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The Return on Equity of Large Dutch Banks

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1 Introduction and summary

The return on equity (RoE) of banks, a common measure of profitability, is a hotly debated topic among banks and regulators. RoE is typically defined as net income divided by the book value of equity.[1] Therefore, a bank's RoE can be changed in two ways: through a change in net income or by operating with more or less equity.

In the run-up to the recent global financial crisis, banks increased the RoE by boosting income and operating with small capital buffers. This development was driven both by investor demands for higher returns and by a gradual loosening of regulatory standards. As a result, the RoE of many Western banks reached levels in excess of 15%. The strategies used to increase the RoE, which often involved more risk-taking, caused many banks to run into trouble once the financial crisis hit. For instance, banks operating with less equity were more likely to fail or to be in need of state support.[2]

Since 2008, regulatory requirements have gradually been tightened to prevent a repeat of the financial crisis. The Basel III Accord[3] requires banks to significantly increase both the quantity and the quality of capital over the coming years and emphasises the importance of larger buffers. This improves the loss absorption capacity of banks, but will also dampen the RoE. In addition, there is currently a debate in the Basel Committee on Banking Supervision (BCBS) on the so-called risk weighting for banks.

1 Net income is the difference between operating income (net interest income, net fee and commission income and other operating income) and operating expenses (staff costs, administrative costs and depreciation) after accounting for impairments, provisions, contributions to the resolution fund and deposit guarantee scheme and taxes.

2 See Berger and Bouwman (2013) and Betz et al. (2014).

3 The Basel III Accord is implemented in European legislation through the Capital Requirements Regulation and Capital Requirements Directive IV.

Risk weights are used to calculate risk weighted assets (RWA) as a basis for capital requirements, and tend to vary substantially across banks. An increase in risk weights will further increase capital requirements, and thereby lower the RoE. This discussion is of particular significance for large Dutch banks because of a relatively high reliance on internal models to calculate risk weights. Current proposals of the BCBS aim to constrain the use of internal modelling in order to improve the consistency and comparability of risk weights.

These regulatory developments, combined with the generally much lower RoE in the wake of the financial crisis, have reignited the discussion on the feasible long-term level of the RoE in the banking sector. Many European banks continue to pursue double-digit RoE targets and argue that stricter regulation makes it difficult to meet shareholders' demands. Meanwhile, regulators fear that a fixation with unsustainably high targets may incentivise banks to engage in excessive risk-taking to boost net income in the short term and to operate with low buffers.

This study aims to estimate the feasible long-term level of the RoE for the three largest Dutch banks in the face of strict(er) requirements and a changing economic environment. This is done on the basis of scenarios. In these scenarios, we investigate to what extent the future RoE of the three largest Dutch banks may fall because of stricter regulatory requirements and rise if banks realise efficiency gains or manage to pass on part of the costs of regulation to their clients, and benefit from the economic recovery. The scenarios differ in terms of the assumptions made, which work out either favourably, unfavourably or balanced for banks' RoE. The scenarios are not predictions. Their purpose is to determine a plausible range for the RoE under different assumptions, given that future regulatory and economic developments are surrounded by a high degree of uncertainty.

Our findings suggest that in a balanced scenario, the RoE of the largest Dutch banks is likely to remain close to current levels (around 7% on average, with considerable heterogeneity across banks). This is based on the assumption that banks largely achieve their targeted efficiency gains and are able to pass on part of their increased costs to their clients. In a more benign scenario, in which it is relatively easy for banks to absorb additional regulatory requirements, the RoE may be around 2 percentage points higher. In an adverse scenario, however, the RoE may also be two percentage points lower than current levels.

A return of the RoE to pre-crisis levels seems unlikely. This does not necessarily mean that shareholders will be inadequately compensated. Stricter regulation and changing business models have reduced risk taking in the banking sector. This means that risk premia required by shareholders could be lower compared to the pre-crisis era. Moreover, in recent years the risk free interest rate has fallen as well and may remain low in the future. Since the RoE can be understood as the risk free rate augmented by the risk premium for holding bank stocks, shareholders could be sufