costs taking into account the level of risk or if the risk cannot be reduced any further given the level of costs. The collection of points where there is an optimum trade-off between costs and risk is known as the efficient frontier. The analysis performed in 2007 showed that the efficient frontier consists of centralised portfolios[5]. A centralised portfolio is characterised by financing in a single term. The repayment profile (interest rate risk profile) for a 7-year centralised portfolio is shown in Figure 3.

***Figure 3: Risk profile for a 7-year centralised portfolio at year-end 2010 (€ billion)***




If the size of the debt remains the same, a 7-year centralised portfolio can be maintained by constantly refinancing repayments in the same maturity (7 years). In practice, however, the size of the debt will be constantly changing because there will not usually be a balanced budget (a budget balance of zero). The risk profile shows temporary inefficiencies because of changes in the budget balance. Managing interest rate risk is difficult when faced with the need to use estimates for the budget balance. Therefore, the budget balance and any changes in the balance during the year are financed at the short-

[5] Risk management of the national debt. Evaluation of the 2003-2007 policy & 2008-2011 policy", DSTA, September 2007.

term interest rate. In the following year, once it is known, the final budget balance is gradually distributed over the seven buckets. Of course, a new budget balance is created in the year in which the budget balance from the previous year is rebalanced. That new budget balance is again temporarily financed at the short-term interest rate.

In practice, interest rate swaps can be used to achieve any risk profile from a specific repayment profile. The repayment profile for the debt portfolio shown in Figure 1 can be adjusted using interest rate swaps to produce the risk profile of a 7-year centralised portfolio from Figure 3.

The DSTA runs credit risk because of the use of interest rate swaps. Credit risk is the risk that the counterparty will not meet its obligations. In principle, the State only enters into the most common form of interest rate swaps (plain vanilla) and does not use complex derivatives. Furthermore, swap counterparties of the Dutch State provide collateral (cash or government paper) when an obligation towards the State arises. An obligation towards the State arises when the swap has a positive market value for the State. The State itself does not give collateral to counterparties. Credit risk is also controlled by the fact that the State only enters into swaps with creditworthy counterparties that meet minimum rating requirements. As a result, the number of counterparties is limited, which can produce concentration risk. Concentration risk is the risk that a large portion of the total credit risk (as a result of temporarily funds lent and/or because of swaps) is run on a single or a small number of parties. Therefore, a limit system to control concentration risk is in place. In the unlikely event that a counterparty with a good rating does actually default, then the resulting interest rate risk position because of the loss of swaps is in principle restricted by the limit system; the collateral should be sufficient to close the interest rate position by entering into new swaps (without extra costs being incurred in order to do so).

### *Risk framework 2008-2011 and the choice of the 7-year centralised portfolio*

In the 2008-2011 period, the interest rate risk framework was implemented through a benchmark.The benchmark is an objective yardstick for measuring the debt manager's performance. The choice of a centralised portfolio as the benchmark means that there is an optimum (efficient) trade-off between costs and risk ex ante, based on modelling analyses. From an efficiency point of view, i.e. "costs as low as possible at an acceptable level of risk", a non-centralised portfolio is not an obvious choice as a benchmark. The benchmark prescribes how financing should be arranged in theory (in a centralised portfolio: issue debt continuously in the same maturity). The costs and risk involved are clearly defined. In practice, the benchmark can only be reproduced by financing in *exactly* the same manner at *exactly* the same yield. This does not mean, however, that the debt manager will apply exactly that strategy. The benchmark will be approximated in practice by a combination of issuance policy and the use of interest rate swaps. Afterwards, the result from debt financing (issuances and swaps) as regards costs and risk will be compared to the benchmark. The consequences of the financing choices are made clear by comparing them to the benchmark. The introduction of a benchmark is part of the drive to increase transparency.

In theory, any centralised portfolio is suitable as a benchmark. In reality, however, a number of factors will affect the choice of the benchmark. The primary factor is the trade-off between costs and risk. As the main function of the risk framework is to act as a safety net (it must still be effective even in the most extreme situations), the risk of a deterioration in the budget balance and the resulting impact on interest costs and interest rate risk must be taken into account explicitly. Portfolios with extremely short-term financing are not eligible as a benchmark because of the size of the risk, especially in the event of adverse developments in the budget balance. In the case of portfolios with extremely long-term financing, the insurance premium – i.e. the price that has to be paid for every extra euro of risk reduction – is so high that these portfolios are usually not eligible as a benchmark either.

Because of choices made in the past, the current debt portfolio has a specific repayment profile. The market rewards continuity and transparency and appreciates a stable and predictable issuance policy. In order to limit the risk of the swap portfolio, swaps are only used to further improve the portfolio (the final extra element of efficiency generated by adjusting the interest rate risk). This gives the debt manager the opportunity to adapt or give up the swap portfolio – if necessary, for instance to respond to changes in regulations and/or market circumstances – without major financial consequences. In the light of these factors, only centralised portfolios that come close to the current portfolio are suitable as the benchmark.

Debt and risk management must also be tailored to suit fiscal policy because there is an interaction between fiscal policy and debt management. The budget balance is financed through the national debt. Interest costs will increase in the event of a deficit and decrease if there is a surplus. The level of the interest costs ultimately adds to the budget balance. On the one hand, the government is attempting to achieve good budgetary results, while on the other hand ensuring that the risks remain sufficiently under control so as not to jeopardise sound fiscal policy. The desirability of a particular centralised portfolio is therefore determined by the extent to which the cost and risk features of that portfolio fit in with fiscal policy. The government's risk preference is decisive in the ultimate choice of the benchmark portfolio.

The benchmark portfolio for 2008-2011 was determined in 2007. In 2007, fiscal policy was focussed on preventing exceeding the 3% GDP limit for the EMU- deficit and assumed a structural surplus as of 2011. The limit set at that time for the projected deficit meant on the one hand that it was not permissible for fluctuations in interest costs to be so large as to endanger a sound fiscal position. On the other hand, restricting the average debt financing costs will help in the event of a budget deficit. The choice of a 7-year benchmark portfolio fitted in with this fiscal policy because it was expected to cause the debt ratio to fall. Retaining the risk framework from the 2003-2007 period would result in a gradual shortening of the debt portfolio[6]. The choice of a 7-year benchmark portfolio would also result in a shortening of the debt portfolio (based on the expected trend of the debt). The choice of the 7-year benchmark in 2007 therefore continued the policy line from the 2003-2007 period, but at on average lower costs and less risk (and therefore slightly greater efficiency).

### *Assessment of the risk framework 2008-2011*

The intention of introducing a 7-year centralised portfolio as the benchmark was to define a workable and efficient risk framework that would act above all as a safety net in extreme situations. The introduction of a benchmark was also intended to improve transparency.

*Safety net role and workability*

The benchmark proved its worth as a safety net during the recent economic crisis[7]. Interest costs in 2008, 2009 and 2010 were not prohibitively high. It was also proven during that period that the benchmark can also be applied in practice in relation to working methods and flexibility. A large number of measures were taken in 2008 to promote stability in the financial sector. The result was an unforeseen increase in the borrowing requirement, which was initially absorbed by the money market. This practical approach is in line not only with the principles of funding policy, but also with the way in

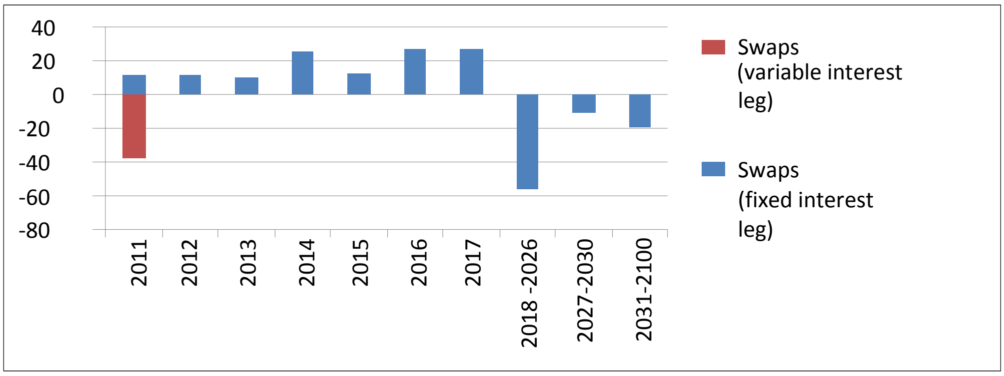
[6] The risk framework for the 2003-2007 period targeted an annual basis amount-at-risk of 9% of GDP. The basis amount-at-risk determined what portion of the debt is exposed each year to changes in the interest rate. If the debt ratio (the size of the debt expressed as a percentage of GDP) decreases, the percentage of the total debt that is sensitive to changes in the interest rate will increase if the target is unchanged. All things being equal, this means a shortening of the debt portfolio.

[7] In practice, however, the safety net role was not really put to the test. In times of crisis and high deficits, it is reasonable to expect that interest costs and interest rates will also increase. However, the latter did not happen in the Netherlands during the recent crisis.

which unforeseen positive and negative developments are dealt with in the benchmark. This approach meant that interest costs remained limited (short-term financing is less expensive than long-term financing). The consequences of the economic crisis (including an excess of liquidity in the market) and the subsequent European debt crisis and in particular the flight into safe AAA government paper also contributed to the relatively low (re)financing costs for the Dutch State in the 2008-2011 period. The size of the money market increased because the extra borrowing requirement was initially absorbed on the money market. The money market has been gradually scaled down since 2009 and there has been – liquidity wise – an extension of the average maturity of debt because of the increase in the annual call on the capital market (which was approximately doubled).

*Transparency and efficiency*
The unambiguous definition of the benchmark makes it possible to present the result of debt policy compared to the benchmark ex post and in a transparent manner. The risk profile is prescribed by the benchmark. In practice, the debt manager aimed to achieve the same risk profile, although an active position was not taken[8]. As already stated, the choice of a centralised portfolio as the benchmark increases efficiency ex ante. The fact that there was no deviation from the benchmark in terms of risk therefore increased efficiency in practice as well. There is a difference in the way in which the risk profile is achieved, however. In practice, the benchmark is approximated by a combination of funding policy and the use of swaps in order to adjust the interest rate risk.

***Figure 4: Risk profile of the swap portfolio at year-end 2010 (€ billion)*** [9]




The swap portfolio (see Figure 4) is used to turn the less efficient interest rate risk profile from Figure 1 into the more efficient interest rate risk profile from Figure 3. As a result, there are costs for insurance against interest rate risk. This can be seen in column B in Table 1. Due to the use of swaps, only a spread risk and not a level risk[10] is run compared to the benchmark (which is an efficient portfolio ex ante). Without the swap portfolio, there would have been a level risk compared to the benchmark. Spread risk is smaller than level risk, which is why the deviations from the benchmark remained small, as can also be seen in the results compared to the benchmark (see column A in Table 1).

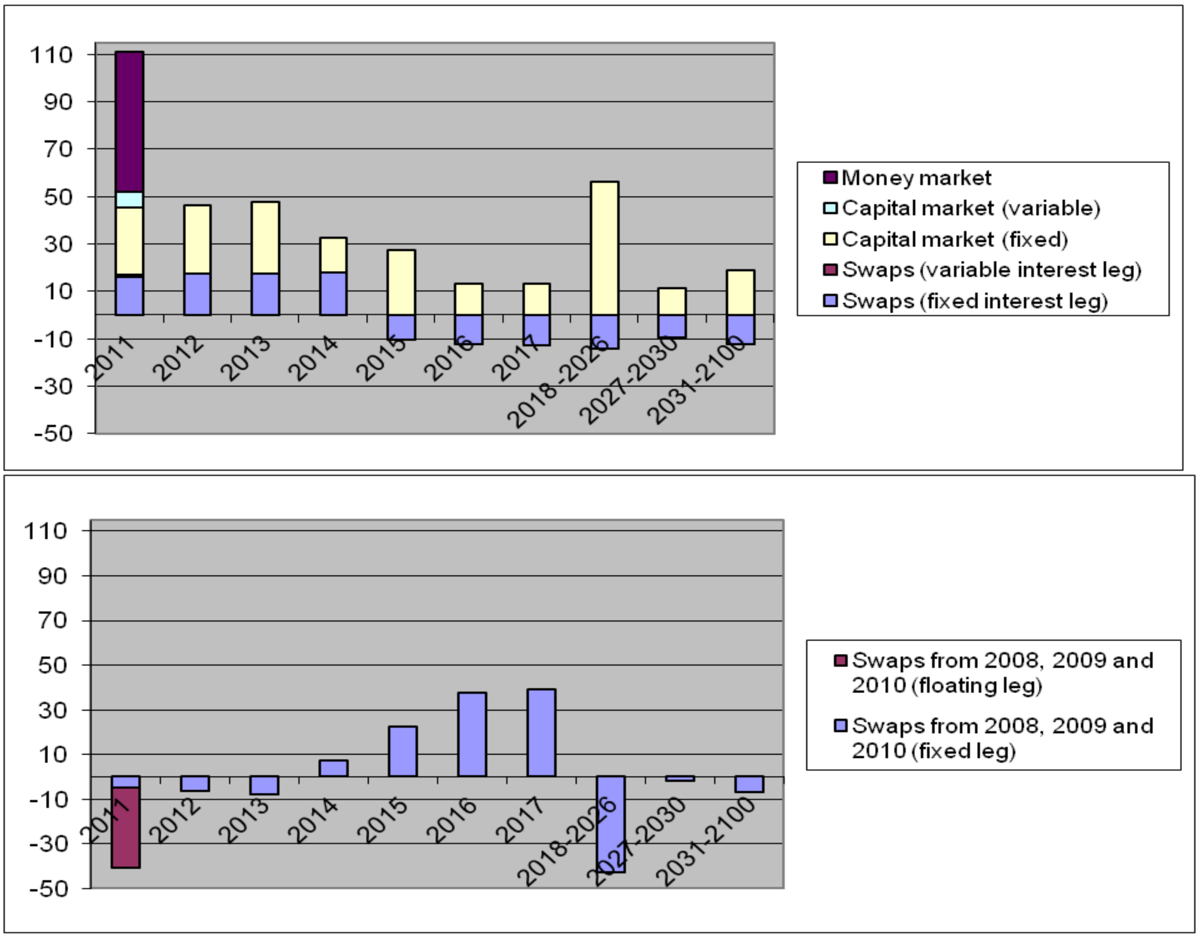
[8] With the exception of a limited position taking on the money market.
[9] Excluding swaps entered into for managing interest rate risk on loans to Fortis.
[10] Level risk is the risk that the result compared to the benchmark will change as a result of an increase or decrease in the interest rate level. Spread risk is the risk that the result compared to the benchmark will change as a result of a change in the difference (= the spread) between two interest rates (e.g. swap rate and government interest rate).

**Table 1: Results compared to the benchmark including and excluding swaps from 2008-2010 (€ billion)**

| Debt financing result compared to the benchmark - 2008 to 2010 | | A. Total cost | B. Total cost (swaps 2008-2010) | C. Total cost (excl. swaps 2008-2010) |
|---|---|---|---|---|
| X1+X2 | Money market & capital market | 494 | -2,237 | 2,731 |
| X3 | Fortis portfolio | -312 | -152 | -160 |
| Z | Result compared to the benchmark (X1 + X2 + X3) | 182 | -2,390 | 2,572 |

If the risk profile is not clearly prescribed, as was the case with the control variable for the 2003-2007 period[11], there is more room for variation and deviations from an ex ante efficient portfolio can be a lot larger (they can reach several billion euros). This means that an interest rate increase would cause very negative results compared to an efficient portfolio. These results are ultimately reflected in high interest costs. Deviations with respect to costs can become larger if the debt manager deviates substantially from the risk profile in the benchmark. This can be seen by looking at the results of the debt and swap portfolio excluding the swaps from 2008, 2009 and 2010 compared to the benchmark (column C in Table 1).

***Figure 5: Risk profile as at year-end 2010 for the debt portfolio excl. swaps from 2008-2010 and for the swaps from 2008-2010 (€ billion)***




The swaps from the 2008–2010 period (see Figure 5) were used to increase efficiency. The swaps from the 2008–2010 period effectively reduced the risk. This reduction

[11] The control variable for 2003-2007 only prescribed the portion of the debt at the end of the year that should be exposed to changes in the interest rate in the following year. The variable therefore did not look ahead by more than one year.

brought the risk of the debt portfolio into line with that of the benchmark. Swaps represent an insurance against interest rate risk. The size of the interest rate risk has been lowered and that is why an insurance premium has been paid. The premium is part of the interest costs. The insurance will pay out if the interest rate risk materialises, in other words, if the short-term interest rate starts to rise. The result of such an increase will be reflected in lower interest rate costs for swaps, or even in interest earnings on swaps if the short-term interest rate increases sharply. The 2007 analysis already showed that it is advisable to take out this insurance (because a centralised portfolio is more efficient than a non-centralised one).

Introducing the benchmark has increased transparency with respect to the result of debt management in terms of costs and risk. Deviations (whether or not caused by actively taking positions) can be seen immediately ex post in the Annual Report on National Debt accounts, both as regards risk and costs. Furthermore, there was no room or incentive for the debt manager to deviate from the chosen risk profile in the benchmark, given the general policy objective for the national debt and its implementation in the 2008-2011 period (the objective being "to approximate the benchmark results by providing the State's borrowing requirement as efficiently as possible").[12] After all, the fact that the benchmark portfolio is characterised by an (efficient) optimum trade-off between costs and risk means that the borrowing requirement is also met as efficiently as possible in practice as long as the benchmark portfolio is approximated with respect to costs and risk.

### *Risk management framework 2012-2015: continuation of the current policy and room for sensible deviations*

The risk framework still has to be determined for the 2012-2015 period. The assessment of the current risk framework (2008-2011) shows that the introduction of the benchmark has helped to increase transparency regarding the costs and risk of the debt and swap portfolio compared to a target debt portfolio with an optimum trade-off between costs and risk. The benchmark has also proven to be workable in times of crisis. The benchmark will therefore be continued.

The reference point chosen for the 2008-2011 period is a centralised portfolio. The latest modelling analyses show that centralised portfolios are still characterised by an optimum trade-off between costs and risk in the longer term. A centralised portfolio will therefore be retained as the benchmark because an inefficient portfolio as a benchmark would not be an obvious choice given the objective of debt financing. Analyses were performed based on the composition of the portfolio at year-end 2010 in order to determine what would be the best fit for the government's fiscal policy and risk preference.

*Risk framework as a safety net*

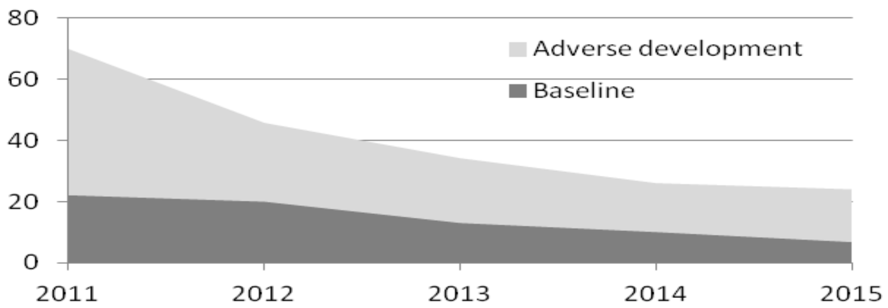
As the main function of the risk framework is to act as a safety net (which must still be effective even in the worst-case scenario), the risk of a deterioration in the budget balance and the resulting impact on interest costs must explicitly be taken into account.

At the end of 2010, the CPB (the Netherlands Bureau for Economic Policy Analysis) analysed the economic and budgetary consequences or the government's coalition agreement. The projected budget balance up to 2015 as calculated by the CPB is taken as the baseline. The term 'budget balance' as used in this context refers to the cash balance, not the EMU-balance. The more extreme variant in Figure 6 (the variant in which a worsening of the budget balance is explictly taken into account) is taken from a recent report containing a risk analysis on Dutch public finances[13].

[12] Operational objective of the budget on National Debt (chapter IXA) for 2008, 2009, 2010 and 2011. *Only in Dutch.*

[13] "The Government Finances Shock Proof - A risk analysis of Dutch public finances", Ministry of Finance, September 2011 (available at www.dsta.nl). This variant is based on simulation 1: Financial crisis.

***Figure 6: Baseline and adverse development of the budget balance (€ billion)***




The interest rate level varies in the calculations from approximately 2% to 4% in the baseline scenario to the historic highs of the early 1990s (approx. 8%) in the unfavourable scenario.

Table 2 shows the costs and risk for the 2011-2015 period for different centralised portfolios. Because the debt and swap portfolio as at year-end 2010 was taken as the starting point, the costs of migrating the current portfolio into a longer or shorter-term portfolio have also been incorporated in the results.

**Table 2: Costs and risk for the 2011-2015 period (€ billion)**

| Centralised portfolio | 4-year | 5-year | 6-year | 7-year | 8-year | 9-year | 10-year |
|---|---|---|---|---|---|---|---|
| Interest costs with the projected (baseline) development of the budget balance (A) | 61.2 | 61.7 | 62.3 | 63.0 | 63.7 | 64.3 | 65.0 |
| Interest rate risk = extra costs because of unfavourable development of interest rates (B) | 32.0 | 28.5 | 26.4 | 24.9 | 23.9 | 23.1 | 22.6 |
| *"Maximum" costs with an unfavourable development of interest rates (C = A+B)* | *93.2* | *90.2* | *88.7* | *87.9* | *87.5* | *87.5* | *87.6* |
| *"Maximum" costs with an unfavourable development of both interest rates and the budget balance (D)* | *122.5* | *119.4* | *117.7* | *116.8* | *116.4* | *116.3* | *116.3* |
| ***Budget risk (D-C)*** | *29.7* | *29.3* | *29.1* | *29.0* | *28.9* | *28.9* | *28.8* |
| \|Δcosts/Δrisk\| (insurance premium) | | 0.1 | 0.3 | 0.5 | 0.7 | 0.9 | 1.2 |

In the event of the projected (baseline) development of the budget balance (see Figure 6) and the continuation of the 7-year centralised portfolio as the benchmark, the costs over a five-year period would be approximately € 63 billion at the current rate of interest (see line A in Table 2). If the interest rate develops unfavourably, however, and increases to approximately 8% by 2015, those costs could increase by approximately € 24.9 billion (see line B in Table 2). If the budget deficit reaches € 70 billion, there would be approximately € 30 billion in extra interest costs over a five-year period in the worst-case scenario (difference between lines D and C in Table 2).

Table 2 also shows that an increase in the portfolio's maturity causes the costs to increase and the interest rate risk to decrease. A decrease in the portfolio's maturity reduces the costs, but increases the interest rate risk. Extending from a 7-year to a 10-year portfolio causes the costs to rise by approximately € 2 billion over a five-year period (average of € 0.4 billion per year). On the other hand, the risk decreases by € 2.3 billion (average of € 0.46 billion per year). The insurance premium (the bottom row in the table) shows that every euro of risk reduction achieved by extending from a 7-year to an 8-year portfolio costs approximately 70 eurocents. Approximately 90 eurocents has to be paid for the subsequent euros of risk reduction. Every euro of risk reduction costs more than one euro in the case of an extension from a 9 to a 10-year centralised portfolio.

The data in Table 2 were obtained from a modelling exercise. The interest costs for the national debt may develop very differently in the 2011-2015 period from the development shown here.

The stress scenario for the interest rate is characterised by high interest rates. A scenario in which the Netherlands would maintain its AAA rating and would be facing such high interest rates is unlikely. If a situation occurs in which the nominal interest rate increases to 8%, this increase will be accompanied by high growth and/or high inflation. In that case, the level of debt could also increase faster without the debt or the interest costs increasing as a percentage of GDP. A situation in which the Netherlands is facing such high nominal interest rates without growth and inflation increasing seems only realistic if the Netherlands were to lose its AAA rating.

In spite of the above qualifying remarks, however, Table 2 does present a useful analysis of the risk framework as a safety net. The interest rate risk in the case of extreme shocks varies from approx. € 23 billion for a 10-year to € 32 billion for a 4-year centralised portfolio and is approximately the same size as the budget risk (approx. € 30 billion; difference between lines D and C). The budget risk is the result of a shock in the budget balance for interest costs over a period of five years. There is not much that can be done through debt financing to counter the effects of extreme shocks in the budget balance on interest costs. Table 2 shows, for example, that the size of the budget risk is approx. € 30 billion regardless of the maturity of the portfolio.

In addition, by using the interest rate risk framework for the national debt one cannot do much extra to counteract the consequences of extreme interest rate shocks. The differences in the 'maximum' costs in the event of an unfavourable interest rate development for a 7-year and a 10-year centralised portfolio are relatively small (see line C in Table 2). Furthermore, it is relatively expensive in the current market circumstances (see the insurance premiums in Table 2) to insure further (extend the portfolio) in order to be more resistant to major interest rate shocks similar to those in the early 1990s (interest rate levels of 8%).

*Impact of smaller shocks in the interest rate*
A 7-year centralised portfolio offers sufficient protection to absorb temporary and small shocks in the interest rate. Table 3 shows that the interest rate risk (B') is a lot smaller than in the unfavourable interest rate scenario (B, see also B from Table 2) in the event of an unfavourable development of the interest rate up to a maximum of approx. 5% by 2015, assuming that the budget balance does not change.

**Table 3: Consequences for the interest rate risk (2011-2015) if the interest rate increases to approx. 5% by 2015 (€ billion)**

| Centralised portfolio | 4-year | 5-year | 6-year | 7-year | 8-year | 9-year | 10-year |
|---|---|---|---|---|---|---|---|
| Interest rate risk = extra costs because of an unfavourable development of interest rates (B) | 32.0 | 28.5 | 26.4 | 24.9 | 23.9 | 23.1 | 22.6 |
| Interest rate risk = extra costs because interest increases to 5% (B') | 8.0 | 7.1 | 6.6 | 6.2 | 6.0 | 5.8 | 5.6 |

All other things being equal, spending cuts will be necessary to absorb small shocks in the interest rate because the interest costs are covered by the expenditure frameworks. In the case of a 7-year centralised portfolio, cuts of approx. € 0.4 to € 0.5 billion (0.06% to 0.07% of GDP) will be needed annually on a structural basis (see Table 4) if there is a gradual increase in the interest rate to approx. 5% by 2015. The total structural level of cuts will reach approx. € 2.1 billion – or approx. 0.3% of GDP – by 2015. The total extra interest costs over a five-year period amount to € 6.2 billion (see also Table 3).

**Table 4: Spending cuts needed to absorb small shocks in the interest rate in the case of a 7-year centralised portfolio (€ billion)**

| 7-year | | 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|---|
| | **2011** | 0.4 | | | | | **0.4** |
| | **2012** | 0.4 | 0.4 | | | | **0.8** |
| | **2013** | 0.4 | 0.4 | 0.4 | | | **1.2** |
| | **2014** | 0.4 | 0.4 | 0.4 | 0.5 | | **1.7** |
| | **2015** | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | **2.1** |
| | | | | | | | **6.2** |
| **Assumed GDP (€ billion)** | | 612 | 632 | 653 | 674 | 696 | |
| **Structural cut in spending per year (% of GDP)** | | 0.06% | 0.06% | 0.06% | 0.07% | 0.07% | |

*Risk framework 2012-2015*
The risk framework for 2012-2015 will once again be implemented with a centralised portfolio as the benchmark. When choosing the benchmark portfolio it is essential to ensure that the risk framework will still be effective even in the most extreme situations. Analyses have shown that the interest rate risk framework for the national debt can provide no protection against the budget risk and hardly any extra protection against extreme interest rate shocks. The analysis also shows that a 7-year centralised portfolio does offer sufficient protection to absorb temporary and small shocks in the interest rate. A 7-year centralised portfolio will therefore be continued as the benchmark in the 2012-2015 period.

*Room for deviations*
The aim for the 2008-2011 period was to make financing as efficient as possible by replicating the 7-year centralised benchmark as well as possible through a combination of issuance policy and swaps. The focus was on both costs and risk. As a result, there has been little room so far for deviations from the risk profile prescribed by the benchmark. However, in light of the current market circumstances and the fiscal outlook (with more than average levels of uncertainty) the question is whether it might be advisable to pay a little extra to hedge the risk of adverse developments (in the interest costs). From the current level, the interest rate can still increase by 7 percentage points to the level reached in the 1990s, but it can only decrease by approx. 2½ percentage points to a nominal interest level of 0% (negative nominal interest rates are unusual). Based on this asymmetry regarding the future development of interest rates, it may be worth deviating from the risk profile prescribed by the benchmark. Possibilities would include the issuance of loans with a maturity of more than 10 years without entering into swaps, for example, or closing out old swaps with long remaining maturities. Deviation from the benchmark portfolio might be motivated by administrative (i.e. political) considerations such as greater fiscal stability, or one might deviate from the portfolio to lower interest costs. When the results compared to the benchmark are presented in the annual report, it should become clear whether it was a wise decision to deviate from the benchmark's risk profile, because the presentation of the results will show the size of the deviation not only with respect to risk, but also with respect to costs.

A cap will have to be imposed on the maximum permitted total deviation in terms of both risk and costs. Two preconditions apply in any event in respect of possible deviations from the benchmark's risk profile. The first is that deviations must not result in an increased risk to the budget. The second precondition is that these deviations must fit within the budget.

It can be concluded that the introduction of room for deviations from the optimum risk profile in the policy framework provides the flexibility needed to anticipate current market circumstances or to create administrative (fiscal) stability. On the other hand, requirements must be laid down regarding the frequency and form of internal risk and performance reports to ensure that the consequences of decisions are clear ex post. The results of deviations from the benchmark will also be made clear in the Annual Reports on the National Debt, because they will present the extent of the deviation not only with respect to risk, but also with respect to costs.

# I Principles and theoretical debt management framework

## *I.1 Generally accepted principles of debt management*

According to the IMF and World Bank guidelines, the aim of debt management is as follows: "To ensure that the government's financing needs and its payment obligations are met at the lowest possible cost over the medium to long run, consistent with a prudent degree of risk"[14]. The State of the Netherlands adheres to this aim in its debt management.

The current, generally accepted principles of debt management were reaffirmed in 2010 at the 10th Forum of Debt Managers in the form of 10 guiding principles for effective and transparent debt management (see Annex 1: Stockholm Principles). The principles allow room for individual countries to fill in the details. The decision to follow these principles does not therefore relieve the debt manager of the obligation to make (continue to make) country specific assessments to take into account the national financial/economic and fiscal outlook, for example. The principles are organised around three key areas: Framework and Operations, Communication and Risk Management.

One major aspect of the framework for debt management is the need to maintain sufficient flexibility in the operation of the borrowing programme. In that regard, the Netherlands specifically assesses the balance between flexibility on the one hand and consistency on the other. The emphasis is on consistency (predictability) in capital market issuances, while flexibility is found mainly in the money market. The fact that the principles are guidelines and do not prescribe what the debt manager must do also allows the room for assessments that are specific to the situation in a particular country. A country might decide to maintain a liquidity buffer, for example. The Netherlands has decided not to maintain a liquidity buffer because it expects that its position as a eurozone country with a AAA rating will always allow it sufficient access to the money and capital markets if it needs to satisfy an unexpectedly high borrowing requirement. This decision by the Netherlands does not mean that maintaining a liquidity buffer cannot be an obvious component of the financing and risk policy of other countries.

The principles also focus extensively on adequate and timely communications regarding debt management. Dutch debt managers traditionally attach a great deal of importance to transparency. Effective communications help to minimise uncertainty and therefore reduce the cost of debt management. Transparency and predictability are also enhanced by communicating in a timely and proactive manner with the market. Dutch debt managers provide information about the expected borrowing requirement and issuance calendars in advance to professional parties and the general public through publications, press releases, the manager's own website and pages on Bloomberg and Reuters. Information is provided on a monthly basis not only about the composition of the debt, but also about the swap portfolio. The policy pursued is accounted for on an annual basis. Policy and any amendments to policy are continually explained not only to the Dutch Parliament, but also to the market.

Transparency about debt and risk policy is also important because of the interaction between fiscal policy, debt management, monetary policy and financial stability. This is also expressed in the Stockholm Principles: communications between debt managers and fiscal and monetary policymakers must be guaranteed because of the unavoidable interaction between various policy objectives, but the different parties must retain their separate responsibilities. It is not surprising that there is a direct interaction between fiscal policy and debt management (see Annex 2: Relationship between debt management and fiscal policy) because the size of the debt is one of the factors that determine the size of the interest costs. The interest costs are part of the budget balance (i.e. outcome of fiscal policy) and the budget balance is one of the factors that determine

[14] Guidelines for Public Debt Management, Prepared by the Staffs of the International Monetary Fund and the World Bank, Amended on December 9, 2003.

the size of the debt. Unlike in some other countries where the debt manager is separate, the Dutch debt manager is an integral part of the Ministry of Finance which is also responsible for fiscal policy. This arrangement makes it easier to coordinate debt management and fiscal policy. The interaction between debt management and monetary policy is less evident (see Annex 3: Relationship between debt management and monetary policy and financial stability).

The final key area for which the IMF and the World Bank have formulated principles is that of risk management. The Stockholm Principles reaffirm the overall objective of debt management. It is stressed that the broadest possible definition of risks should be used. Debt management and risk management are closely connected. According to Wheeler, for example, the aim of debt management is 'to ensure that the government's borrowing needs are met efficiently and that the stock of government debt, and the incremental debt flows […] are managed in a manner consistent with the government's cost and risk preferences'[15]. Risk relates to uncertainty (chance) and the consequences of uncertainty (scale). Debt policy generally allocates a central role to the trade-off between costs and risk.

### *I.2 Alignment with theoretical approaches to risk management*

The debt financing strategy employed by the Netherlands (as well as most other countries) is aimed at financing the national debt as efficiently as possible by minimising the costs of debt financing at an acceptable level of risk. In this context, 'costs' refer specifically to the interest costs in the budget. The risk is defined as the possible fluctuation in these costs. The degree of fluctuation considered by a country to be 'acceptable' will depend on factors such as the level of debt and the national financial/economic and fiscal outlook.

This approach to debt management is the best match with the cost minimisation method. In addition to cost minimisation, there are also two other alternatives[16]: the budget position method and Asset & Liability Management (ALM). In the budget stabilisation approach , the debt manager uses smart financing of the national debt to help to stabilise the budget balance. The financing must be organised in such a way that the interest costs in the budget change in accordance with the primary budget balance; if the primary balance improves, an increase in the interest costs can be absorbed such that the total budget balance stabilises as a result. The ALM method aims to match the risk features of the assets and liabilities on the national balance sheet so that economic shocks have an equal effect on both sides of the balance sheet.

Not all of the methods are equally popular in practice. Countries do not use the budget stabilisation approach as a guide for risk management, for example. The main reason for not doing so is that it is difficult to determine how various macro-economic variables will affect the debt costs and the budget balance. If a country does not know what shocks to expect either (shocks in demand or supply), it is impossible to determine the correct hedges for the budget balance in advance. Although some countries rationalise policy measures by referring to the budget stabilisation approach[17], minimising costs is usually their main objective.

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[15] Wheeler, G., Sound Practices in Government Debt Management, The World Bank (2004), p. 4.

[16] A comprehensive descriptions of the different theoretical approaches can be found in the analysis published in September 2007 entitled "Risk management of the national debt. Evaluation of 2003-2007 policy & 2008-2011 policy.

[17] Inflation-index-linked loans are one example. France has stated that index-linked loans might help to stabilise the budget balance (Renne J.P. and N. Sagnes, Analytical Model of French State Debt Strategies, Diagnostic Forecasts and Economic Analysis, no. 99, 2006, pp. 6-7). The United Kingdom claims that index-linked loans have a favourable effect on the stabilisation of the budget balance. It is not clear whether this played a role in the decision to issue index-linked loans (IMF/World Bank, Guidelines for Public Debt Management, Accompanying Document and Selected Case Studies, 2003, p. 336).

The ALM method is not used that much in practice either because of the complexity of producing a national balance sheet, on the one hand, as well as the fact that using matching to hedge balance sheet risks is often extremely costly (if it is at all possible to clearly establish the risk features of assets such as a motorway or a gasfield). It is also a factor that debt managers are usually not responsible for the management and risk management of assets or liabilities other than debt. If they are, ALM is a workable option. To date, no government has been able to produce a comprehensive balance sheet showing all its assets and liabilities. The countries most active in the analysis and use of ALM are New Zealand and France. Although these countries take a number of results from the analyses into account in the overall arrangement of their debt policy, they do not base their risk management on the ALM method but rather on cost minimisation.

It is not immediately obvious that debt management in the three theoretical methods does not extend further than its effects on the budget and public finances. One recurring debate is how far the costs and benefits to society from debt financing ('externalities') should be involved in debt management. For example, if market failure means that it is not possible to meet the specific demand for a particular product in the market, prosperity can be improved if the government arranges for the supply to meet this demand. Another example can be found in the public good nature of national debt. Based on the principle of the collective good, repaying the entire national debt – which was seriously being considered before the start of the economic crisis – is not necessarily the best option. It can be useful to maintain a market for national debt if that is what the market needs (e.g. in order to provide a benchmark for risk-free interest rates or as part of investment portfolios). Such costs and benefits to society from debt financing are often difficult to demonstrate or quantify. Widening the role of the debt manager to include internalising possible 'externalities' is not only problematic: it is also not in line with the IMF and World Bank guidelines. Such a widening of the manager's role would also mean that the mandate was no longer precisely defined and would make it difficult to measure performance. However, notwithstanding the above, there may be arguments (possibly political ones) – regardless of debt management issuances – in favour of certain issuances even though the debt manager's mandate leaves no room for the issuance of particular debt instruments. If the decision is taken to issue these instruments, it must be possible to transparently identify their impact on the interest costs and the interest rate risk.

Cost minimisation is used by most European countries and is by far the most popular method internationally. On the one hand, this has to do with the limitations of the other methods, and on the other hand the focus of most governments is usually on the costs of debt financing and the impact of these costs on public finances. In other words, financial management revolves around sound public finances and reducing the national debt. Cost minimisation fits in well with the efforts to reduce the national debt and control the tax and premium burden. It is important to control interest costs because they represent a relatively large expenditure item in many countries. Countries implement cost minimisation (given a particular budget risk) in different ways: the level of risk considered acceptable is obviously specific to the country in question. Furthermore, different control variables are used to manage costs and risk.

In addition to cost minimisation, the Dutch debt manager also uses Asset & Liability Management (ALM) wherever possible[18]. One example is the risk management for the loans granted to Fortis Bank Nederland (FBN) at the end of the 2008 and the financing of those loans. The Dutch State took over FBN in 2008 and included in that takeover were short and long-term loans from Fortis Bank SA/NV to FBN. The loans to FBN were accounted for in the same chapter of the National Budget as the financing of those loans, which allowed the debt manager to implement ALM for that part of the national debt. Implementation of ALM means that the interest rate risk attached to the financing is tailored to the interest rate risk for the receivables. This method differs from the usual

[18] *Jaarverslag Nationale Schuld IXA 2008* ('IXA National Debt Annual Report 2008') (*Kamerstukken* ('Parliamentary Documents') II, 2008-2009, 31 924, no. 1). *Only in Dutch.*

approach in which the borrowing requirement is fully hedged and not tailored to the risk attached to the assets financed by the borrowed funds.

### *I.3 Assessment of debt management by the Dutch State*

The Dutch State finances the deficit and refinances the existing national debt based on a set of policy rules that are geared to financing the national debt at minimum cost and with an acceptable level of risk to the budget. A financing plan is drawn up annually and is part of the set of policy rules. There is also policy on controlling risks, part of which is the interest rate risk framework. The interest rate risk framework is assessed approximately every four years – or more often if circumstances demand it. The extreme situation during the credit crisis from the end of 2008 onwards was sufficient reason at the time to examine whether the existing interest rate risk framework with a 7-year centralised portfolio as the benchmark was still adequate. It is difficult to formulate appropriate debt policy if the fiscal situation is uncertain, which was the case in 2009 and 2010. Only once there is more clarity regarding the fiscal situation (at least the planned situation) as is now the case[19] is it possible to tailor risk management of the national debt accordingly.

The focus of the periodic assessment in 2007 was on the interest rate risk. Given the changed circumstances in which the debt manager now has to operate, the assessment this time also needs to focus explicitly[20] on other risks that are relevant for the debt manager. Using a broad definition of risk is also in line with the principles of risk management as reaffirmed in Stockholm. The risks in question are briefly described in the next chapter.

[19] Agreement was reached on 30 September 2010 regarding the coalition and parliamentary support agreement for the first government of Prime Minister Mark Rutte. The impact of the coalition agreement was incorporated in CPB Document no. 213, "Updating the Economic Outlook 2011-2015", which was published in November 2010.
[20] These risks were not explicitly stated in the previous analysis, but they were taken into account.

## II Risk management and debt financing

According to the 'Guidelines for Public Debt Management' issued by the IMF and the World Bank, debt managers are faced with the following types of risk: market risk, rollover (i.e. refinancing) risk, liquidity risk, credit risk, settlement risk and operational risk. Market risk – especially the interest rate risk – is the most relevant in this assessment, but a number of the other types of risk are also addressed[21]. The term 'market risk' as used in this analysis refers to all risks that are related to changes in the economic/macro-economic climate. In addition to fluctuations in the interest and exchanges rates, this definition also encompasses all macro-economic shocks.

### *II.1 Funding policy, refinancing risk and liquidity risk*

Funding policy is the cornerstone of debt financing. The annual borrowing requirement of the Dutch State is composed of the refinancing of expiring capital market loans, the size of the money market at the end of the previous year and the (expected) budget deficit. The total borrowing requirement is partly covered by issuances on the capital market and partly by financing on the money market. The best way to use the instruments available is decided on an annual basis. Loans issued on the capital market have maturities of up to 30 years. The market values transparency and continuity and therefore a stable issuing policy. The aim is to keep capital market borrowing as stable as possible, both in the current year and year-on-year. Traditionally, fluctuations in the borrowing requirement as a result of windfalls and setbacks in the budget are absorbed as much as possible on the money market because the money market offers the greatest amount of flexibility to take advantage of a changing borrowing requirement. Because the money market has this buffer function, the outstanding financing in the money market must be sufficiently large and sufficiently liquid to absorb any windfalls and setbacks. On the other hand, however, the money market must not become too big because of the refinancing risk.

The size of a liquid money market cannot be clearly determined. In general, the money market must be large enough to absorb unexpected windfalls in the budget – i.e. differences between the actual and the estimated budget balance – without there being any threat to the minimum size needed to maintain money market liquidity. Based on deviations in the past between the estimated and the actual budget balance, the minimum desired size of the money market for the Dutch State has been calculated at approx. € 30 billion[22].

The volatility in the difference between the estimated and actual budget balance can give an impression of the maximum possible size of the money market if there are unexpected setbacks in any given year. This maximum size together with the repayment of capital market loans and the estimated budget balance for the following year are the factors that determine the maximum refinancing risk for the following year. Various debt issuance scenarios are used to monitor the refinancing risk. The extent of capital market borrowing is adjusted to control the financing risk if there is reason to do so in light of the expected development of the budget balance and the money market. The aim of such an adjustment is to produce a level of capital market borrowing that will allow a financing strategy to be pursued over several years without any substantial changes. Capital market borrowing will therefore remain as stable as possible year-on-year, which fits in with the aim of ensuring continuity. It is difficult to state in advance what size of the

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[21] Operational risk relates to processes, systems and people and is controlled through the structure of the organisation (division of responsibilities) and internal control measures. The subject of this analysis is the risk management policy for the national debt. The internal organisation of the DSTA – the department in the Ministry of Finance that is responsible for the management, administration and financing of the national debt – is not the subject of this analysis.

[22] See the letter from the Minister of Finance on government policy on financing the national debt (*Kamerstukken* (Parliamentary Documents) II, 2010-2011, 32 500 IXA, no. 7), and the responses to written questions (*Kamerstukken* II, 2010-2011, 32 500 IXA, no. 8). *Both are only available in Dutch.*

money market is the maximum size sustainable for the Netherlands. It is possible, however, based on the situation in the latter part of 2008 and early 2009, to demonstrate that the funding was definitely available for a (brief) money market volume of more than € 100 billion.

Market considerations indirectly contributing to a debt manager's reputation and therefore lower interest costs play an important role in debt financing[23]. From a liquidity point of view, it is important to issue loans of a sufficient size on the capital market. Interest rate differences in the eurozone can generally be explained by differences in credit risk and in liquidity. The increase in the spreads between Germany and other countries during the crisis shows that liquidity is more important in uncertain times. In spite of the fact that other countries – including the Netherlands – also have excellent creditworthiness and therefore a AAA rating, investors still prefer German Bunds because they are seen as the most liquid option because of their size. Furthermore, positions in German Bunds – unlike positions in other eurozone bonds – offer the best hedging possibility in the form of the Bund future.[24] As a result, other countries pay a liquidity premium to finance their national debt on the capital market. This premium usually increases in uncertain times. In the case of Dutch State Loans (DSL), a strip facility and de-strip facility[25] and a repo facility[26] help to increase tradibility and liquidity. In addition, a full and liquid interest rate curve up to 10 years is maintained by the annual issuance of a new euro loan in the 10-year segment for a minimum amount of € 15 billion (previously € 10 billion). Finally, quotation obligations for Primary Dealers contribute to pricing and liquidity in the secondary market.

Because of the lower level of flexibility and relatively lower liquidity, financing on the capital market is less suitable for quickly absorbing unexpected setbacks in the budget balance. In the case of a AAA country, the money market usually offers more flexibility so that fluctuations in the borrowing requirement can be absorbed without any noteworthy negative price effects. Furthermore, by initially absorbing the extra borrowing requirement on the money market, it is possible to retain a predictable, continuous and transparent issuing strategy on the capital market. This will be appreciated by the market and will therefore help to reduce interest costs.

The State of the Netherlands intervened in the financial sector in a number of different ways in the latter part of 2008 in order to safeguard financial stability. These interventions created an extra borrowing requirement in 2008 in the amount of approximately € 82.6 billion[27]. This extra borrowing requirement in 2008 was largely absorbed in the first instance on the money market. However, money market borrowing entails refinancing in the current or the following year. As regards liquidity, the Dutch State has been working since 2009 to extend the maturity of debt issuances through twice as much capital market borrowing as was previously the case (approx. € 50 billion compared to € 25–30 billion). The doubling of capital market borrowing has moderated the increase in the size of the money market in spite of persistently high deficits in the budget in 2009 and 2010. The repayment of part of the loans to FBN (which was one of the economic crisis measures) has caused the money market to decrease gradually from approx. € 100 billion at year-end 2008 to approx. € 65 billion at year-end 2010. The result of the funding policy in recent years can be seen in the repayment profile for the national debt (see Figure 7).

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[23] See the letter from the Minister of Finance to the Lower House of Parliament regarding government policy on financing the national debt (*Kamerstukken* (Parliamentary Documents) II, 2010-2011, 32 500 IXA, no. 7). *Only in Dutch.*

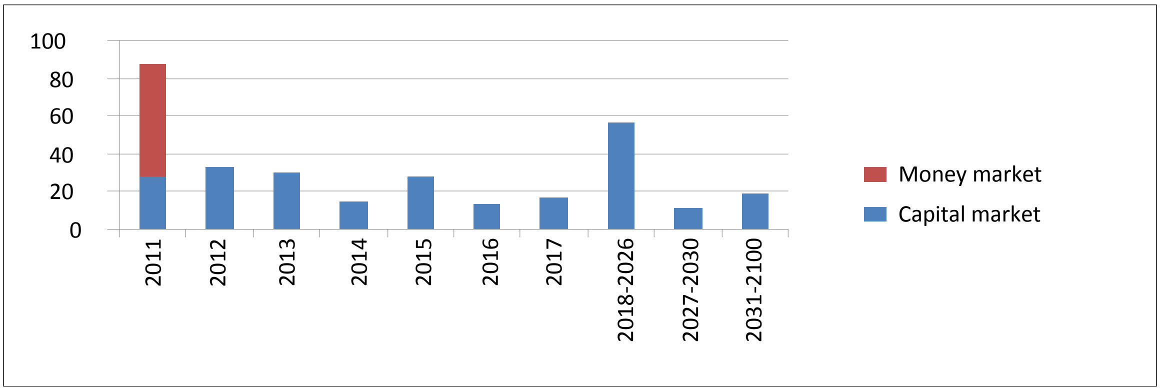
[24] See, for example, Ejsing, J. and J. Sihvonen, Liquidity Premia in German Government Bonds, ECB Working Paper No. 1081, 2009.

[25] This facility separates a loan into individual coupon strips and a principal strip. In principle, these strips are tradable separately. It is also possible to recompose (de-strip) a loan with a principal strip and sufficient individual coupon strips.

[26] The repo facility ensures that Primary Dealers always have the opportunity to obtain DSLs from the Dutch State (for a brief period of time).

[27] *Jaarverslag Nationale Schuld IXA 2008* ('IXA National Debt Annual Report 2008') (*Kamerstukken* ('Parliamentary Documents') II, 2008-2009, 31 924, no. 1). *Only in Dutch.*

***Figure 7: Repayment profile at year-end 2010 (€ billion)***




### *II.2 Market risk – currency risk*

In principle, the Dutch State borrows on the capital market in euros. Preparations have been made in recent years for issuing capital market loans in US dollars because that would increase the investor base, on condition that lower costs can be achieved. The Dutch State has also been issuing Commercial Paper (CP) on the money market in foreign currencies with maturities of up to one year since 2007. However, the State is running a currency risk by borrowing in foreign currencies and it therefore enters into currency swaps to hedge this risk[28]. As a result, there is effectively no currency risk run on the national debt[29].

### *II.3 Market risk – interest costs and interest rate risk and the use of swaps*

Funding policy is significantly influenced by market considerations (predictability, transparency, liquidity, a broad investor base) which contribute indirectly to lower debt-financing costs. Interest rate risk policy revolves around controlling and adjusting risks, which helps to ensure sustainable and predictable public finances in the short, medium and long term because interest costs for debt financing are a major component of the EMU-balance (approx. 1.6% to 2.0% of GDP). As well as having a direct impact on the budget, fluctuations in interest costs can also be seen in their contribution to the EMU balance (see Annex 2: Relationship between debt management and fiscal policy).

A trade-off takes place between the costs and the risks of debt financing. On average, the more short-term the financing, the lower the interest costs will be, but the higher the risk; on the other hand, the more long-term the financing, the higher the interest costs, but the lower the risk will be on average. This relationship exists because annual refinancing will be higher if the financing is more short-term on average and lower if the financing is more long-term on average; an adverse (increasing) trend in the interest rate level will also affect interest costs faster with financing that is more short-term and less fast with financing that is more long-term on average. There is more room in the budget to absorb unexpected adverse developments in interest costs if the debt ratio is lower because the debt manager can then borrow on a more short-term basis at lower costs on average – but slightly increased risk – without endangering the budget objectives as a result. Costs that are lower on average help to reduce the debt ratio. The

[28] A currency swap is a transaction in which two parties agree to exchange currency for a specific period of time. Such a transaction can be broken down into different parts: the first part – the exchange of currency A for currency B – is performed on the day of the transaction and the second part – the exchange from currency B to A – which will be performed at a later stage.
[29] The one exception is a small exchange rate risk on the Antillean debt certificates that were taken over in October 2010 from the former country the Netherlands Antilles and the former island territory of Curacao. These loans are denominated in NAf and have terms ranging up to 20 years. Because of the fixed link between the NAf and the US dollar, there is a euro-dollar risk on these debt securities of a nominal amount of approximately $ 1.8 billion (approx. € 1.3 billion) as of 10 October 2010.

government's risk preference is decisive in the ultimate choice of the desired trade-off between costs and risk.

Issuing loans in a limited number of specific maturities does not always produce the desired result as regards the trade-off between costs and risk because the issuance policy may mean that the average maturity of the portfolio is not in line with the desired maturity from a risk perspective. Many countries therefore use interest rate swaps as part of their debt policy[30]. Swaps offer the possibility of uncoupling issuance policy from (interest rate) risk policy and achieving aims in both policy areas[31]. The Dutch State also uses interest rate swaps to adjust the interest rate risk that is the consequence of the funding policy. For example, the debt manager can use swaps for short-term financing of part of the debt (in the liquid money market) and still pay a fixed long-term interest rate.

The use of swaps is a tool for managing risks and should never create any additional risks. The risk attached to the Dutch swap portfolio is relatively small because the swaps are only employed to achieve a slight improvement in the debt portfolio (i.e. the final extra amount of efficiency generated by adjusting the interest rate risk). Section 4 in this chapter addresses the management of risks attached to swaps.

### *II.3.1 Trade-off between costs and risk – the modelling approach*

Through its debt and risk management, the DSTA intends to fulfil the Dutch State's borrowing requirement as efficiently as possible. 'Efficient' in this case means minimising (interest) costs over the medium and long-term at an acceptable level of risk to the budget. (Interest) costs and risk are meant in their broadest sense in this context and (interest) costs also include implementation costs. The DSTA analyses the development of the debt portfolio periodically. The analysis looks at the development of the budget balance in a baseline scenario and a stress scenario and shows precisely how the trade-off would work between the costs and risk of various financing strategies in those scenarios. The need for such analyses of the debt portfolio is emphasised in the Stockholm Principles.

Based on the current composition of the debt and swap portfolio, the analyses run by the DSTA calculate the expected (interest) costs and the risk attached to different financing strategies for a period of at least four years. The (interest) costs are already partly fixed for the years ahead because the calculations are based on the composition of the current portfolio. For the same reason, the size of the risk (i.e. the part of the portfolio on which the interest rate has to be set once again) is also already partly fixed.

Using the modelling method, the average expected (interest) costs over a specified period for a specific financing strategy are compared to the risk attached to that strategy. The risk is understood as the maximum extra (interest) costs that can be generated over the specified period in the event of an unfavourable interest rate scenario[32]. Costs and risk vary according to the composition and size of the portfolio. The composition of the portfolio is determined by the initial composition and the financing strategy. The size of the portfolio is determined by the development of the budget balance, which in principle is external information from a debt manager's point of view; for the budget balance various scenarios are defined (including a baseline and a stress scenario).

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[30] An interest rate swap is an agreement between two parties to the effect that a fixed interest rate is exchanged for a variable one during the term.
[31] Wolswijk, G. and J. de Haan, Government Debt Management in the Euro Area; Recent Theoretical Developments and Changes in Practices, Occasional Paper Series, no. 25, 2005, p. 12.
[32] The risk is expressed as Cost-at-Risk (CaR) (in this case, the relative CaR). The absolute CaR comprises the interest costs that will not be exceeded with a certainty of 97.5% (one-tailed confidence interval) in a particular period (the simulation period). Of course, there is a 2.5% chance that the actual interest costs will be higher in the period in question. The relative CaR is the absolute CaR minus the average expected (interest) costs. The CaR is determined based on a normal distribution.

The modelling results in terms of costs and risk depend not only on the scenario used for the development of the budget balance and the chosen financing strategy, but also of course on the modelling option chosen for the interest rate. The interest rate is simulated using a multi-factor model[33]. Changes in the interest rate are determined in the model by uncorrelated random shocks which are reflected in the future interest rate curves. A component analysis[34] is used to determine how many random shocks have to be modelled and with what level of volatility. The analysis is based on a set of historical interest rate curves. Which actually detectable risk factor causes the shock is neither known nor relevant in this modelling analysis. The interest rate level is modelled as an exogenous factor that is not affected by the debt manager[35].

The central assumption in the modelling of the expected (interest) costs is that the trend of the interest rate curve on average is upwards. This assumption is also in line with the average observation based on historical interest rate curves and with what one can expect according to time preference theory, for example. An interest rate curve where the average trend is upwards suggests that short-term borrowing is less expensive than long-term borrowing. The relationship with the budgetary risks is reversed. This is shown by the modelling of the interest rate. On an annual basis, long-term borrowing generates less refinancing than short-term borrowing. In addition, the long-term interest rate is usually less volatile than the short-term rate, which means that the possibility of unforeseen changes in the interest costs (the budgetary risk) is further restricted with long-term borrowing.

The trade-off between costs and risk can be clarified in a graph showing costs and risk. In this graph (see Figure 8), the expected costs of debt financing (interest costs) are shown on the vertical axis for a specific development of the budget balance and a specific period. The risk is shown on the horizontal axis. The risk comprises the extra costs that may be generated over that specific period if the development of the interest rate is less favourable. Each point on the graph is the result of a model calculation based on the same initial composition of the debt portfolio, the same assumptions in respect of the development of the budget balance (the baseline or the stress scenario) and the same modelling of the interest rate, but a different financing strategy. The extremes in Figure 8 represent a portfolio A in which most of the borrowing is long-term (high costs, low risk) and a portfolio B in which most of the borrowing is short-term (low costs, high risk).

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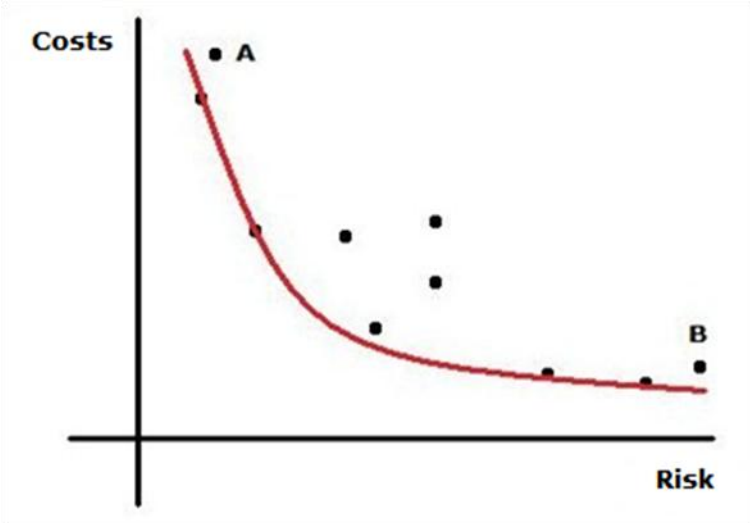
[33] A multi-factor Heath-Jarrow-Morton (HJM) model is used. In the HJM model, changes in the forwards are determined by a drift and a random term. The drift is small and is ignored in the model. Changes in the interest rate are therefore determined in the model by uncorrelated random shocks which influence the future interest rate curves in the discrete modelling through the forwards.

[34] Principal component analysis (PCA) is used to describe a large dataset of possibly correlated variables (in this case, interest rate series) with the help of a smaller number of uncorrelated variables (the principal components). The first principal component explains most of the variation in the dataset. The second component explains as much as possible of the remaining variation, etc. Usually, the first two to three components describe 80% to 90% of the variation in the dataset.

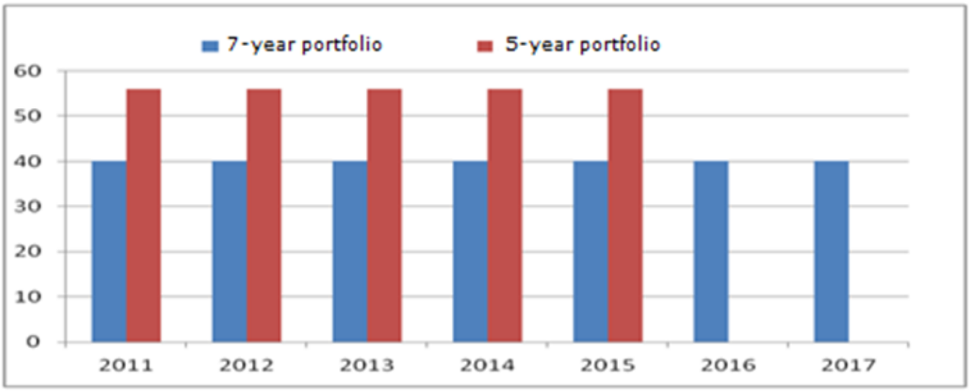
[35] A relationship between debt policy and interest rate level is difficult to demonstrate (see also Annex 3: Relationship between debt management and monetary policy). Nevertheless, a sound debt policy – in addition to healthy public finances and a solid fiscal policy – does contribute indirectly to a country's credit rating. Countries with a higher credit rating usually pay a lower risk premium than countries with a lower credit rating. Furthermore, access to financing for the less creditworthy countries is not as easy in a crisis as it is for the countries with a better rating.

***Figure 8: Trade-off between costs and risk***




The portfolios with an optimum trade-off between costs and risk form what is known as the *efficient frontier*. These are portfolios with costs that are as low as possible given the risk or with a level of risk that is as low as possible given the costs. Only centralised portfolios can be found on the *efficient frontier* (see Annex 4: Why centralised portfolios are efficient). A centralised portfolio is characterised by financing in a single maturity. By way of illustration, Figure 9 shows the repayment profiles (as well as the risk profiles) of a 5-year and a 7-year centralised portfolio worth a total of € 280 billion as at year-end 2010.

***Figure 9: Risk profile of two centralised portfolios at year-end 2010 (€ billion)***




### *II.3.2 Risk framework as a safety net*

One of the points to remember when determining the risk framework is that it must be a safety net for extreme situations. This is why the model analyses take account above all of the risks attached to a worsening of the budget balance and the subsequent impact on interest costs, as shown in scenarios with an adverse development of the budget balance. As with modelling of the interest rate, the debt manager is not concerned about which factors worsen the budget balance. However, it is important to obtain a picture of the overall worsening of the budget position that might occur in the event of a negative shock. The document entitled 'The government finances shock proof. A risk analysis of Dutch public finances'[36] contains more information about the possible risk factors that can worsen the budget balance. The document provides insight into the sensitivity of public finances to three different types of imiginary shocks.

[36] See the letter of the Minister of Finance to parliament (*Kamerstukken* ('Parliamentary Documents'), 2010-2011, 33000, nr. 36. The report is also available on www.dsta.nl.

The development of the interest rate is another important aspect of the model. As already stated, the interest rate is modelled using shocks which are reflected in the interest rate curve. In practice, several shocks can occur in any specific period of time. On balance, these shocks can also fully or partly average each other out over the medium to longer term because a shock can result not only in an upward curve (and therefore higher interest costs), but also in a downward curve (lower interest costs). In the modelling analysis, shock after shock is reflected in the interest rate curve in the same manner and only higher interest costs are relevant (windfalls in interest costs are not usually a problem). The consequence of this approach is that the position of the interest rate curve is higher and higher in the model. The ultimate stress shown in the interest rate modelling after a number of years using this method is similar to the historical high interest rates that the Netherlands had to pay to borrow money in the 1980s. This analysis is therefore an important supplement to the risk analysis of Dutch public finances mentioned before[37].

The debt increases during the simulation because the worsening of the budget balance is explicitly taken into account in the stress situation. The upward trend in the interest rate curve during the simulation will also increase the simulated (re)financing costs. A risk framework based on analyses using these assumptions will certainly be a safety net, including in extreme situations. There is a danger, however, that the results will explode if a longer period of time is simulated. Results should therefore always be interpreted in relation to the modelling assumptions and the hypothetical parameters.

### *II.3.3 Ultimate decision – risk preference in line with fiscal policy*

Initially, the modelling analysis is a *theoretical* concept. Any financing strategy can be analysed within that concept starting from any initial composition of the portfolio. This theoretical concept assumes that only debt is issued for (re)financing purposes. The fact that the debt manager can also use derivatives such as interest rate swaps in practice to manage the interest rate risk is not relevant in the modelling analysis. A swap is a supplementary instrument that can facilitate the implementation of funding policy and risk management; using swaps is not an end in itself for the debt manager and therefore does not belong in the modelling analysis.

The fact that the debt manager can use swaps to adjust the interest rate risk is relevant, however, as regards translating the results from the modelling analysis into a *practical* risk framework. The outcomes from the modelling analysis show that there is more than one portfolio (financing strategy) with an efficient trade-off between costs and risk because this efficient trade-off is a feature of all portfolios on the efficient frontier. The initial composition of the debt portfolio restricts the portfolios that are achievable in practice with (re)financing alone. A portfolio with relatively short-term financing offers greater flexibility because debt will be due for (re)financing earlier. Flexibility is more limited in the case of a portfolio with relatively long-term financing. Of course, the risk profile can be restructured by repurchasing the current debt and refinancing in different maturities. The question then, however, is whether the advantages of extending or shortening the debt portfolio are sufficient to justify the restructuring costs. It is also possible in principle to use swaps to achieve any risk profile, but it is important to remember in that case that swaps support debt management and that the risk related to the swap portfolio must never be so large that the portfolio itself becomes a source of risk. The disappearance of (part of) the swap portfolio must not result in such fluctuation in the interest costs as to threaten the achievement of the fiscal objectives or fiscal discipline. In principle, therefore, only portfolios that can be achieved from the initial portfolio within a few years by means of debt issuances and a restricted swap portfolio

[37] See the letter of the Minister of Finance to parliament (*Kamerstukken* ('Parliamentary Documents'), 2010-2011, 33000, nr. 36. The report is also available on www.dsta.nl.

are eligible for conversion to a practical risk framework. As a result, only part of the efficient frontier is usually relevant in practice (this is the "lock-in effect").

Assuming that the government is risk-averse, a portfolio with ultra-long-term financing (e.g. a portfolio of 30-year loans) seems advisable. Such a portfolio does have its disadvantages of course. Largely ultra-long-term borrowing causes a reduced refinancing requirement in the short term because the debt is fixed for the longer term and will not be due for refinancing for the time being. If the budget balance then remains limited, it is hardly possible any longer to issue new debt, which would put pressure on the previously discussed principles of Dutch funding policy such as continuity and predictability. If the debt manager is no longer able to continue the issuing policy, the risk-free interest rate curve (the State curve) often used by other market participants as a benchmark will also be in danger. The portfolios achievable in practice are therefore also determined by the (expected) absolute size of the debt portfolio and the basic principles of funding policy. For example, with a debt of € 300 billion and an annual issuance of € 10 billion in the 30-year segment, there is no longer any room in the long-term equilibrium for issuances in other maturities or for maintaining a money market of sufficient size to absorb unexpected windfalls or setbacks in the borrowing requirement.

The trade-off between costs and risk is another factor because reducing the risk means increasing the (expected) costs. Shorter-term financing is on average less expensive, but it also entails higher risks. Longer-term financing is on average more expensive, but there is less risk from adverse developments. The higher costs can be seen as a premium to be insured for part of the interest rate risk. Every euro less risk results in a higher insurance premium, usually with a non-linear link, i.e. the insurance premium is usually higher for each extra euro of risk reduction than for the previous euro of risk reduction. Consequently, there comes a point when it is no longer worth reducing the risk any further by extending the maturity. For example, if a further € 1 million reduction in the risk would increase the expected costs by more than € 1 million, the advantages of reducing the risk no longer outweigh the expected costs. Obviously, the tipping point depends on the shape of the interest rate curve. The insurance premium is low with a low interest rate and a flat curve; the benefits of insurance therefore almost always outweigh the risk of adverse developments with shorter-term financing. The insurance premium also depends on the curvature of the curve. The premium will be lower, for example, if the curve is flattening out at the longer end, which means that long-term financing (of part of the debt) may then be advisable.

In addition to the above considerations in practice and also the role of the risk framework as a safety net, the government's risk preference will also have a decisive impact on the final decision. The final decision will obviously have to be in line with the objectives of the coalition agreement.

### *II.4 Credit risk, settlement risk and concentration risk*

Interest rate and currency swaps are an integral part of risk policy. The State does run a credit risk by using swaps, however. The credit risk is the risk that a counterparty in a swap will not meet its obligations.

The State enters into swaps under a standard contract (ISDA Master Agreement)[38] as part of risk management of the national debt. In principle, the State only enters into the most common form of interest-rate swaps and currency swaps (plain vanilla) and does not employ complex derivatives. A customised Credit Support Annex (CSA) to the ISDA contract helps to limit the credit risk from counterparties. This CSA states that the counterparties must provide collateral (cash or government paper) when an obligation towards the State arises. An obligation towards the State arises when the swap has a positive market value for the State. The CSA agreed between the Dutch State and its

[38] ISDA stands for International Swaps and Derivatives Association. The standardisation of contractual terms and conditions by the ISDA helps to create an efficient market.

counterparties does not require the State to provide its counterparties with collateral. The size of the collateral required for most parties is determined based on daily valuation of the swaps. In principle, the Dutch State only enters into swaps with Primary Dealers (PD) or Single Market Specialists (SMS) who are extremely creditworthy (a minimum of AA- from S&P/Fitch or Aa3 from Moody's for at least two of the three ratings). Parties with a lower rating (A+ or A1) are required to pay a set amount of "upfront collateral" before they can enter into swaps. The State can immediately "unwind" swaps with a counterparty if one of the ratings of that counterparty drops below A (S&P/Fitch) or A2 (Moody's).

The Dutch State also runs a credit risk on excess funds lent on a temporary basis. In order to limit this risk, counterparties with whom the debt manager can conduct transactions must comply with minimum rating requirements. The credit risk is also restricted by minimising unhedged lending and not lending for longer periods of time. As a result, the preference is for buy-and-sell-back transactions (hedged deposits) in which collateral in the form of government bonds from the most creditworthy eurozone countries is deposited with the State. This collateral can be sold off if a counterparty fails to meet its obligations. The economic crisis has resulted in a further tightening of the rules. For example, the possibility of lending without collateral is restricted to one day ("overnight") for most counterparties.

Settlement risk is part of credit risk. Settlement risk is the risk that the counterparty with whom transactions have already been concluded but not yet settled will no longer be able to fulfil its obligations, as a result of which losses may be incurred. The form of the obligation depends on the instrument. In the case of swaps, there is a risk that the counterparty will not comply with its obligation to provide collateral or that the counterparty will fail to pay a fixed (or variable) interest (although netting does mitigate this risk)[39]. When debt is issued, settlement risk is the risk that party A will pay, but party B will not deliver. The basic principle in the case of the national debt is equal exchange ("payment versus delivery").

Concentration risk is the risk that a large portion of the total credit risk (as a result of funds lent or because of swaps) will be run on one or a small number of parties. Consequently, there is a limit system to avoid concentration risk. The limit system prescribes the portion of the total credit risk that may be run on a single counterparty. Credit risk itself is (often) hedged by collateral. Concentration risk is important in the event of a default by a counterparty because unhedged receivables then become part of the bankruptcy and swap transactions fall away altogether. Because of that, the State then has an open position. This position has to be closed to avoid an undesirable interest rate or currency position for the State. In the unlikely event that a counterparty with a good rating were to default, the collateral should in principle be sufficient to close the position by entering into new swaps (without extra costs having to be incurred in order to do so).

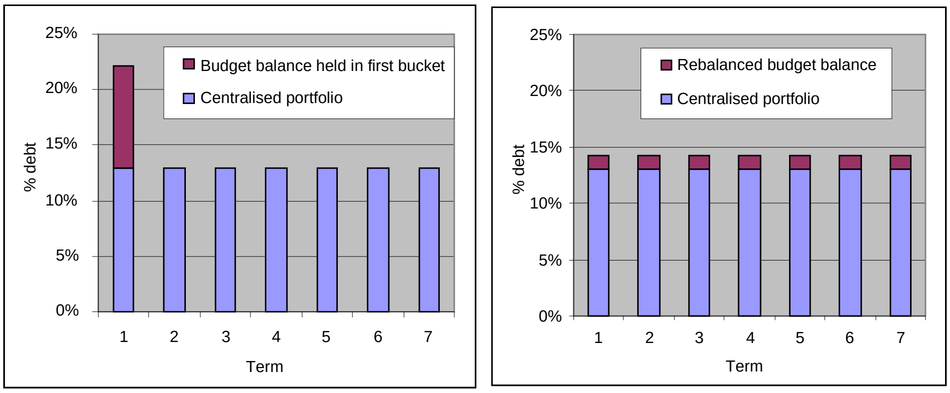
[39] In a swap, fixed interest and variable interest are exchanged and an agreement is made with most counterparties that payments will be netted (in other words, when the counterparty has to pay a fixed (or variable) interest rate and the State also has to pay a variable (or fixed) interest rate, the balance of the two payments determines the ultimate amount of the net payment). The settlement risk for the State is reduced as a result.

## III. Assessment of the risk management framework for 2008 to 2011

### *III.1 A benchmark for the national debt*

The risk management framework for the 2008-2011 period is based on the principle of debt financing at the lowest posisble interest costs given an acceptable level of risk to the budget[40]. As regards what is acceptable, it is important to remember that the risk framework must also be effective in the most improbable (economic) situations (safety net role). The framework was implemented with a benchmark starting in 2008. The benchmark for the 2008-2011 period is a 7-year centralised portfolio. The model analyses performed in 2007 showed that centralised portfolios are efficient[41]. There is a trade-off between costs and risk. The statement that a portfolio has an efficient trade-off between costs and risk means either that there is no other portfolio with a lower risk at a specific average cost level, or that there is no portfolio with lower average costs at a specific level of risk. The risk profile of such an efficient centralised portfolio (including the way the budget balance is treated – see below) is shown in Figure 10. The risk profile is a reflection of the portion of the debt on which the interest rate has to be set again in any given year. The government's risk preference is decisive in the ultimate choice of one of the efficient portfolios as the benchmark.

***Figure 10: The treatment of the budget balance in the benchmark***




In 2007, fiscal policy was focussed on remaining within the 3% GDP limit for EMU deficits and assumed a structural surplus of 1% of GDP as of 2011. The limit set at that time for the deficit meant on the one hand that it was not permissible for fluctuations in interest costs to be so large as to endanger a sound fiscal position. On the other hand, however, restricting the average debt financing costs helps to produce a surplus. The choice of the 7-year centralised portfolio was in line with fiscal policy, which was focussed on achieving a structural surplus of 1% of GDP in 2011. As a result of this fiscal policy, the expectation was that the debt ratio would fall. This approach would have gradually shortened the portfolio under the risk framework from the 2003-2007 period, in which a basis amount-at-risk of 9% of GDP was the target[42]. The choice of a 7-year centralised portfolio also resulted in a shortening of the debt portfolio. Given the expected trend in the debt, the choice of the 7-year centralised portfolio as the benchmark therefore continued the old policy line from the 2003-2007 period, but the continuation was expected to cost less and incur less risk on average[43] (because the chosen portfolio has an ex ante efficient

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[40] General policy objective, *Jaarverslag 2008 - Nationale Schuld IXA* ('Annual Report 2008 – IXA National Debt'). *Only in Dutch.*
[41] See Annex 5 in Risk management of the national debt. Evaluation of the 2003-2007 policy & 2008-2011 policy, DSTA, September 2007.
[42] The basis amount-at-risk determines what portion of the debt is sensitive to changes in the market interest rate every year. The basis amount-at-risk for year *t*, which had to be ready as at year-end *t-1*, is composed of the amount of the existing debt that has to be refinanced in year *t* plus the net swap portfolio.
[43] See p. 7, p. 46 and p. 54 in Risk management of the national debt. Evaluation of the 2003-2007 policy & 2008-2011 policy, DSTA, September 2007.

trade-off between costs and risk).

A 7-year centralised portfolio can be maintained by constantly refinancing repayments in the same maturity (i.e. 7 years). In practice, there will always be changes in the size of the debt as a result of deficits or surpluses. These changes in the debt are also incorporated in the benchmark to avoid creating any discrepancy between the benchmark and the actual portfolio. Each change ensuing from the budget balance is initially kept (financed) in the benchmark at the money market rate (in the first bucket). The budget balance therefore causes a temporary inefficiency in the risk profile. This inefficiency is removed during the subsequent year by dividing the budget balance in the benchmark over the seven buckets (rebalancing). Of course, a new budget balance is created in the year in which the budget position from the previous year is rebalanced. That new budget balance is then also financed temporarily at the money market rate. The way in which the budget balance is treated in the benchmark fits well with the situation in practice where (unexpected) changes in the debt are also (largely) absorbed on the money market. Expected (previously estimated) changes in the debt can obviously be taken into account when determining the annual capital market borrowing. The benchmark is in fact a fictional debt portfolio intended to achieve financing that is as efficient as possible taking into account real-life factors such as unexpected changes in the debt.

The debt-financing objective was implemented for the 2008-2011 period with a benchmark to tackle a number of disadvantages of the risk framework in the previous period. The intended advantages of introducing a centralised portfolio as the benchmark compared to the control variable from the previous period (2003-2007) were that the portfolio would not be affected by the business cycle and would be more workable, easier to explain and more efficient[44].

These advantages were obtained by introducing the benchmark as the control variable in 2008. The chosen benchmark is tailored to the expected trend in development of the debt from 2007. The implementation of the risk framework with a benchmark means that it is no longer necessary to immediately extend the maturity of the portfolio in the event of adverse budgetary developments or to immediate shortening of the portfolio because of positive developments in the budget. The benchmark in the form of a 7-year centralised portfolio determines the maximum risk that can be run and therefore acts as a safety net. A portfolio with a shorter maturity is accompanied by greater risk and a portfolio with a longer maturity by less risk.

The debt manager does not have to make adjustments in order to achieve the objective if any part of the actual budget balance differs from the estimate because errors in projections are absorbed (at least largely) in the money market in both the benchmark and the debt portfolio. As a result, the control variable is more workable than was previously the case.

The benchmark is clearly defined not only with respect to risk, but also with respect to costs because it prescribes exactly how and at what yield the debt manager should borrow funds. The result of the debt manager’s choices can therefore be quantified explicitly compared to the benchmark as regards both risk and costs. If other control variables such as a basis amount-at-risk or a duration target[45] are used, only the risk is quantified (costs are usually not clearly defined with those control variables), because two debt portfolios can have the same duration but a different composition. Differences in composition can also affect the annual interest costs. In the case of a duration target, therefore, there is no clear reference with which to compare the costs of the actual debt portfolio.

[44] A comprehensive explanation can be found in Risk management of the national debt. Evaluation of the 2003-2007 policy & 2008-2011 policy, DSTA, September 2007.

[45] Duration is a measure of the sensitivity of a bond or a portfolio of bonds to interest rates. The duration is actually the weighted average term of all cash flows (coupons and repayment of the principal) where the weight is determined by the relative importance of those cash flows.

Using a benchmark is also in line with the efforts to increase transparency. The ex ante transparency concerns interest rate risk policy. It is easy to explain why the Dutch debt manager uses an interest rate risk framework with a 7-year centralised portfolio as the benchmark. The choice of a centralised portfolio as the benchmark means that there is an efficient trade-off between costs and risk ex ante. The costs and risk of the benchmark can only be replicated exactly by borrowing in practice in exactly the same way and with exactly the same yields. Incidentally, this does not mean that the debt manager will apply exactly the same strategy in practice because the details of the actual borrowing strategy are a combination of issuance policy (which is partly determined by market considerations that contribute indirectly to reputation and lower costs) and the use of derivatives such as currency and interest rate swaps.

The ex post transparency concerns the result of the issuance policy and the swaps compared to the benchmark. The result of the actual portfolio is compared with that of the benchmark on an annual basis in relation to both risk and costs. Transparency in respect of results compared to the benchmark promotes efficiency because it encourages the debt manager to explicitly assess the balance of costs and risk. Even when there are (social) arguments in favour of issuances that are less efficient as regards the cost-risk balance, the effects of those issuances are still quantified in the results compared to the benchmark.

The downside to the increased efficiency and transparency is the complexity, which can also be seen in the Annual Reports on National Debt. The explanatory notes in the annual reports have become more technical since the introduction of the benchmark as a control variable[46]. Furthermore, the decision was taken to recognise both realised results as well as unrealised changes in market value compared to the benchmark. The reason behind this decision was the need to ensure that the results of the actual portfolio could be properly compared with the results of the benchmark. A comparison of the realised result with the benchmark shows how much higher or lower the interest costs would have been if the national debt had been financed in exactly the manner prescribed in the benchmark. The realised result alone does not provide enough information about the result compared to the benchmark, which is why the unrealised result compared to the benchmark is also presented. The unrealised result relates to the change in the cash value of the future cash flows (market value changes). The timing of debt repayment and refinancing will be different in the debt portfolio and the benchmark. The unrealised result compared to the benchmark is also presented in the annual report in order to take into account these timing differences. The unrealised result shows whether, all other things being equal, the borrowing decisions were favourable or unfavourable compared to the benchmark.

### *III.2 Risk compared to the benchmark*

The debt financing results compared to the benchmark are reported on an annual basis after the fact[47]. The results relate to both risk and costs. The DSTA attempts to replicate the benchmark as far as possible where risk is concerned[48]. The debt manager has not actively taken positions compared to the benchmark[49]. The risk profile of the debt portfolio including swaps at year-end 2010 (Figure 11) therefore resembles that of the benchmark (Figure 9).

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[46] See National Debt Annual Report [*Jaarverslag IXA Nationale Schuld*] for 2008, 2009 and 2010. *Only in Dutch.* An overview of the results for 2010 is available in English at www.dsta.nl.

[47] See National Debt Annual Report [*Jaarverslag IXA Nationale Schuld*] for 2008, 2009 and 2010. *Only in Dutch.* An overview of the results for 2010 is available in English at www.dsta.nl.

[48] For the sake of completeness, it should be noted that there is a currency and interest rate risk compared to the benchmark at year-end 2010 because the Dutch State took over debt securities from the former country the Netherlands Antilles and the former island territory of Curacao.

[49] With the exception of limited taking up of positions by dealers on the money market.

***Figure 11: Risk profile of the debt portfolio including swaps at year-end 2010 (in € billion)***

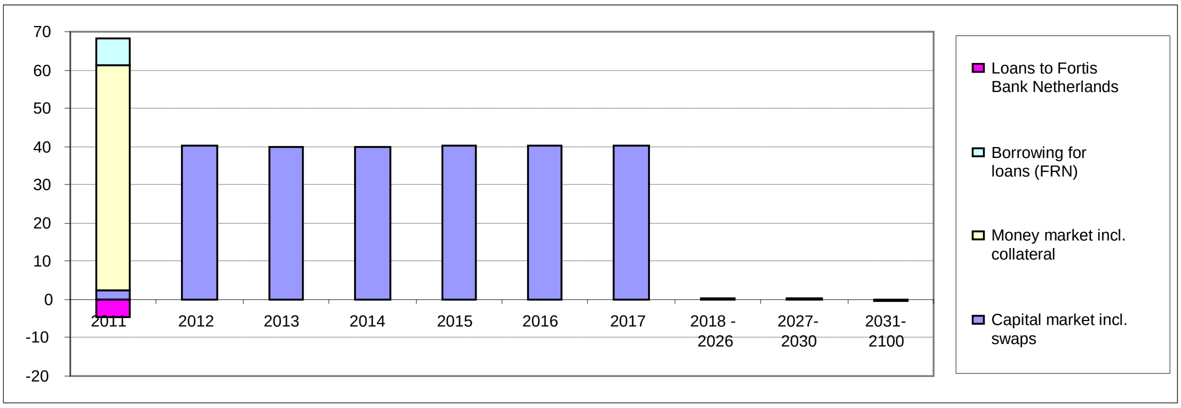
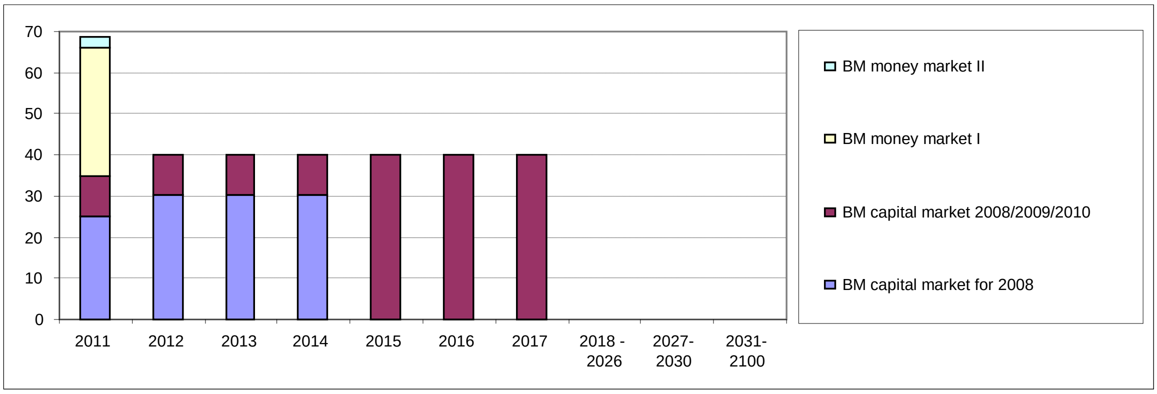



***Figure 12: Risk profile of the benchmark at year-end 2010 (in € billion)***




There were also similar risk profiles for the actual portfolio and the benchmark as at year-end 2008 and year-end 2009. The risk is shown based on the nominal size of the debt certificates (and swaps) for which the interest rate has to be fixed once again. As a result, small deviations in the presentation of the risk may occur[50]. The risk profile of the actual portfolio is similar to that of the benchmark, but the risk profile of the actual portfolio is achieved in a different manner. Benchmark transactions and actual debt financing have been different since 1 January 2008. In the benchmark, there has been only daily (re-)financing at the 7-year yield or the call rate (EONIA) since the beginning of 2008. The refinancing with 7-year loans in 2008, 2009 and 2010 can be seen in the benchmark's risk profile as at year-end 2010 in the years 2015, 2016 and 2017 (Figure 12). This figure also shows that the budget deficit from 2008 and 2009 – after first being financed at the call rate – was incorporated in the benchmark by refinancing in maturities of 1 to 7 years. The result was that the absolute size of the risk in the years 2011 to 2017 (in Figure 12) increased from approximately € 30 billion at the beginning of 2008 to approximately € 40 billion as at year-end 2010.

The risk profile of the benchmark at year-end 2010 differentiates between money market I and money market II. Money market I is the portion of the debt financed in the benchmark at the call money rate (EONIA). Money market II is also financed at the call money rate but is reported separately because a modified risk management method is used for a part of the financing of measures taken in the context of the credit crisis. In 2008, the Dutch State acquired an interest in Fortis Bank Nederland Holding N.V., Fortis

[50] There was one such deviation as at year-end 2010. The total risk in the debt portfolio as presented in Figure 11 is slightly less than the total risk in the benchmark in Figure 12. The nominal sizes are shown in the risk profile. Premiums and discounts on issuances, as well as differences in the interest charges, can cause the size of the nominal debt in the debt portfolio to differ from that of the nominal debt in the benchmark. An explanation can be found in the annual report on national debt for 2010 *(only in Dutch)*. An overview of the results for 2010 is also available in English at www.dsta.nl.

Verzekeringen Nederland N.V., Fortis Corporate Insurance N.V. as well as an indirect interest in the portion of RFS Holdings (ABN AMRO) acquired by Fortis. Included in that takeover were short- and long-term loans issued by Fortis Bank SA/NV to Fortis Bank Nederland (FBN)[51]. The loans to FBN are recognised in the accounts under Article 1 in the Budget on National Debt (chaper IXA of the national budget).Because both the financing of these loans and the loans themselves are recognised in the same budget chapter, ALM was used for that part of the national debt[52]. Initially, the financing of the loans was as large as the loans themselves. Over time, however, the composition of this part of the debt portfolio has changed due to a number of factors, including early repayments of the loans by FBN. The financing of the loans and the remaining loans to FBN must be compared to the part of the benchmark called 'BM money market II'.

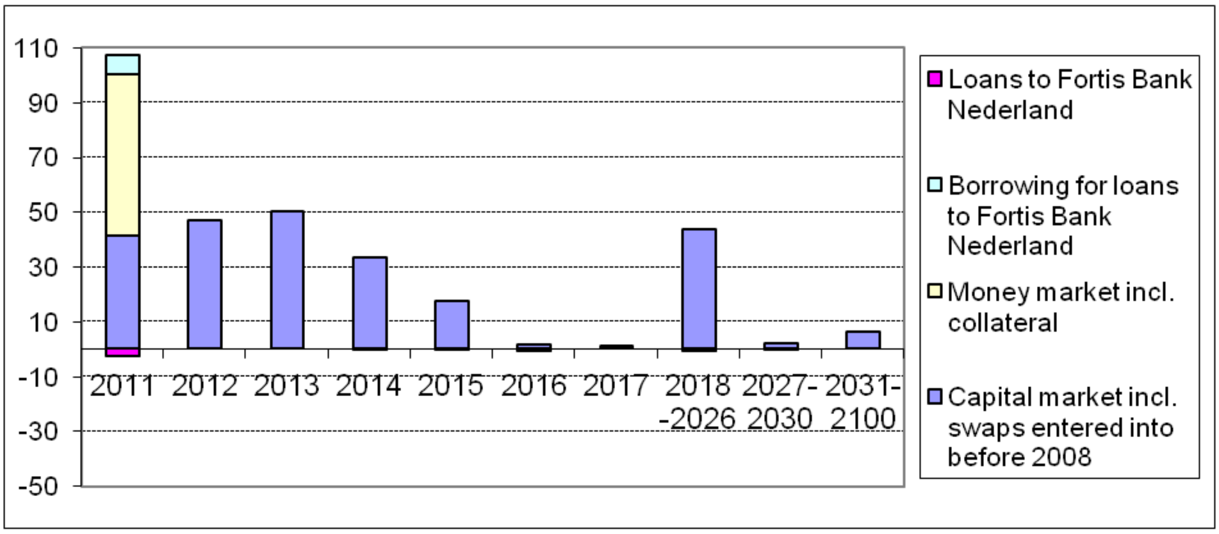
The 7-year yield for borrowing in the benchmark is equal to the effective yield at which the State could also have borrowed. The interest costs in the benchmark therefore develop in accordance with the interest rate level on the market. Because of the financing/refinancing, the interest costs in the debt portfolio also follow the interest rate level on the market. As long as the risk profiles of the two portfolios are sufficiently similar, the two portfolios will even follow the market interest rate level in a similar manner. The debt manager does not therefore run any risk as a result of changes in the absolute interest rate level (level risk).

The actual portfolio approximates the risk profile of the benchmark through a combination of issuances in different maturities up to 30 years and swaps. As a result, there is a spread risk compared to the benchmark, because issuing a 3-year loan and at the same time entering into a 3-year receiver swap[53] and a 7-year payer swap in the debt portfolio is not the same as issuing a 7-year loan in the benchmark. The arrangement does lock-in level risk of the debt portfolio compared to the benchmark, but it is still not clear what the overall result will be for the entire period because the 3-year loan from the debt portfolio is financed/refinanced after three years at a rate and for a maturity that are currently not known. As part of that transaction, a receiver swap with a similar maturity will be entered into once again. Effectively, the risk compared to the benchmark is spread risk. The spread in question is the spread between the swap rate and the effective yield on State loans with a similar maturity. Fluctuations in spreads are smaller than fluctuations in interest rate levels.

There would have been a level risk compared to the benchmark if no swaps had been entered into in 2008, 2009 and 2010. The risk profile of the actual portfolio would then have been different to that of the benchmark (see Figure 13). Deviations from a portfolio with a theoretically efficient trade-off between costs and risk are greater if there is level risk as well as spread risk, as is explained below.

[51] *Kamerstukken* (Parliamentary Documents) II, 2008/09, 31 371, no. 12. *Only in Dutch*.
[52] See the National Debt Annual Report [*Jaarverslag Nationale Schuld*] for 2008, 2009 and 2010. *Only in Dutch.* An overview of the results for 2010 is available in English at www.dsta.nl.
[53] A receiver swap is a swap in which a fixed, long-term swap rate of interest is received and a variable rate of interest (usually a 3-month or 6-month Euribor) is paid. A payer swap is a swap in which the fixed, long-term swap rate of interest is paid and a variable rate of interest is received.

***Figure 13: Risk profile of the debt portfolio at year-end 2010 excluding the swaps entered into since 1-1-2008 (in € billion)***




### *III.3 Result compared to the benchmark in terms of costs*

The measurement of performance in terms of costs is based on "total cost" (see box 1). The result based on "total cost" comprises more than only the (realised) interest costs as accounted for in the Annual Report on National Debt. The result also includes (unrealised) changes in the market value of the debt portfolio so that debt portfolio results can be properly compared to the benchmark results. Comparing only the realised interest income and costs with the benchmark would not be a proper comparison. The total-cost method takes into account the difference in the timing of debt repayment and refinancing in the debt portfolio and in the benchmark. Calculating the present value of all current obligations will determine changes in market value and attribute effects of the chosen issuing strategy to the result. The "total cost" result is calculated for both the debt portfolio and the benchmark. The performance measurement amounts to comparing the result from the actual portfolio with the benchmark result. The difference between the two is the result compared to the benchmark.

**Box 1: Total Cost**

"Total cost" is a method of calculating the costs of a debt portfolio for a specific reporting period. The method is derived from "total return"[54]. In the "total cost" method, the value of the debt portfolio at the start of the reporting period is compared to the value at the end of the period to obtain a result. Interim interest payments and debt issue costs are also included in the calculation. The method is sensitive to changes in debt level during the reporting period. These changes are caused in the debt portfolio by the budget deficit (or surplus). When these changes are also taken into account in the benchmark, the "total cost" results of the debt portfolio are comparable to those of the benchmark.

At 1 January 2008, the market value of the actual portfolio and the benchmark were equal. The cumulative result compared to the benchmark at year-end 2010 was € 182 million (see Table 5). This cumulative result consists of a positive result compared to the benchmark of € 494 million on the money and capital market (excluding loans to Fortis and the financing of those loans) and a negative result of € 312 million on the Fortis portfolio compared to the benchmark.

[54] A method used to calculate the yield on a portfolio of investments over a specific period of time. The value at the start of the period is compared with the value at the end of the period. In the simplest situation in which nothing is withdrawn from or added to the portfolio during the period, the change in value divided by the value at the start of the period is the yield.

**Table 5: Results compared to the benchmark over the 2008 to 2010 period**

| | Result compared to benchmark - 2008 to 2010 | Total cost 2008-2010 |
|---|---|---|
| **X1+X2** | **Result from the money and capital market compared to the benchmark** | **494** |
| **X3** | **Result from the Fortis portfolio compared to the benchmark** | **-312** |
| **Z** | **Total result compared to the benchmark (X1 + X2 + X3)** | **182** |

The negative result on the Fortis portfolio concerns in particular the effects of unrealised market values on the long-term loans to FBN as well as the FRNs (Floating Rate Notes, i.e. long-term securities with a variable rate of interest) which were used by the State to finance part of these loans.
A separate record is kept of the cumulative result on the loans to FBN and the financing of those loans. This record will allow the DSTA to determine the ultimately realised result on the Fortis portfolio once all transactions have been completed.

The result compared to the benchmark can be broken down into a realised and an unrealised result. This breakdown was produced for 2010 (in the Annual Report on National Debt) (see Table 6)[55]. The overall result compared to the benchmark for 2010 consists of a positive realised result (€ 231 million) and a positive unrealised result (€ 262 million). A positive realised result compared to the benchmark means that the net interest costs as recognised in the Annual Report on National Debt were lower for 2010 than they would have been if borrowing had been conducted exactly as prescribed by the benchmark. This does not mean, however, that the interest costs for the debt portfolio will be lower in subsequent years because that also depends on the future development of the interest rate and the borrowing decisions taken in later years. The positive unrealised result compared to the benchmark shows that, all other things being equal, the borrowing decisions taken in 2008, 2009 and 2010 were favourable compared to the benchmark.

**Table 6: Realised and unrealised result compared to the benchmark for 2010**

| | Result compared to the benchmark - 2010 | Total cost 2010 |
|---|---|---|
| X1+X2 | realised | 266 |
| | unrealised | 201 |
| X3 | realised | -35 |
| | unrealised | 61 |
| | realised (X1+X2+X3) | 231 |
| | unrealised (X1+X2+X3) | 262 |
| **Z** | **Overall result compared to the benchmark** | **492** |

The size of the unrealised result compared to the benchmark remained limited because the debt manager hardly deviated from the benchmark's risk profile. Funding policy has not changed in principle compared to the 2003-2007 period[56] (see also Annex 5: Funding

[55] In order to gain a better insight into the structure of the total cost result, the link with the realised interest costs as recognised annually in the Annual Report was made for the first time in the Annual Report 2010. The link was not made in the annual reports for 2008 and 2009.
[56] Funding policy was modified in certain respects in the 2008-2010 period, however, in order to meet the higher borrowing requirements caused by the economic crisis. Capital market borrowing doubled to

policy and deviations from an efficient portfolio). The interest rate risk resulting from the unchanged issuance policy (see Figure 13) was adjusted using swaps to that of the benchmark. Consequently, the unrealised result compared to the benchmark in 2010 was limited to approximately €0.3 billion (see Table 6). Unrealised results compared to the benchmark could have been larger if the debt manager had deviated from the risk profile prescribed by the benchmark because in that case there would have been a level risk compared to the benchmark. The consequences of level risk are explained in the next section.

### *III.3.1 Effect of swaps in the result compared to the benchmark*

The Dutch State's swap portfolio has grown since 2008 when swaps became an integral part of Dutch debt funding policy. The use of swaps by debt managers does raise questions from time to time, however. First of all, there are questions about how transparent debt managers are in their use of derivatives. Not every debt manager is as transparent as the Dutch debt manager in respect of the role and the risk of swaps in debt policy, the derivatives entered into and the results from those derivatives. As far as the Dutch State is concerned, however, swaps are an integral part of risk management policy, as is explained on the website of the DSTA (www.dsta.nl). The Treasury Agency is also open about the composition of the swap portfolio in the monthly report on its website. The result from swaps is an integral part of the result of debt financing compared to the benchmark. The interest costs on swaps are also budgeted for and recognised as part of the total interest costs on the national debt. Secondly, there are also risks such as credit risk attached to the use of derivatives and the debt manager will have to take adequate measures to control these risks as is explained in section II.4. Thirdly, the derivatives market has changed enormously in recent years, resulting in a much larger quantity and much more complex derivatives. Nowadays, debt managers and/or governments can use complex derivatives as an instrument to hedge risks or to shift the timing of income or costs. The Dutch debt manager only uses the simplest standard derivatives (interest rate swaps and currency swaps) and only in order to adjust or hedge interest rate and currency risk.

The effect of the swap portfolio on the risk and the costs of debt financing can be isolated for the 2008-2010 period to give an insight into the income and costs involved in using swaps for risk management in debt financing. Figure 13 shows the risk profile of the debt portfolio as it would have been if no swaps had been entered into in order to adjust the interest rate risk of the issuance policy in the 2008-2010 period. This profile deviates from the envisaged risk profile in the benchmark (Figure 12). Because swaps were entered into in 2008, 2009 and 2010, the risk expressed as a baseline risk amount at year-end 2010 was reduced from approximately € 105 billion (size in 2011 in Figure 13) to approximately € 65 billion (size in 2011 in Figure 12). This effect can also be seen in Figure 14 where the swap portfolio lowers the interest rate risk in 2011 and reduces the costs of financing in the longer-term segments to the level of costs in the 7-year segment.

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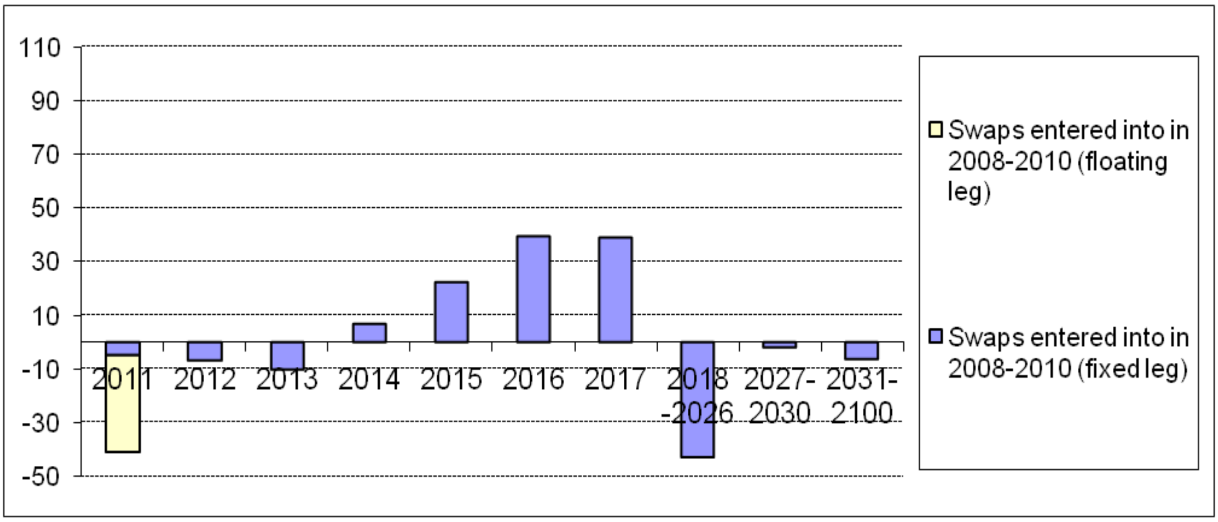
approximately € 50 billion a year from 2009 onwards, for example. In 2009, the off-the-run facility was introduced to be used on a monthly basis (the 4th Tuesday in the month, regular auctions take place on the 2nd Tuesday in the month) to re-open a maximum of 3 old bonds. The minimum amount for new 3-year and 10-year loans used to be € 10 billion, but the minimum target amount was increased to € 15 billion from 2010 on wards. No major changes were made to the basic principles of the DSTA's funding policy.

***Figure 14: Effect of swaps entered into in 2008, 2009 and 2010 on the risk profile (in € billion)***




Reducing the level of risk incurs costs. These costs for insuring against interest rate risk can be seen in the result; the total amount was €2.4 billion (column B in Table 7). The allocated interest costs (realised result) for the swaps entered into in 2008, 2009 and 2010 amounted to €0.7 billion for the 2008-2010 period. There was therefore a negative unrealised result of €1.7 billion for the 2008-2010 period on the swaps entered into in 2008, 2009 and 2010. The costs of executing swaps (the difference between the bid or ask price and the mid-swap rate) are included in the price at which the swap is entered into and are therefore part of the realised and unrealised result on the swaps. The exact amount of these costs cannot be specified.

**Table 7: Result compared to the benchmark including and excluding swaps for 2008-2010**

| **Debt financing result compared to the benchmark - 2008 to 2010** | | **A. Total cost** | **B. Total cost (swaps 2008-2010)** | **C. Total cost (excl. swaps from 2008-2010)** |
|---|---|---|---|---|
| **X1+X2** | **Money market & capital market** | **494** | **-2,237** | **2,731** |
| **X3** | **Fortis portfolio** | **-312** | **-152** | **-160** |
| **Z** | **Result compared to the benchmark (X1 + X2 + X3)** | **182** | **-2,390** | **2,572** |

The result of the debt portfolio excluding swaps from 2008, 2009 and 2010 compared to the benchmark is presented in Table 7 (column C). The result excluding the swaps is larger (more positive) than the result including the swaps (column A in Table 7 and Table 5). The larger deviation from the benchmark (in terms of costs) is of course related to the deviation in the risk profile. If no swaps had been entered into in 2008, 2009 and 2010, there would have been a level risk compared with the benchmark (level risk is larger than spread risk) unless the issuance policy had changed. The technical details in relation to the scale of level risk can be found in Annex 6: Deviations compared to the benchmark and duration. Looking back over the 2008-2010 period shows that a deviation from the benchmark would have produced a larger (positive) result compared to the benchmark, although the interest rate risk would have been larger as well. The result in column C could have been different (and just as large but the reverse result) if the interest rate had not fallen because of the economic crisis but had risen instead. The results for the swaps from 2008-2010 would then have been different (reversed). The swaps created a more efficient trade-off between costs and risk. The fact that there was then no payout with this insurance (i.e. the swaps) – because the risk of an interest rate increase did not materialise – does not mean that it was inefficient to insure against the interest rate risk. After all, one usually takes out insurance (fire insurance, for example) to cover the costs of an unexpected event (such as a fire), but the non-occurrence of this event does not mean that it was unwise to take out the insurance. For the sake of completeness, it should also be noted that the issuance policy may well have been different if the debt manager had not been able to use swaps to adjust the interest rate risk.

The introduction of a benchmark means that the debt manager has less room for deviations because deviations will always become apparent in the accounts afterwards. The room to deviate from a theoretically efficient portfolio was also reduced by the fact that an ex ante modelling analysis showed that the benchmark portfolio is efficient as regards the trade-off between costs and risk. The debt manager currently has no mandate to deviate from the benchmark's risk profile. The fact that the debt manager did not deviate from the risk profile can also be seen in the results compared to the benchmark (they remained limited to approximately € 0.5 billion). If the risk profile is not clearly prescribed, as was the case in the control variable for the 2003-2007 period, deviations from an ex ante efficient portfolio can be a lot larger. Even if the debt manager deviated from the benchmark in terms of risk by not entering into any swaps, for example, deviations from an efficient portfolio could have been 5 to 10 times larger. These deviations could have been positive or negative.

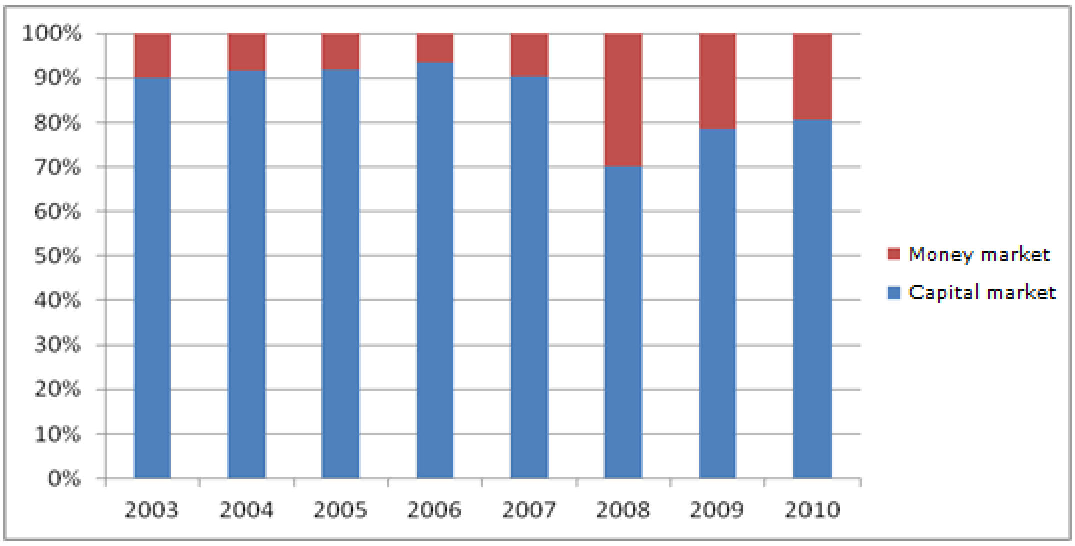
### *III.4 The risk framework as a safety net for extreme situations*

The risk framework must be appropriate for the debt financing objective and the envisaged fiscal policy. The framework should also be a safety net in unforeseen circumstances. In the first place, this means that the chosen benchmark portfolio and the intended limitation of costs and risk through the portfolio must also be adequate in extreme situations if the budget objectives are not achieved or interest rates rise unexpectedly. In the second place, this means that the framework must ensure access to sufficient funding in more difficult circumstances. The risk framework proved itself in this regard in its role as a safety net from 2008 to 2010.

The Dutch government intervened in various different ways to safeguard financial stability at the end of 2008. As a result there was an extra borrowing requirement. The benchmark prescribes that the extra borrowing requirement must be financed at the call money rate. In line with how the risk framework works, the extra borrowing requirement in 2008 was mainly absorbed in the first instance on the money market. The money market is usually deep enough to quickly absorb fluctuations in the borrowing requirement caused by unexpected setbacks in the budget balance. Borrowing on the capital market is less suited for this purpose because there is less flexibility and because of the reduced liquidity and greater risks for investors. Furthermore, by initially absorbing the extra borrowing requirement on the money market, it is possible to retain a predictable and transparent issuing strategy on the capital market. As fluctuations in the budget balance (unexpected ones in particular) are absorbed on the money market, the average remaining maturity of the debt falls significantly if there is a substantial extra borrowing requirement, as there was in 2008 because of the measures taken in response to the economic crisis (see Figure 15)[57].

[57] The ALM approach for loans to Fortis and for financing of those loans distorts the amount of exposure to the money market. Receivables with the same risk profile are therefore set against part of the debt.

***Figure 15: Composition of the national debt (outstanding) at year-end***

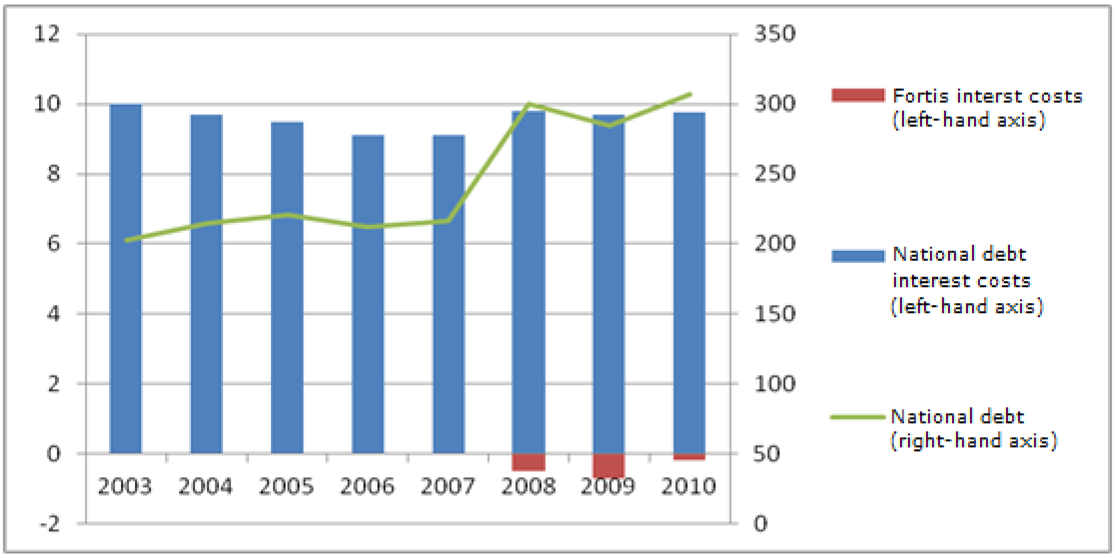



On average, short-term borrowing is less expensive but more high-risk than longer-term borrowing. Since the ECB reduced interest rates, there has also been a further decrease in the cost of short-term borrowing. However, borrowing at relatively good rates on the money market does mean refinancing in the following year and therefore the risk of future adverse developments if the interest rate rises.

This interest rate risk is controlled in the benchmark by gradually converting the short-term funding for the budget balance the following year into funding at the capital market yield in maturities up to 7 years. The interest rate risk is continually adjusted in the benchmark to that of a 7-year centralised portfolio. This method is also used in practice, as shown by the doubling of capital market borrowing starting in 2009. As a result (and because of the repayment of loans by FBN), the size of the money market relative to the total size of the debt decreased in 2009 and 2010. Once again, new budget deficits from 2009 (as well as those from 2010) were of course initially absorbed in the money market which therefore remained large in those years relative to the size of the money market between 2003 and 2007. The interest rate risk of this relatively large money market was further restricted by interest rate swaps, although this cannot be seen in Figure 15 because it only shows outstanding debt. As a result, the portfolio in 2009 (and in 2010) was again extended to the desired 7-year centralised portfolio. The direction is therefore always towards a 7-year centralised portfolio, although that portfolio is never actually reached (neither in the benchmark nor in the actual portfolio). Aiming for the 7-year point limits the risk and also the costs.

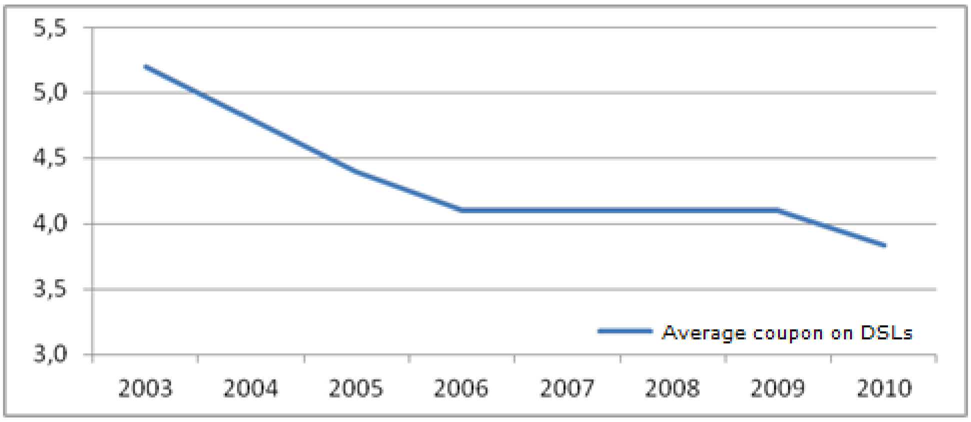
In practice, the function as a safety net has never really been tested. A debt increase – as happened in 2008 – would be expected to cause interest costs to increase as well, as is indeed shown in Figure 16. However, the increase in interest costs in 2008 compared to the previous year (approximately € 0.7 billion) is not in proportion to the year-on-year increase in the debt from 2007 to 2008 (€ 85 billion). The increase in the national debt only affected the interest costs in the last quarter of 2008 (which means that there would be an increase of 4 x € 0.7 billion over the whole year). Even with this increase, the interest costs still remained relatively low because  adverse budgetary developments resulting in an increase of the funding need were initially absorbed in the money market in accordance with the risk framework. On average, short-term borrowing is less expensive than long-term borrowing. Furthermore, the Dutch State was able to borrow on the money market and also on the capital market during the economic crisis (2008-2010) at historically low rates.

***Figure 16: Annual interest costs and the size of the national debt at year-end 2003-2010 (in € billion)***




The drop in interest costs from 2001 to 2006/2007 with almost no change in the national debt was a result of the drop in the interest rate level. Whenever the debt was refinanced, it was therefore possible each time to change part of the debt with a relatively high coupon into debt with a lower coupon. This change was shown by the drop in the average coupon on Dutch State Loans (DSLs).

***Figure 17: Average coupon on Dutch State Loans (DSLs) at year-end (%)***




Since then, from 2008 to the present day, borrowing costs for the Dutch State have been reduced as a result of the economic crisis. Unrest on the financial markets caused investors to flee to relatively safe government paper at the end of 2008. The subsequent European national debt crisis in 2010 also created a division between the countries with a relatively high national debt and the other, more creditworthy European countries, including the Netherlands. The increased demand for the more creditworthy, safer national debt paper caused its price to increase. The yields (which move in the opposite direction to the price) fell, while at the same there was an extra supply of government paper to fund rescue plans and stimulus packages. Furthermore, there was sufficient liquidity because of the large quantity of money made available by the central bank. The government would not have been able to finance the major borrowing requirement at the end of 2008 – or would have only been able to do so at a higher cost – if there had not been a crisis, but without a crisis such a borrowing requirement would never have existed. Of course, all other things being equal, borrowing at rates that are currently lower than the historical average will certainly have a positive effect on the level of interest costs.

# IV. Risk management framework 2012-2015

## *IV.1 Debt and risk policy 2012-2015*

The risk framework has to be set (again) for the 2012-2015 period. The assessment for the current risk framework (2008-2011) shows that the introduction of the benchmark has helped to increase transparency regarding the costs and risk of the debt and risk policy compared to an envisaged optimum trade-off between costs and risk. The benchmark has also proven to be workable during a crisis and will therefore be retained as the control variable for debt management.

The reference point chosen for the 2008-2010 period was a centralised portfolio because one of its features is an optimum trade-off between costs and risk. New model analyses show that centralised portfolios are still efficient over the longer term (see Annex 7: Interest costs and risk in balanced situations). A centralised portfolio will therefore be maintained as the benchmark because an inefficient portfolio would not be an obvious choice as the benchmark given the objective of "debt financing at minimum cost and an acceptable level of risk". With a view to determining the best fit for fiscal policy and the government's risk preference, analyses of the trade-off between cost and risk for the 2011-2015 period have been run for various financing strategies based on the composition of the portfolio at year-end 2010.

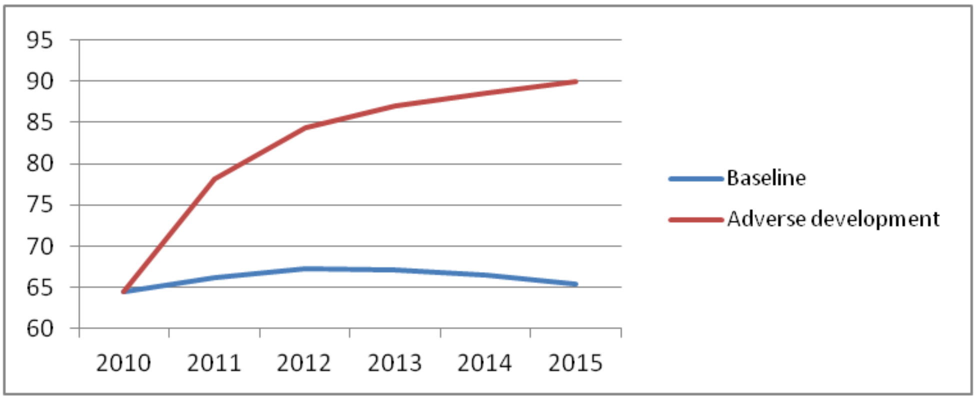
## *IV.2 Input parameters for 2012-2015 modelling analyses*

Because of the significant degree of interaction between fiscal policy and debt management, the analyses were based on the projected development of the budget balance. As the risk framework is meant above all as a safety net (still effective in the worst-case scenario), the analyses must also expressly take into account the risk of a deterioration in the budget balance and the resulting impact on the size of the debt and the interest costs. The risk of an increasing interest rate is also taken into account.

### *IV.2.1 The baseline and adverse development of the budget balance*

The analyses were based on the development of the projected budget balance. Figure 18 shows the expected development of EMU-debt (% of GDP) that accompanies this projection for the budget balance.

***Figure 18: Development of EMU-debt (% of GDP)***

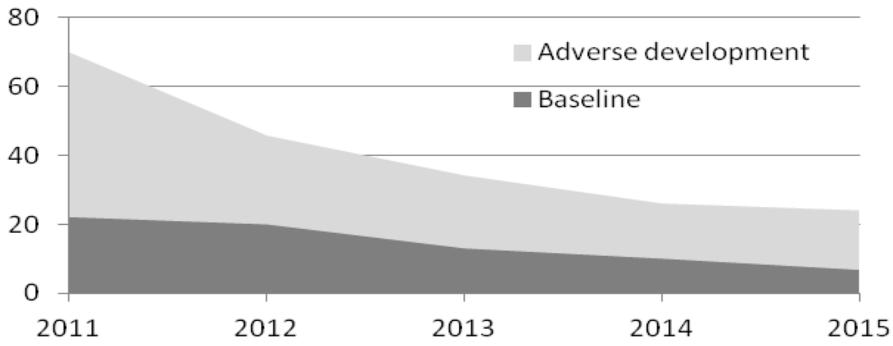



At the end of 2010, the CPB (the Netherlands Bureau for Economic Policy Analysis) analysed the economic and budgetary consequences or the government's coalition agreement. The baseline is derived from these analyses..[58]. The more extreme variant in Figure 18 is taken from a recent report containing a risk analysis on Dutch public

[58] "Updating the Economic Outlook 2011-2015" (discussion of the coalition agreement), CPB Document no. 213, November 2010.

finances[59]. This variant expressly takes a worse budget balance into account, which is shown by the increase in the debt level. The possible shocks that can result in such an increase in the debt level are described in "The government finances shock proof". The GDP projections are used to translate the increase or decrease in the EMU-debt ratio into an absolute increase or decrease in the national debt[60]. The annual increase or decrease in the national debt is the cash balance that has to be financed. Figure 19 shows the envisaged development of the annual budget balance (cash balance and not the EMU balance) derived on this basis. Setbacks account for the difference between the baseline and the adverse development scenarios. The setbacks are the size of historically recorded shocks from the recent economic crisis. The scenarios in Figure 19 provided input for the cost-risk analyses for the national debt for the 2011-2015 period.

***Figure 19: Budget deficit/cash shortage (€ billion)***

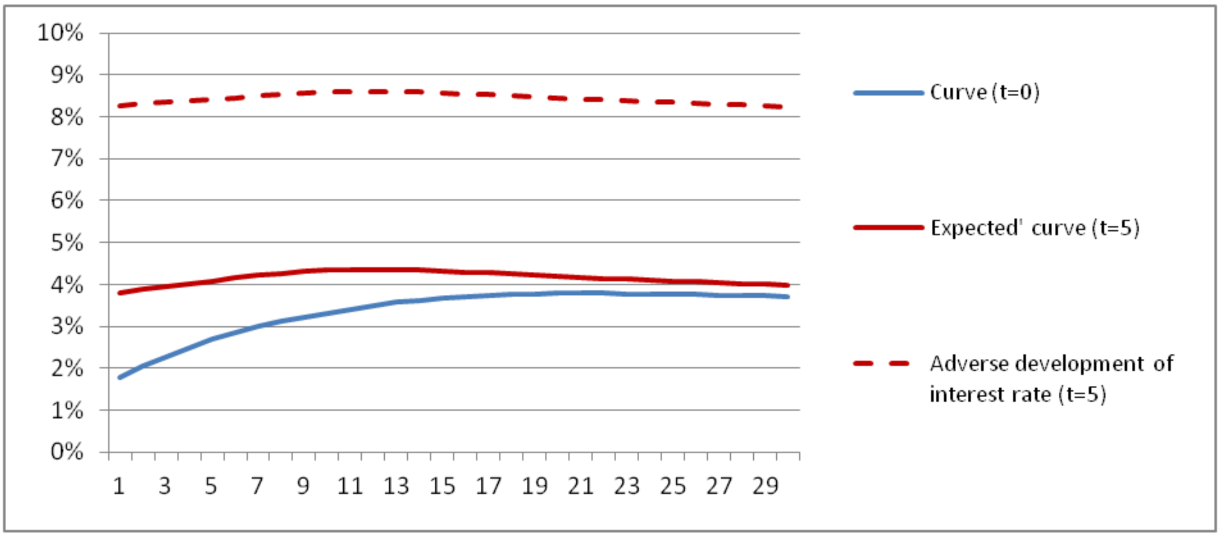



### *IV.2.2 Interest rate shocks and the adverse interest rate scenario*

It is important to also take unexpected adverse developments in the nominal interest rate into account in cost-risk analyses for the national debt. Figure 20 shows interest rate curves for maturities of up to 30 years. The figure shows an interest rate curve from mid-2011 (t=0). The implicit 'expected' development of the curve for the next five years was derived from the curve using forwards. Figure 20 shows the curve as it is 'expected' to be five years later as well as the same curve five years later in the event of on adverse development of the interest rate. The latter curve assumes a gradual increase in the interest rate because of a shock every year. After five shocks the level of the interest rate curve in the adverse scenario (t=5) is approximately 4 percentage points higher than the 'expected' curve (t=5).

[59] This variant is based on simulation 1: financial crisis in: The Government Finances Shock Proof - A risk analysis of Dutch public finances", Ministry of Finance, September 2011 (available at www.dsta.nl).
[60] National debt is not the same as EMU-debt. In addition to the national debt (i.e. the debt of the central government), EMU-debt also includes the debts of local government bodies such as municipal and provincial authorities, for example.

***Figure 20: Interest rate curve (t=0) for maturities up to 30 years (horizontal axis), curve derived on that basis for 5 years later and a curve 5 years later in the event of an adverse development of the interest rate***

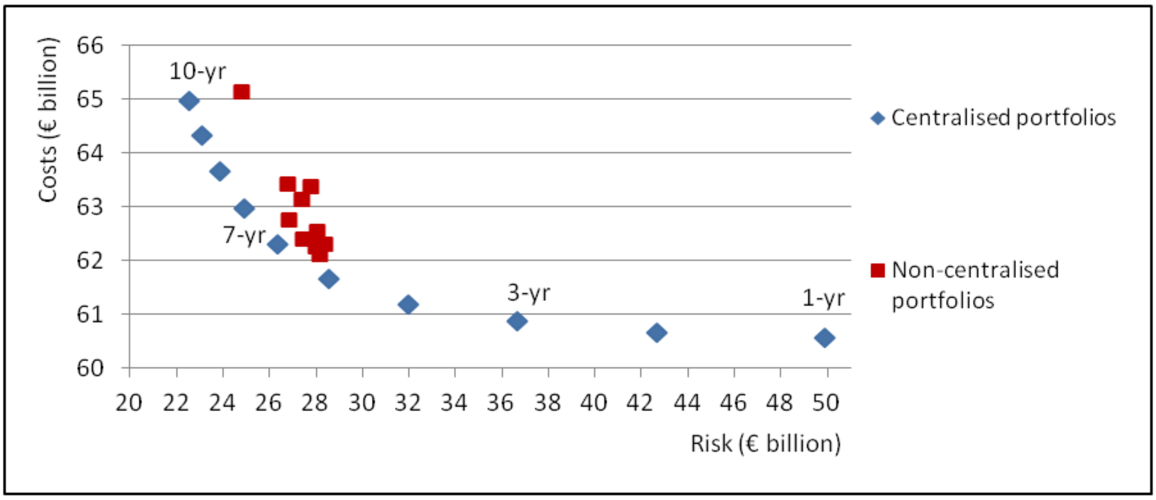



The high interest rate in Figure 20 is approaching the historically high levels of the early 1990s when the 10-year interest rate on Dutch State Loans was more than 9%.

### *IV.3 Interest costs and interest rate risk for the 2011-2015 period*

Various borrowing strategies were analysed for the 2011-2015 period based on the composition of the debt portfolio and the swap portfolio at year-end 2010. The analyses took into account the projected development of the budget balance (baseline in Figure 19). The result is that the national debt increases from approximately € 302 billion[61] at year-end 2010 to approximately € 375 billion at year-end 2015. As in practice, the budget deficit (cash shortage) in the analyses is absorbed every year on the money market and then refinanced in the following year in longer maturities. The analysis is based on the development of the interest rate described above (Figure 20). Figure 21 shows the expected costs and the risk accumulated for 2011 to 2015.

***Figure 21: Costs and risk for different financing strategies accumulated for 2011 to 2015 based on the baseline development of the budget balance (€ billion)***




[61] The national debt at year-end 2010 was approximately € 306.7 billion. Approximately € 4.6 billion was still covered by assets at year-end 2010 (loans to Fortis Bank Nederland). A so-called 'ALM' approach is taken in respect of those assets and their financing.

The risk profile of the debt and swap portfolio at year-end 2010 was equal to that of a 7-year centralised portfolio. The analysis takes into account the effect of migrating from the 7-year centralised portfolio to another centralised portfolio on the cost-risk trade-off. It is assumed that the migration takes place in the first year (2011). Setbacks in the budget balance increase the debt level which, in turn, increases the absolute interest charges and the absolute interest rate risk. If the setbacks from Figure 19 occur, the scatterplot in Figure 21 will move upwards (see Figure 22).

***Figure 22: Costs and risk for different financing strategies accumulated for 2011 to 2015 based on the baseline and adverse development of the budget balance (€ billion)***

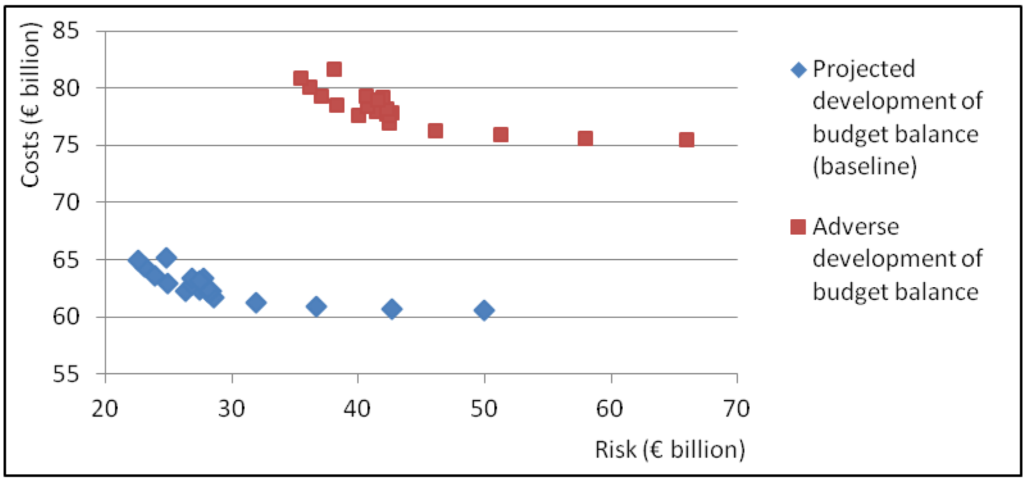



Table 8 summarises the costs and risk for the 2011-2015 period for a number of the centralised portfolios from Figure 21 and Figure 22. Because the debt and swap portfolio at year-end 2010 was taken as the basis, the costs of restructuring the current portfolio into a longer or shorter-term portfolio have also been incorporated.

**Table 8: Costs and risk accumulated for 2011 to 2015 (€ billion)**

| Centralised portfolio | 4-year | 5-year | 6-year | 7-year | 8-year | 9-year | 10-year |
|---|---|---|---|---|---|---|---|
| Interest costs with the projected (baseline) development of the budget balance (A) | 61.2 | 61.7 | 62.3 | 63.0 | 63.7 | 64.3 | 65.0 |
| Interest rate risk = extra costs with an adverse development of interest rates (B) | 32.0 | 28.5 | 26.4 | 24.9 | 23.9 | 23.1 | 22.6 |
| *"Maximum" costs with an adverse development of interest rates (C = A+B)* | *93.2* | *90.2* | *88.7* | *87.9* | *87.5* | *87.5* | *87.6* |
| *"Maximum" costs with an adverse development of both interest rates and the budget balance (D)* | *122.5* | *119.4* | *117.7* | *116.8* | *116.4* | *116.3* | *116.3* |
| *Budget risk (D-C)* | *29.7* | *29.3* | *29.1* | *29.0* | *28.9* | *28.9* | *28.8* |
| \|Δcosts/Δrisk\| (insurance premium) | | 0.1 | 0.3 | 0.5 | 0.7 | 0.9 | 1.2 |

If the budget balance develops as envisaged and the 7-year centralised portfolio is retained as the benchmark, the costs over a five-year period will be approximately € 63 billion at the current rate of interest (see line A in Table 8). If the interest rate develops unfavourably, however, and increases to approximately 8% by 2015 (see Figure 20), those costs could increase by approximately € 24.9 billion (see line B in Table 8). If the budget balance develops according to the adverse scenario (see Figure 19), the worst-case scenario would be the addition of approximately € 29 billion in extra interest over a five-year period (difference between rows D and C in Table 8). This is the budget risk based on the adverse interest rate scenario.

Table 8 also shows that extension of the portfolio's maturity increases the cost and reduces the interest rate risk. Shortening the portfolio, on the other hand, reduces the cost, but increases the interest rate risk. Extending from a 7-year to a 10-year portfolio increases the cost over a 5-year period by approximately € 2 billion (€ 0.4 billion on average per year). At the same time, however, the risk is reduced by € 2.3 billion (€ 0.46 billion a year on average). The maximum difference in accumulated costs over five years between the two extremes of the seven strategies presented is approximately € 3.8 billion. The maximum year-on-year difference is approximately € 0.7 billion. The cost savings generated by preferring a 4-year portfolio to a 10-year one would result in a € 9.4 billion increase in the interest rate risk.

The insurance premium (the bottom row in the table) shows that every euro of risk reduction achieved by extending from a 7-year to an 8-year portfolio costs approximately 70 eurocents. The cost of each subsequent euro of risk reduction is approximately 90 eurocents. Every euro of risk reduction costs more than one euro in the case of an extension from a 9 to a 10-year centralised portfolio. Of course, the actual trade-off between costs and risk depends on the shape of the interest rate curve. The curve from mid-2011 – which was the basis for this analysis – is steeper than the average curve since the introduction of the euro. The flatter the curve, the smaller the difference in costs will be. Insuring against interest rate risk pays off more quickly if the curve is flat because that is when it is not so expensive to further extend the portfolio (and thereby reduce the risk).

The data in Table 8 were obtained from the modelling analyses. The interest costs for the national debt may develop very differently in the 2011-2015 period than the development presented here. The stress scenario for the interest rate is characterised by high interest rates. A situation in which the Netherlands still had its AAA rating but was facing such high interest levels is unlikely. If a situation would occur in which the nominal interest rate increases to 8%, the increase will be accompanied by high growth and/or high inflation. The level of debt could then also grow faster without the debt or the interest costs increasing as a percentage of GDP. A situation in which the Netherlands would be facing higher nominal interest rates without growth and inflation increasing as well is actually only a realistic possibility if the Netherlands were to lose its AAA rating.

In spite of the above qualifying remarks, however, Table 8 does provide a useful analysis of the risk framework as a safety net. The interest rate risk in the case of extreme shocks varies from approx. € 23 billion for a 10-year to € 32 billion for a 4-year centralised portfolio and is approximately the same size as the budget risk (approx. € 30 billion, i.e. the difference between lines D and C). The interest rate risk framework for the national debt cannot offer any protection against the budget risk, as is shown in Table 8 where the size of the budget risk is approximately € 30 billion regardless of the maturity of the portfolio.

There is not much extra that can be achieved to counter the consequences of extreme interest rate shocks by using the interest rate risk framework for the national debt. The differences in the 'maximum' costs for a 7-year centralised portfolio compared to a 10-year centralised portfolio are relatively small in the event of adverse development of the interest rate (see line C in Table 8). In addition, it is relatively expensive in the current market circumstances to take out further insurance (by extending the portfolio) in order to be more resistant to major interest rate shocks similar to those in the early 1990s (interest rate levels of 8%), as can be seen from the insurance premium in Table 8.

### *IV.3.1 Impact of smaller interest rate shocks*

A different picture of the risk of setbacks in the interest costs emerges if a more moderately increasing interest rate is assumed with maximum levels of approximately 5% by 2015. Shocks with a smaller impact probably provide a more realistic picture of the possible consequences for interest costs. Assuming no change in the budget balance,

Table 9 shows that the interest rate risk (B1') is a lot smaller in the event of an adverse development of the interest rate up to a maximum of approximately 5% by 2015 than the interest rate risk would be in the adverse interest rate scenario (B1).

**Table 9: Consequences for the interest rate risk if the interest rate increases to approx. 5% (€ billion)**

| Centralised portfolio | 4-year | 5-year | 6-year | 7-year | 8-year | 9-year | 10-year |
|---|---|---|---|---|---|---|---|
| Interest rate risk = extra costs with an adverse development of the interest rate (B1) | 32.0 | 28.5 | 26.4 | 24.9 | 23.9 | 23.1 | 22.6 |
| Interest rate risk = extra costs if the interest rate increases to 5% (B1') | 8.0 | 7.1 | 6.6 | 6.2 | 6.0 | 5.8 | 5.6 |

Table 9 also shows that the consequences of shocks in the interest rate over the 2011-2015 period are smaller as the portfolio's maturity becomes more long-term. All other things being equal, spending cuts are needed to absorb small shocks in the interest rate because interest costs are covered by the expenditure frameworks. Table 10 provides an insight into the cuts that will be necessary in the case of a 10-year, a 7-year and a 5-year centralised portfolio if the interest rate gradually increases to approximately 5% by 2015.

The table shows that the extra interest costs in 2011 as a result of an interest rate shock amount to € 0.4 billion for a 10-year centralised portfolio. A spending cut of 0.06% of GDP is needed to absorb these extra interest costs in 2011. It is assumed that the increase in the interest rate is permanent, which is why a structural spending cut is needed. In 2012, the extra interest costs amount to € 0.8 billion, of which € 0.4 billion has already been absorbed through the structural spending cut in year 1. In year 2, therefore, a further (structural) cut of € 0.4 billion will be needed (and the same applies to years 3, 4 and 5). The total structural spending cut reaches approximately € 1.9 billion (5 x € 0.4 billion) or approximately 0.3% of GDP by 2015. The total extra interest costs over a five-year period equal € 5.6 billion (see also Table 9).

**Table 10: Spending cutbacks required to absorb small shocks in the interest rate (€ billion)**

| **10-year** | | **1** | **2** | **3** | **4** | **5** | **Total** |
|---|---|---|---|---|---|---|---|
| | **2011** | 0.4 | | | | | **0.4** |
| | **2012** | 0.4 | 0.4 | | | | **0.8** |
| | **2013** | 0.4 | 0.4 | 0.4 | | | **1.1** |
| | **2014** | 0.4 | 0.4 | 0.4 | 0.4 | | **1.5** |
| | **2015** | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | **1.9** |
| | | | | | | | **5.6** |
| **Assumed GDP (€ billion)** | | 612 | 632 | 653 | 674 | 696 | |
| **Structural spending cut per year (% of GDP)** | | 0.06% | 0.06% | 0.06% | 0.06% | 0.05% | |

| **7-year** | | **1** | **2** | **3** | **4** | **5** | **Total** |
|---|---|---|---|---|---|---|---|
| | **2011** | 0.4 | | | | | **0.4** |
| | **2012** | 0.4 | 0.4 | | | | **0.8** |
| | **2013** | 0.4 | 0.4 | 0.4 | | | **1.2** |
| | **2014** | 0.4 | 0.4 | 0.4 | 0.5 | | **1.7** |
| | **2015** | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | **2.1** |
| | | | | | | | **6.2** |
| **Assumed GDP (€ billion)** | | 612 | 632 | 653 | 674 | 696 | |
| **Structural spending cut per year (% of GDP)** | | 0.06% | 0.06% | 0.06% | 0.07% | 0.07% | |

| 5-year | 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| **2011** | 0.4 | | | | | **0.4** |
| **2012** | 0.4 | 0.4 | | | | **0.9** |
| **2013** | 0.4 | 0.4 | 0.5 | | | **1.4** |
| **2014** | 0.4 | 0.4 | 0.5 | 0.6 | | **1.9** |
| **2015** | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | **2.6** |
| | | | | | | **7.1** |
| **Assumed GDP** | 612 | 632 | 653 | 674 | 696 | |
| **Structural spending cut per year (% of GDP)** | 0.07% | 0.07% | 0.08% | 0.08% | 0.09% | |

In the case of a 7-year portfolio, a structural spending cut reaching € 2.1 billion by 2015 (approx. 0.3% of GDP) is required in order to absorb the setbacks in interest costs if interest rates gradually increase to approximately 5%. In the event of a single shock and its impact on a 7-year centralised portfolio, the total shock will have been fully absorbed after 7 years of structural spending cuts. A 10-year centralised portfolio would require 10 years of cuts before the shock is fully reflected in the interest costs. Table 10 shows that the required annual structural cuts to absorb small shocks remain limited to less than 0.1% of GDP even if the portfolio were shortened to a 5-year centralised portfolio, for example. The total structural level of spending cuts will reach approx. € 2.6 billion (approx. 0.4% of GDP) by 2015.

### *IV.3.2 Considerations involved in decisions about the risk policy for 2012 to 2015*

A number of factors are especially important when deciding on the benchmark portfolio for the 2012-2015 period. The primary concerns are finding the right balance between interest costs and an acceptable level of risk (cost fluctuations) for the government and ensuring that this balance is in line with fiscal policy. Only centralised portfolios are eligible to be the benchmark because the intention is to achieve an optimum trade-off between costs and risk.

Debt increased substantially at the end of 2008. As a result, extending the portfolio seems to be the obvious choice. A debt of € 210 billion (similar to the pre-crisis level) in a 7-year centralised portfolio translates into an annual debt level of € 30 billion for which the interest rate has to be reset. With a debt of € 315 billion (similar to the post-crisis level), a 7-year portfolio results in an annual interest rate reset over an amount of € 45 billion. If the portfolio is extended to a 10-year period, however, the annual size of the debt that is sensitive to interest rate shocks could be reduced from € 45 billion to € 31.5 billion (similar to the pre-crisis level). The market may see extending the portfolio as a good sign because the extension reduces the level of risk. However, the market can just as easily interpret the extension as a bad sign for a country with a AAA credit rating.

The opportunities for extending (or shortening) the portfolio’s maturity are limited. Only centralised portfolios that are close to the current portfolio (a 7-year centralised portfolio) are suitable as the benchmark. In addition, the risk framework must still be effective in the most extreme situations, which is why the current portfolio was analysed taking into account extreme scenarios for the development of the interest rate and the budget balance. Under the conditions applied, the analysis showed that extending the portfolio has only a limited effect on either costs or risk. Table 8 shows that there is little more that can be done in risk policy for the national debt to counter the effects of extreme interest rate shocks. The differences in the ‘maximum’ costs for a 7-year centralised portfolio compared to a 10-year centralised portfolio are relatively small in the event of adverse development of the interest rate (see line C in Table 8). In addition, it is relatively expensive in the current market circumstances to take out further insurance (by extending the portfolio) in order to be more resistant to major interest rate shocks (see the insurance premium in Table 8). There is also not much that can be done through debt financing itself to counter the impact on interest costs of extreme shocks in the budget balance. Based on an adverse interest rate scenario, the budget risk is still approximately €30 billion regardless of the maturity of the debt portfolio.

The maturity of the 7-year centralised portfolio is sufficiently long to absorb temporary and small shocks in the interest rate. In the event of a gradual increase in the interest rate to approximately 5% by 2015, the spending cuts required each year vary from approximately 0.06% to 0.07% of GDP (see Table 10). The total level of structural cuts will reach approx. €2.1 billion – or approx. 0.3% of GDP – by 2015. This percentage will increase if the budget balance worsens. A small extension of the portfolio does not make much difference in the case of larger shocks because the market will usually demand substantial measures more quickly.

Any further extension makes it more difficult to achieve the projected budget targets because the extension increases interest costs, even without an unfavourable interest rate scenario. Shortening the portfolio in order to reduce interest costs is an attractive option in light of the projected budget targets. However, shortening the portfolio substantially increases the interest rate risk (larger setbacks if shocks occur). Under the current market conditions, for example, shortening the present 7-year to a 4-year centralised portfolio would increase the interest rate risk by approximately €7 billion over a five-year period (see Table 8). In contrast, the cost saving achieved by shortening the portfolio is limited (approx. €2 billion). The interest rate risk would come on top of the uncertainty that already exists regarding the budget balance, which means that shortening the portfolio can give the wrong signal to the market.

The decision as to which of the above factors will be decisive in determining the ultimate risk preference is obviously a choice that has to be made in light of the projected development of the budget balance and the accompanying risks that setbacks could occur. Developments relating to the European debt crisis should also be taken into account. To date, the debt crisis has increased the spreads with respect to Germany for all countries, especially the European countries on the outskirts of Europe where the increases have been substantial.

Based on the above considerations, shortening the portfolio does not seem to be the right decision in the current circumstances. Extending to a centralised portfolio with a longer maturity than the 7-year centralised portfolio does not achieve much either as regards the cost-risk trade-off. Furthermore, extension does not offer any protection against shocks in the budget balance and not much more can be done through the risk policy for the national debt to counter the consequences of (extreme) interest rate shocks. The 7-year centralised portfolio will be continued as the benchmark in the 2012-2015 period because it is sufficiently long to absorb temporary and small shocks in the interest rate.

### *IV.4 Room for deviations*

The aim for the 2008-2011 period was to make financing as efficient as possible by replicating the 7-year centralised benchmark as closely as possible through a combination of issuance policy and swaps. The focus was on both the costs and the risk. As a result, there has been little room so far for deviations from the risk profile prescribed by the benchmark. However, in light of the current market circumstances and the fiscal outlook (with more than average levels of uncertainty) the question is whether it might be advisable to pay a little extra to hedge the risk of setbacks (in interest costs).

From the current level, the interest rate can still increase by 7 percentage points before it reaches the level of the 1990s, but it can only decrease by approximately 2.5 percentage points to a nominal interest rate of approximately 0% (negative nominal interest rates are unusual). Given this asymmetry regarding the possible direction in which the interest rate might develop, it may be worth deviating from the risk profile prescribed by the benchmark. One option would be to issue loans with a maturity longer than 10 years without entering into swaps or closing out old swaps with long remaining maturities. Such a deviation from the benchmark portfolio can be motivated by administrative/political considerations (e.g. greater fiscal stability because interest costs contribute to a stable budget balance) or to to lower interest costs. When the results compared to the benchmark are presented, it should be clear whether it was a wise decision to deviate from the benchmark's risk profile. The presentation of the results will show the size of the deviation not only with respect to risk, but also with respect to costs.

Another consideration with a view to allowing greater room for deviations from the risk profile of a centralised portfolio concerns the use of swaps and the need to maintain adequate risk management also without swaps.

In normal circumstances, swaps are insurance against interest rate risk and insurance usually involves paying a premium. These premiums are included in the interest costs as accounted for in the Annual Report on National Debt. If the world is on fire, the insurance pays out. That was what happened in 2007 and 2008, for example, when short-term interest rates (Euribor rates) were high, and it could happen again if short-term interest rates start to rise. This can be explained as follows. At the moment, the Dutch State's debt portfolio has the characteristics of a so-called "barbell portfolio"[62]; this portfolio represents a hedge for the 7-year centralised portfolio. Because the money market is relatively large, there is a small net position on balance in the swap portfolio; the variable interest (the short-term Euribor interest) is received in that net position. On balance, there are more payer swaps than receiver swaps; one of the reasons for entering into payer swaps was to reduce the interest rate risk attached to the size of the money market. The insurance (the swap portfolio) pays out if the short-term variable interest rate increases. The insurance also pays out if the Netherlands itself is not directly facing higher borrowing costs on the money market.

There are risks attached to using swaps. The main risks – credit risk and concentration risk – are mitigated (as described earlier in section II.4). Risks concerning new regulations and/or market circumstances are more difficult to mitigate. As a result, there may be fewer parties with whom the State can enter into swaps in future, or the cost of entering into swaps may increase, e.g. as a result of CSAs that also require the Dutch State to provide collateral (so-called bilateral collateral agreements). Therefore, in order to limit the risks attached to the swap portfolio, swaps are only used to further improve the interest rate risk ensuing from the debt portfolio by adjusting it towards the benchmark. This approach creates the opportunity (should it ever be necessary) to modify or unwind the swap portfolio without major financial consequences if changes in regulations and/or market circumstances would give cause to do so.

The fact that the issuance strategy results in a natural barbell hedge for the centralised portfolio means that a centralised portfolio can still be reasonably approximated without swaps. If swaps are not used, the final extra amount of efficiency is lost, but this choice would be justifiable if the risks attached to using swaps increase or the costs become too high.

A cap will have to be imposed on the maximum permitted total deviation in terms of both risk and costs. The cap on risk should describe the maximum permitted size of the deviation from the optimum risk profile in the benchmark. The cap on costs is a limit on the size of the loss that may be incurred. To date, the benchmark has always been approximated by a combination of issuances and swaps. The maximum loss that would

[62] A so-called barbell hedge for a 7-year centralised portfolio is created by borrowing on the money market and using loans with terms shorter than 7 years (3 and 5 years) on the one hand and by borrowing in the form of loans with terms longer than 7 years (10 and 30 years) on the other hand. The quality of the barbell hedge that is the result of issuance (excluding swaps) is reflected in the results compared to the benchmark. The effectiveness of the barbell hedge can be adjusted by issuing in a different ratio of maturities (and/or in totally different maturities).

be allowed is defined in relation to the costs of a portfolio where there is no deviation from the benchmark's risk profile. A loss is incurred if the costs of a portfolio with a deviation are higher over a particular period of time than the costs for a portfolio where there is no deviation from the prescribed risk profile. Once the loss would exceed the ex ante defined maximum, the deviation in the risk profile will have to be adjusted in order to avoid a further increase of losses. By putting a maximum on the loss that would be allowed, the extra interest costs that can be incurred as a result of a deviation from the benchmark's risk profile is limited. Two preconditions apply in any event in respect of possible deviations from the benchmark's risk profile. The first is that deviations must not result in an increased risk to the budget. The second precondition is that these deviations must fit into the budget.

It can be concluded that the introduction of room for deviations from the optimum risk profile in the policy framework provides the flexibility needed to benefit from current market circumstances or to create administrative (fiscal) stability. On the other hand, requirements must be laid down regarding the frequency and form of internal risk and performance reports to ensure that the consequences of decisions are clear ex post. The results of deviations from the benchmark will also be presented in the Annual Reports on the National Debt, because they will show the extent of the deviation not only with respect to risk, but also with respect to costs.

## Annex 1: Stockholm Principles

In July 2010, the IMF organised the 10th Forum of Debt Managers in Stockholm. The main theme of the Forum was the high level of national debt worldwide, which is reducing the room for new policy initiatives and limiting the extent to which additional risk and shocks can be absorbed through the governments balance sheet. The relatively high levels of debt and uncertainty have made it more important for debt management to be robust and effective. The debt managers and representatives of central banks, the private sector and international financial institutions attending the Forum produced 10 debt management guidelines known as the 'Stockholm Principles'[63], which reaffirm the current and generally accepted approach, but with greater emphasis on flexibility and security (buffers) and communication with other policy areas. The principles offer a general direction, but leave sufficient room for each country in accordance with its own situation. The principles are grouped into three themes:

*Framework and operations*

1. The scope of debt management should be defined in a way that also accounts for any relevant interactions between the nature of financial assets, explicit and implicit contingent liabilities, and the structure of the debt portfolio.
2. Strategic and operational debt management decisions should be supported by relevant information sharing at the domestic, regional, and global levels.
3. Flexibility in market operations should be maintained to minimize execution risk, improve price discovery, relieve market dislocations, and support secondary market liquidity.

*Communication*

4. Proactive and timely market communications strategies should be maintained to support a transparent and predictable operational framework for debt management.
5. Modifications to the operational toolkits of debt managers should be properly explained.
6. Communication among debt managers and monetary, fiscal, and financial regulatory authorities should be promoted, given greater inter-linkages across objectives, yet with each agency maintaining independence and accountability for its respective role.
7. A close and continuing dialogue with the investor base should be promoted to keep abreast of its characteristics and preferences.

*Risk Management*

8. Debt portfolio risk should be kept at prudent levels, while funding costs are minimized over the medium to long term.
9. When determining medium-term debt management strategies, the range of risk factors considered should be consistent with the broadest definition of the debt portfolio and the associated range of potential scenarios.
10. Prudent risk management strategies covering the full range of risks facing sovereign debt managers should be adopted and communicated to investors.

[63] http://www.imf.org/external/np/mcm/stockholm/principles.htm, September 2010.

**Annex 2: Relationship between debt management and fiscal policy**

In principle, interest cost fluctuations are the result of changes in price (interest rate level) and in volume (refinancing plus the budget balance). As far as the Dutch debt manager is concerned, the interest rate is an exogenous factor over which little or no influence can be exercised. The budget balance is largely the result of fiscal policy. Debt and risk management policy determine the volume of refinancing (or interest reset) and affect the budget balance via interest costs. After all, interest costs are part of the budget balance. The opposite also applies: the budget balance affects the level of interest costs through changes in the amount of national debt. It is therefore essential to ensure the required alignment between debt policy and fiscal policy on a periodic basis.

*Interest costs and expenditure frameworks*
Interest costs were removed from the expenditure frameworks starting in 2008. The main reason was that interest cost fluctuations could trigger pro-cyclical policy responses under the expenditure frameworks[64]. The aim of excluding interest costs from the frameworks was to prevent windfalls in interest costs from being used for additional expenditures that would reduce the sustainability of public finances in the future. The downside to this measure, however, was that there was no compensation for adverse developments in interest costs (i.e. no spending cuts) and those developments would be charged to the EMU-balance[65].

Given the fact that interest costs are partly policy-based through the budget deficits and given the desire to exert better control over downward risks, the 2010 Study Group on Fiscal Space (*Studiegroep Begrotingsruimte 2010*) issued the advice to to bring back interest costs into the expenditure framework starting in 2011. The Study Group recommended adjusting (i.e. reducing) the expenditure framework during the government's term in office in order to prevent windfalls in interest costs from being used as an extra margin for expenditures to soften the burden of implementation problems or to accommodate new policy goals[66] rather than repayment of national debt. This asymmetric adjustment of the framework is in line with the Study Group's advice that more effective control of downward risks is needed, which is considered a way to achieve the budget target for 2015 more quickly.

The matter of whether interest costs are covered by the expenditure frameworks in no way affects the debt manager's objective, however. On the one hand, fluctuations in interest costs should not be so large as to jeopardise fiscal discipline, whereas, on the other hand, restricting the average cost of debt financing helps to reduce the budget deficit and promotes efforts to achieve a sustainable surplus. An efficient trade-off between costs and risk remains essential. It cannot be assumed in advance that the risk attached to debt financing (i.e. adverse development of interest costs) can be mitigated by using automatic stabilisers (i.e. windfalls on the income side) if interest costs fall outside the scope of expenditure frameworks[67] or by spending cuts if interest costs fall under the frameworks[68]. Low costs and an acceptable risk both remain relevant factors.

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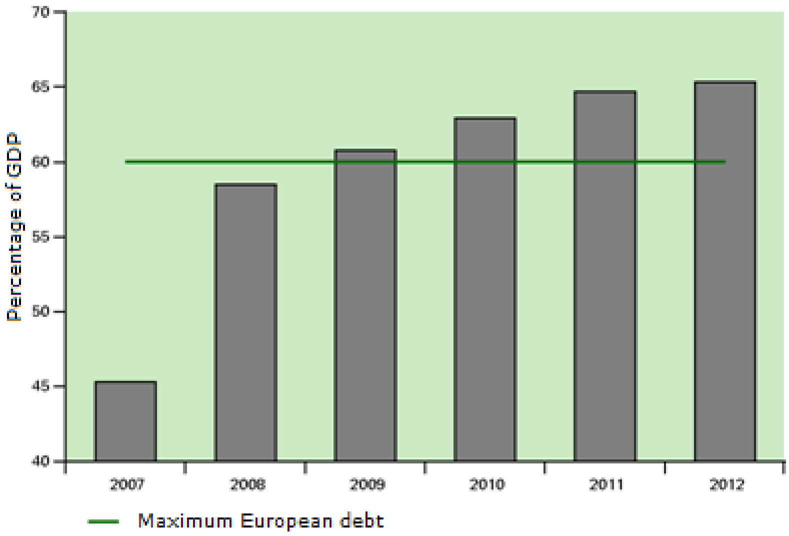
[64] Study Group on Fiscal Space (*Studiegroep Begrotingsruimte*) twelfth report, entitled 'Ageing and Sustainability' (*Vergrijzing en houdbaarheid*), June 2006. *Only in Dutch.*
[65] The EMU-balance is the government financial balance (i.e. financial balance for the entire public sector) on a transactions basis. The budget balance (cash balance) is the national balance of income and expenditure on a cash basis that must be financed through the national debt.
[66] Study Group on Fiscal Space (*Studiegroep Begrotingsruimte*) thirteenth report, entitled 'Risks and certainties' (*Risico's en zekerheden*), April 2010. *Only in Dutch.*
[67] There should be opposite movements on the income side in the face of both rising interest rates and rising interest expenditure on the national debt. However, it has not been demonstrated whether such compensatory effects actually occur. Tax income might be disappointing if the increase in interest rates (combined with rising housing prices during an economic boom) causes the amount of mortgage interest tax relief to increase as well. There is usually, but not always a positive correlation between the interest rate and the economy. Rising interest rates, however, do not necessarily have to be accompanied by an economic upturn.
[68] Recent experience has shown that it is sometimes necessary to take measures during times of crisis and that deficits and interest expenses will increase.

When deciding what is acceptable, it should be borne in mind that the risk framework also has to be effective in the most improbable financial/economic situations (safety net role).

*Budget deficit and debt ratio*
The debt ratio increased sharply at the end of 2008 due to measures taken in response to the economic crisis. Compared to other EU countries, the Netherlands intervened relatively quickly, making a relatively substantial impact on the debt. This in turn resulted in a significant increase in the debt ratio (see Figure 23).

***Figure 23: Debt ratio (EMU-debt) as a percentage of GDP*** [69]




***Source: Budget Memorandum 2012***

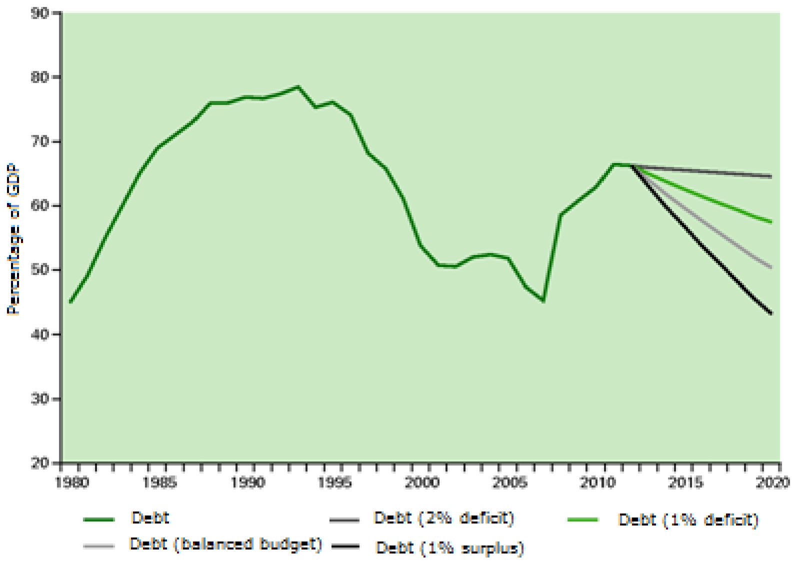
Having made small surpluses in the period before 2008, the Netherlands had a good initial fiscal position when the crisis broke out (as can also be seen by the relatively low level of debt compared to other countries). This good initial position was one of the main reasons why it was possible to take the necessary measures to safeguard financial stability. At the same time, the increased level of debt means that the margin for taking new measures is now more limited.

The debt will remain above the European debt limit of 60% of GDP in 2011 and 2012[70]. Although the EMU-balance is expected to improve during the present government's term in office, the level of debt is not forecasted to start falling in relation to GDP until 2014.

The impact of the economic crisis on debt policy can be seen by looking at the long-term development of the debt ratio (see Figure 24). Despite an improvement in the EMU-balance in 2011 en 2012, the Netherlands is still a long way away from a return to healthy public finances. Reducing debt to the pre-economic crisis level (approx. 45% of GDP) will not be easy. Given average growth of 1.5% and inflation running at 2%, the debt ratio will continue to increase as long as the EMU-deficit exceeds 2.2% of GDP. Even with a balanced budget, it will still be way beyond 2020 before the debt is back at the 2007 level. In the event of a resumption of budget surpluses, however, public finances will be healthy once again relatively quickly, which is what is needed to build the buffers required to handle population ageing.

[69] De EMU-schuldquote is de schuld van de gehele overheid (Rijk, gemeenten en provincies) uitgedrukt in een percentage van het bruto binnenlands product (BBP). De staatsschuld is de grootste component (ca. 85%) in de EMU-schuld.
[70] The European debt limit states that the debt is 'sustainable' at a maximum of 3/5 or 60% of GDP, provided the deficit does not exceed 3% and nominal growth in GDP is at least 5%.

***Figure 24: Development of the debt in various scenarios(EMU-debt as % of GDP)***




***Source: Budget Memorandum 2012***

Rising debt causes interest costs to increase (in absolute terms). These interest expenditures will either result in an even worse budget balance *or* force cuts in other areas of government expenditure. With a GDP of € 600 billion and an interest rate of 4%, a one percentage point of deficit will produce one percentage point of debt and consequently around an extra € 250 million in interest costs per year until this debt is paid off. A deficit of 2% of GDP per year therefore increases interest costs every year by around € 500 million. This does not even factor in cumulative interest-on-interest, nor does it take into account the impact of interest rate fluctuations (e.g. paying a higher interest rate after refinancing the debt).

An increase in the debt level reduces the size of the buffers available to the government to absorb future shocks. The Netherlands' favourable fiscal position prior to the economic crisis means that it can now use the debt to absorb a large part of the shock in the financial sector and in the real economy. The trade-off is a reduced level of debt sustainability. A smaller buffer can result in an increase in the risk premium on Dutch government bonds, which would lead to a further increase in interest expenditure. The literature also shows that forecasted budget deficits drive up long-term interest rates. Roughly speaking, if the forecasted budget deficit increases by 1 percentage point of GDP, the long-term nominal interest rate will increase by 50 to 100 basis points[71]. The Netherlands borrows on the international capital market and as a small country it will not be able to exercise much influence on interest rates. However, governments worldwide are in the same position.

[71] Gale W.G. and Orszag P.R. (2002), 'The Economic Effects of Long-Term Fiscal Discipline', Brookings Institution and Tax Policy Centre Discussion Paper. International Monetary Fund (October 2009), 'Global Financial Stability Report'.

**Annex 3: Relationship between debt management and monetary policy and financial stability**

The interaction between debt policy on the one hand and monetary policy and financial stability[72] on the other hand is mediated via various channels.

*Interaction between debt policy and monetary policy*
In principle, the policies adopted by central banks can be influenced by the decisions taken by debt managers on matters such as the maturities in which they issue debt and the type of instruments used to meet borrowing requirements. Examples of this interaction include:

- The issuance of inflation-linked bonds supports a central bank's policy of striving to achieve price stability, as issuing this type of paper increases the debt manager's interest in controlling inflation. This effect is stronger the more these issuances are in relatively longer maturities;
- The issuance of debt securities influences supply and demand relationships on the market and can therefore impact the shape of the interest rate curve[73]. In principle, the effects will be larger the more debt issuance is concentrated in specific segments/maturities. Differences in the relative supply of debt securities in different maturity segments can affect the slope and/or curvature of the interest rate curve;
- Debt policy can affect market liquidity. The issuance of debt on the money market directly impacts the size of that market and consequently on money market rates;
- If debt managers maintain liquid assets at central banks – as a precautionary buffer, for example – those assets will also directly impact the size of the money market;
- If debt managers issue more short-term debt or choose to issue long-term debt at a variable rate of interest (e.g. 'floating rate notes'), this reduces the power of the 'wealth channel' of monetary policy. If this transmission becomes less important, a larger interest rate increase will be needed to achieve a certain effect on inflation;
- An increase in debt issuance can exert upward pressure on interest rates, which may be contrary to the aim of adopting a accommodating bias in monetary policy. On the other hand, the issuance of extra debt is usually the result of an expansive fiscal policy, which in itself supports an accommodative bias in monetary policy.

Parallel to the possible effects of debt issuance on the interest rate curve, central banks have tried to use lower long-term interest rates in bond purchases to further relax monetary policy and safeguard financial stability. The effectiveness of monetary policy would be under pressure if debt managers were to increase debt issuances in precisely the segments where central banks are active. Effective coordination between the central bank and the debt manager is essential in these kinds of situations[74].

Monetary policy responses during the economic crisis have changed the cost-risk assessment for debt managers. There are signs that a number of countries have deliberately shortened the maturity of their portfolio as a means of reducing interest costs[75]. It is not surprising that specifically the most creditworthy countries would take that decision, because they are precisely the countries that are best able to withstand an interest rate shocks, while at the same time being exposed to the lowest level of refinancing risk. It is true that the short-term portion of total debt in the Netherlands has increased sharply since the end of 2008, but rather than as a response to changes in the interest rate curve, this increase in short-term debt is in line with traditional Dutch

[72] IMF Working Paper 2010/280 (pp. 6-7) presents various definitions of 'financial stability'.
[73] BIS Committee on the Global Financial System, 'Interactions of sovereign debt management with monetary conditions and financial stability', CGFS Paper no. 42, May 2011. This effect does not occur if debt securities with various maturities are perfect substitutes for each other.
[74] 'Government debt management at low interest rates' in BIS Quarterly Review, June 2009. Coordination in the UK between the Bank of England and the Treasury was effective in ensuring that the Debt Management Office did not change its issuance strategy in response to purchases by the central bank. The debt manager announced that there would be no changes to its previously announced issuance policy.
[75] 'Public Debt Managers' Behaviour: Interaction with Macro Policies', DNB Working Paper no. 273, 2010.

funding policy which states that unexpected changes in the borrowing requirement should be absorbed in the first instance by the money market. The relatively larger money market volume has tended more to support monetary policy than to obstruct it. It turned out that creditworthy governments had a role to play as the 'borrower of last resort' for investors in search of safe investment instruments (other than a deposit account with the ECB).

Generally speaking, debt policy does not appear to have much effect on interest rate levels. There does not appear to be any strong empirical evidence of interaction between debt management and monetary policy. The Bank for International Settlements (BIS) concludes that the impact has generally been small and easy to control[76]. The debt management approach taken during the economic crisis did not interfere with the central banks' ability to relax monetary policy. Debt managers and central banks did not get in each other's way thanks to clear institutional agreements about who is responsible for what and thanks to the debt managers' focus on continuous and predictable issuance strategies.

Both points are key pillars in the Guidelines for Public Debt Management issued by the IMF and the World Bank and also serve as core principles of debt management in the Netherlands. When central banks sell their debt securities in the years ahead, they will be operating on the same side of the market as debt managers, which once again emphasises the importance of clear communication between debt managers and central banks. It is, however, reasonable to expect that market circumstances when debt securities will be sold will be more normal than when they were purchased. It is also important to remember that the upward interest rate effect of selling when monetary policy is tightening can be larger than the downward interest rate effect of buying in very relaxed monetary conditions.

*Interaction between debt policy and Financial stability*
The maturity structure and risk features of government debt portfolios are important for financial stability. Fiscal policy and debt policy can affect financial stability via a number of channels[77]:

- Financial institutions are major holders of debt securities issued by governments. If downward pressure is exerted on the quality of government paper in a crisis, financial institutions may be faced with higher financing costs, both directly because of a deterioration in the balance sheet (reduced capital ratio and buffers, increasing losses) and indirectly because it will not be possible to use government paper to the same extent as collateral for financing (including from the central bank);
- Debt paper issued by governments has features that are used in the market as a benchmark from which to derive the risk characteristics of other assets. In principle, government paper should provide the lowest level of risk (credit or other risks) and the highest level of liquidity. A relatively low level of supply in certain term segments can damage liquidity and as a result can also damage the quality of the government curve as a benchmark for private parties. There is also pressure on the benchmark role if risks related to public finances increase substantially;
- A country's debt structure can become a source of uncertainty and vulnerability. Debt instruments that help to reduce costs usually entail greater risks. Examples include borrowing in foreign currencies (exchange rate risk, less faithful investors) and short-term borrowing (interest rate risk directly reflected in the budget; repayment peaks can undermine confidence).
- In the past, decisions regarding maturities and the composition of the debt portfolio have caused financial stability problems (especially in countries with high levels of debt and a low credit rating).

[76] BIS Committee on the Global Financial System, 'Interactions of sovereign debt management with monetary conditions and financial stability', CGFS Paper no. 42, May 2011.
[77] 'Managing Public Debt and its Financial Stability Implications', IMF Working Paper no. 280, 2010.

The crisis has shown that debt managers can reduce volatility on the financial markets by spreading the maturities in which debt is issued and aiming for a stable and broad investor base. Specific instruments targeting certain groups can help to broaden the investor base and mitigate the impact of shocks, as the Netherlands is trying to do by issuing a loan in US dollars. It is also possible to maintain access to the money and capital markets – even during a crisis – by avoiding too large a concentration with respect to the holders of debt. The decision taken in Dutch funding policy to issue debt in different terms ranging from 1 day to 30 years is an example of this approach.

## Annex 4: Why centralised portfolios are efficient

A centralised portfolio is one in which – after the preparation of an even risk profile – the same loan is issued continuously. The risk profile therefore remains constant over time. Such a portfolio corresponds to a point along the interest rate curve. Consider a portfolio involving the continuous issuance of a 5-year loan. The point on the interest rate curve at a 5-year term is representative for this portfolio. The same average maturity can also be achieved using an appropriately proportioned combination of other loans.

In the case of a 5-year *centralised* portfolio, 20% of the debt has to be refinanced every year, which means that 20% of the debt is exposed to interest rate changes.

We could build the average maturity with, for example, a combination of 1-year and 10-year loans by financing 56% of the debt with 1-year loans and 44% with 10-year loans. The following formula applies for the average maturity (where X equals the portion of total debt that is 1-year debt):

$5 = X \cdot 1 + (1-X) \cdot 10$, from which it follows that $X = 5/9 \approx 56\%$

However, this would mean that ($56+1/10 \cdot 44 =$) 60.4% of the debt would have to be refinanced every year. It is obvious that refinancing this amount of the loan would involve a risk several times larger than the risk attached to the centralised portfolio. Consequently, when considering both costs and risk, the centralised portfolio offers the maximum level of efficiency (situated on the efficient frontier).

## Annex 5: Funding policy and deviations from an efficient portfolio

Debt financing is based on funding policy, which controls refinancing and liquidity risk. Market considerations also play a major role in funding policy[78]. The funding policy involves the annual issuance of a new 10-year loan of at least € 15 billion to maintain a liquid curve up to 10 years, as well as maintaining a money market with a volume of no less than approximately € 30 billion to absorb unexpected positive and adverse developments in the budget balance. The aim is to minimise changes in issuance policy on the capital market – both within a single year and from year to year – as the market appreciates transparency, continuity and stability in issuance policy. The size of the debt determines the financing strategy that can be pursued consistently over a number of years without any changes being made. Two examples of possible financing strategies are presented below.

The first example is a financing strategy appropriate for a debt of approximately € 210 billion. The financing strategy in this example is broadly in line with the financing policy pursued between 2003 and 2007. In practice, re-openings raise issuances in the 30-year segment within a certain number of years to a total amount of € 10 billion. This approach produces peaks in the repayment profile. The issuances in the long-term segment are shown here in a more model-based presentation, which is why the peaks that would occur in practice cannot be seen in this example. The refinancing requirement of € 42 billion per year was equal to approximately 9% of GDP in 2003/2004. It was therefore in line with the then-prevailing risk framework.

The second example presents a financing strategy appropriate for a larger debt of approximately € 350 billion. A larger debt offers more room for issuing larger loans (€ 15 billion instead of € 10 billion) and for issuing in multiple segments. The basic funding policy principles in the second example are the same as those used in the first. The specifics have been adapted in accordance with the larger debt. Both examples show the risk profile in an equilibrium situation. If the size of the debt remains the same, this profile can be constantly maintained by pursuing the same financing strategy every year.

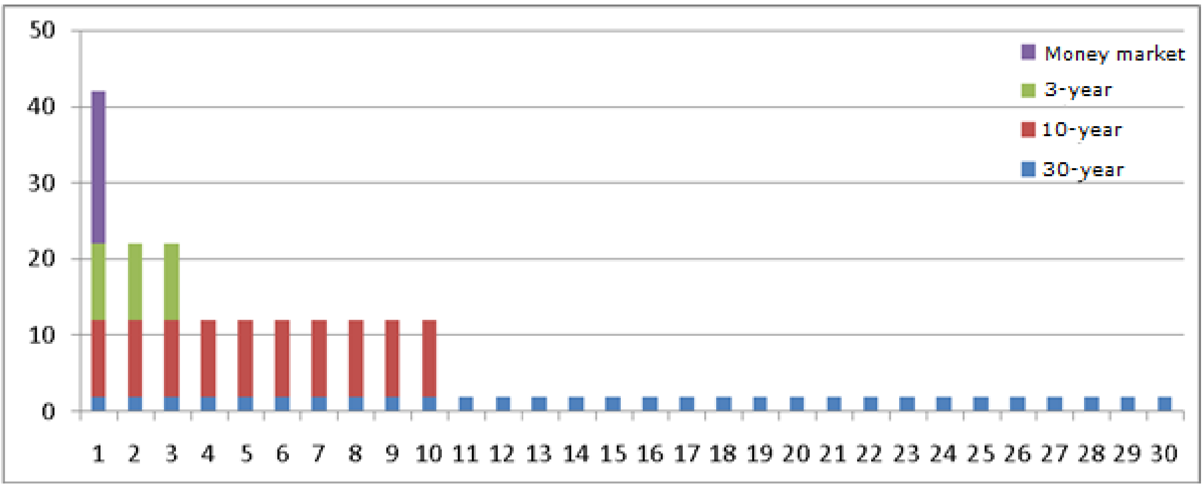
*EXAMPLE 1*
*A financing strategy that can be pursued over a number of years without any changes with a debt of € 210 billion.*

- Issuance of at least € 10 billion in new 3-year and 10-year loans;
- Minimum size of the money market is € 20 billion;
- Issuance of a new 30-year loan once every 5 years (which then reaches a volume of € 10 billion in 5 years).

[78] The Lower House of Parliament received detailed information on funding policy in March 2011 (Parliamentary Documents II, 2010-2011, 32 500 IXA, no.7). *Only in Dutch.*

The annual refinancing risk in this funding plan is € 42 billion.
The total size of the debt in an equilibrium situation is € 210 billion.

| | 30-year | 10-year | 3-year | Money market |
|---|---|---|---|---|
| **1** | 2 | 10 | 10 | 20 |
| **2** | 2 | 10 | 10 | |
| **3** | 2 | 10 | 10 | |
| **4** | 2 | 10 | | |
| **5** | 2 | 10 | | |
| **6** | 2 | 10 | | |
| **7** | 2 | 10 | | |
| **8** | 2 | 10 | | |
| **9** | 2 | 10 | | |
| **10** | 2 | 10 | | |
| **11** | 2 | | | |
| **12** | 2 | | | |
| **13** | 2 | | | |
| **14** | 2 | | | |
| **15** | 2 | | | |
| **16** | 2 | | | |
| **17** | 2 | | | |
| **18** | 2 | | | |
| **19** | 2 | | | |
| **20** | 2 | | | |
| **21** | 2 | | | |
| **22** | 2 | | | |
| **23** | 2 | | | |
| **24** | 2 | | | |
| **25** | 2 | | | |
| **26** | 2 | | | |
| **27** | 2 | | | |
| **28** | 2 | | | |
| **29** | 2 | | | |
| **30** | 2 | | | |



*EXAMPLE 2*
*A financing strategy that can be pursued over a number of years without any changes with a debt of € 350 billion.*

- Issuance of at least € 15 billion in new 3-year and 10-year loans;
- Minimum size of the money market is € 30 billion;
- Issuance of a new 30-year loan once every 3 years (which then reaches a volume of € 9 billion in 3 years);
- Issuance of a new 5-year loan once every 2 years (which then reaches a volume of € 14 billion in 2 years).

The annual refinancing risk in this funding plan is € 70 billion.
The total size of the debt in the equilibrium situation is € 350 billion.

| | **30-year** | **10-year** | **5-year** | **3-year** | **Money market** |
|---|---|---|---|---|---|
| **1** | 3 | 15 | 7 | 15 | 30 |
| **2** | 3 | 15 | 7 | 15 | |
| **3** | 3 | 15 | 7 | 15 | |
| **4** | 3 | 15 | 7 | | |
| **5** | 3 | 15 | 7 | | |
| **6** | 3 | 15 | | | |
| **7** | 3 | 15 | | | |
| **8** | 3 | 15 | | | |
| **9** | 3 | 15 | | | |
| **10** | 3 | 15 | | | |
| **11** | 3 | | | | |
| **12** | 3 | | | | |
| **13** | 3 | | | | |
| **14** | 3 | | | | |
| **15** | 3 | | | | |
| **16** | 3 | | | | |
| **17** | 3 | | | | |
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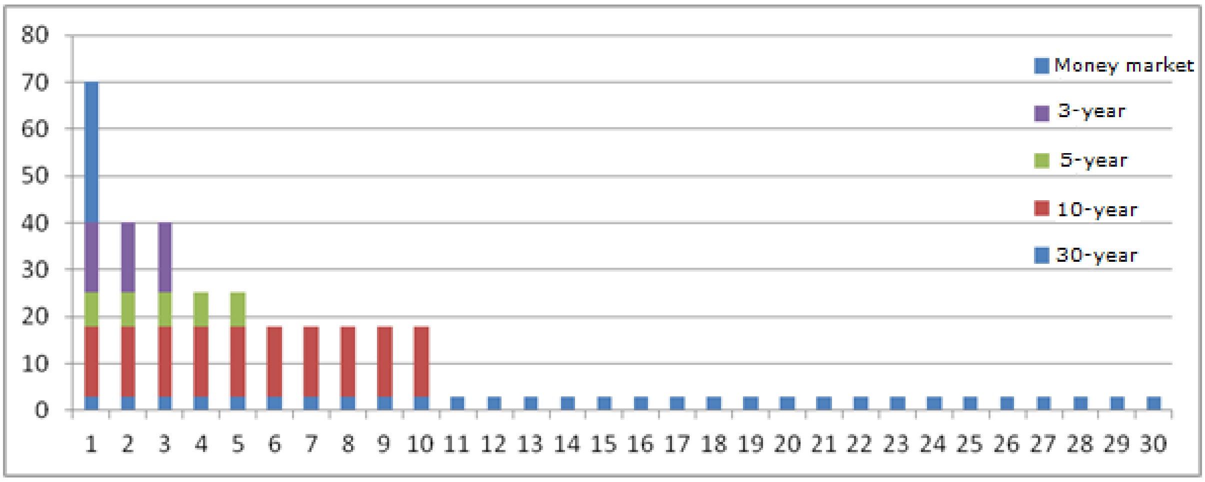
| **20** | 3 | | | | |
| **21** | 3 | | | | |
| **22** | 3 | | | | |
| **23** | 3 | | | | |
| **24** | 3 | | | | |
| **25** | 3 | | | | |
| **26** | 3 | | | | |
| **27** | 3 | | | | |
| **28** | 3 | | | | |
| **29** | 3 | | | | |
| **30** | 3 | | | | |




The examples show that decisions taken in the past (i.e. financing strategies) create a specific repayment profile for the debt portfolio in the space of a few years. However, this specific repayment profile is not efficient as regards the trade-off between costs and risk. A 5-year centralised portfolio is an example of an efficient portfolio in the case of € 42 billion in annual refinancing and € 210 billion in total debt, as well as € 70 billion in annual refinancing and € 350 billion in total debt.

## Annex 6: Deviations compared to the benchmark and duration

The size of the unrealised result compared to the benchmark was limited because the debt manager rarely deviated from the benchmark's risk profile. After all, swaps were used to adjust the interest rate risk attached to the unchanged issuance policy to bring it into line with the benchmark. Unrealised results compared to the benchmark could have been larger if the debt manager had deviated from the benchmark's risk profile. This scenario can be illustrated by using the concept of 'duration', which is a measure of the sensitivity of a bond or a portfolio of bonds to interest rates.

Duration is measured in two ways: 'Macauley duration' and 'modified duration'. The former is the weighted average term of all future cash flows (coupon payments and repayments) of a bond. The weight of each cash flow is determined by the cash value of the cash flow, divided by the price of the bond. Modified duration is the Macauley duration divided by one, plus the effective yield on a bond with the same remaining maturity. Although duration is sometimes expressed in years, this is theoretically inaccurate. Duration is a yardstick for the sensitivity of a bond or a portfolio of bonds to interest rates. When a bond's duration is calculated, all cash flows are taken at their present value with the same yield (i.e. the effective yield on a bond with the same remaining maturity). In fact, each cash flow should be calculated at its present value at the yield applicable for a cash flow with that maturity.

For small deviations, the value of a bond fluctuates roughly by 1% of duration if the interest rate increases or decreases by 1 percentage point.

***Figure 25: Risk profile with no changes in the size of the debt and a continuous issuance policy***

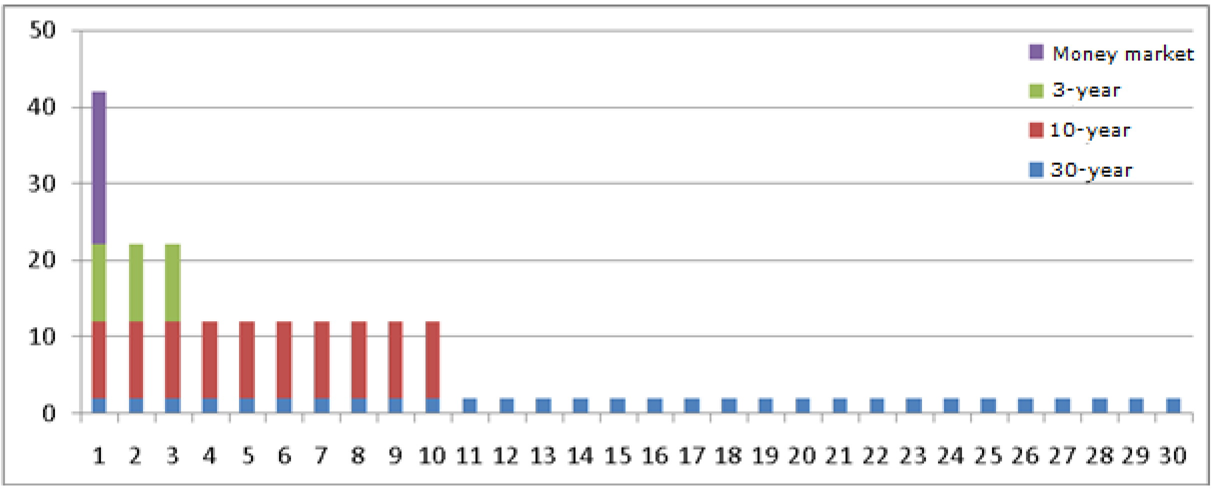
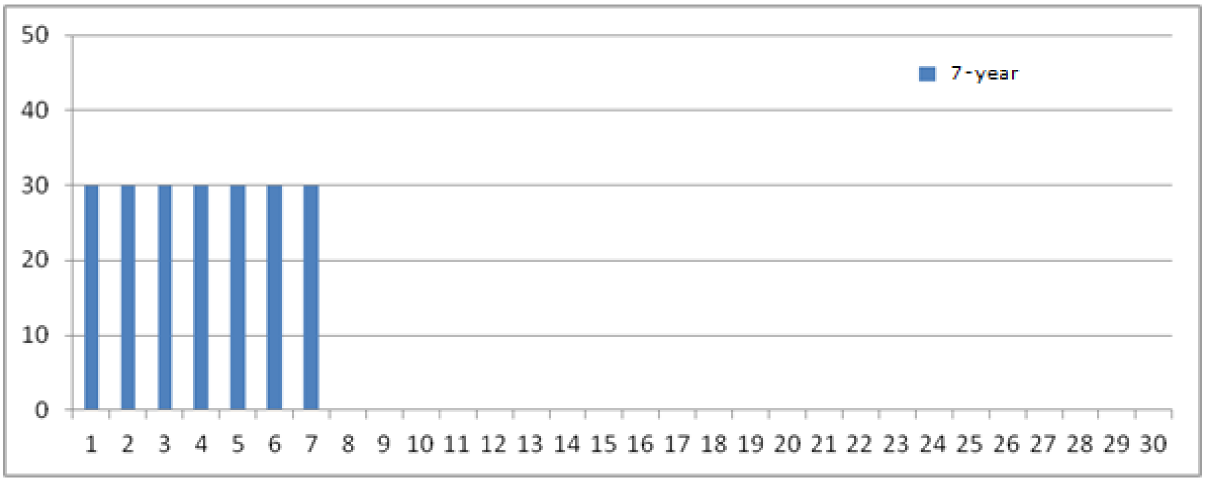



Figure 25 presents a financing strategy based on the Dutch government's funding policy. The portfolio shown in Figure 25 has a duration of approximately 5.6, based on a curve showing an average upward trend with a spread of approximately 75 basis points between the 3-year and 10-year and a 7-year interest rate of approximately 4.3% (i.e. duration increases if the spread is larger and/or the interest rate is lower). Subject to the same assumptions regarding the curve, the duration of the 7-year centralised (benchmark) portfolio (see Figure 26) is approximately 3.7. The difference in duration between the two financing strategies (resulting in a specific composition of the portfolios) is approximately 1.9. If the interest rate changes by 1 percentage point (100 basis points), a 1.9 deviation in duration can change the market value by approximately 1% x 1.9. In that case, the change in market value (i.e. unrealised results compared to the benchmark) for a debt portfolio of approximately € 300 billion can exceed € 5 billion. If no swaps had been entered into, there could have been a difference in duration of 1.9

between the debt portfolio and the benchmark portfolio. The debt portfolio results with respect to total cost might have involved a much larger deviation (positive or negative) from the benchmark results.

***Figure 26: Risk profile of a 7-year centralised portfolio***



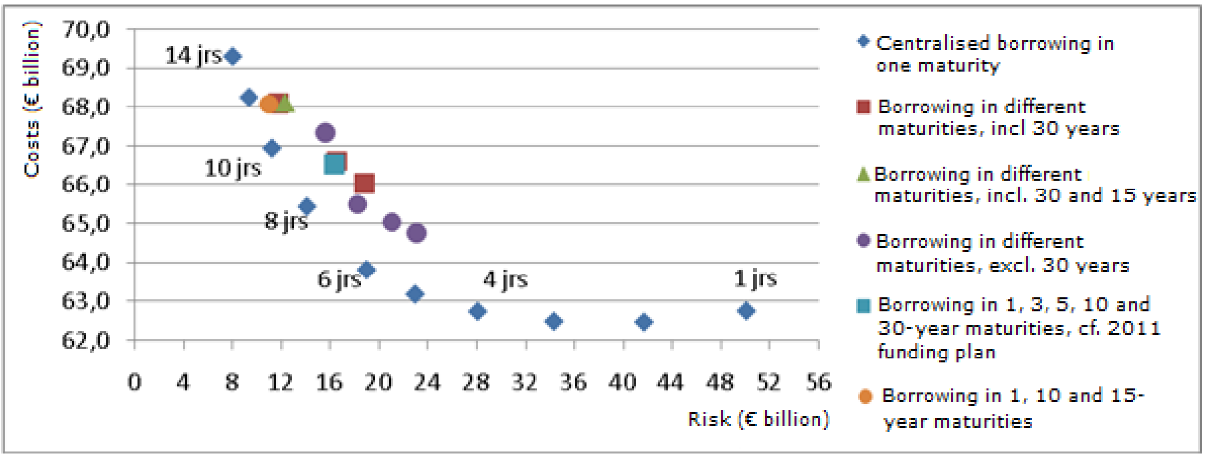

The implementation of swaps in 2008, 2009 and 2010 adjusted the debt portfolio's risk profile to that of the benchmark, which limited the unrealised result compared to the benchmark to approximately € 0.3 billion in 2010.This shows that there was a small deviation between the duration of the debt portfolio including swaps and the duration of the benchmark.

## Annex 7: Interest costs and risk in balanced situations

The aim of debt financing is 'to ensure that the government's financing needs and its payment obligations are met at the lowest possible cost over the medium to long run, consistent with a prudent degree of risk'. As explained earlier, achieving this aim requires insight into the trade-off between costs and risk. Simulations would have to be run for a longer period of time before anything could be said about the costs and risks of debt financing in the longer term. Alternatively, the trade-off between costs and risk for portfolios in an equilibrium situation can be analysed. In order to perform such an analysis, two assumptions have to be made which greatly simplify the real-life situation: (1) the size of the debt does not change and (2) the debt manager is not bound to follow historical decisions regarding debt financing.

If the size of the debt does not change, all financing strategies ultimately tend towards an equilibrium situation. In principle, if one starts from the current debt composition, it will take the remaining maturity of the longest-running loan in the portfolio to achieve an equilibrium situation. An understanding of the long-term trade-off between costs and risk can be obtained by running simulations for a shorter period of time, based on the assumption that the portfolio is already in an equilibrium (see Figure 27). The figure shows that the trade-off between costs and risk in equilibrium situations is optimal for centralised portfolios. Centralised portfolios are portfolios where debt is refinanced in the same maturity whenever it is due to be repaid. Centralised portfolios produce a smooth repayment profile (see Figure 26) in an equilibrium situation.

***Figure 27: Cost versus risk over a 5-year period in an equilibrium situation for a debt of € 300 billion***




Refinancing in more than one maturity (cf. terms of the 2011 fundingplan[79]) is not on the efficient frontier with respect to the trade-off between costs and risk in an equilibrium situation. Some of those portfolios are close to the efficient frontier, however. For instance, in the figure the portfolio with borrowing in maturities from the 2011 funding plan, is above the 7-year centralised portfolio. The strategy results in annual refinancing (€ 60 billion), which is equal to the annual refinancing of a 5-year centralised portfolio. The sum of costs and risk for the non-centralised portfolio, however, is larger than the sum for the centralised portfolio.

[79] See Outlook 2011 for details.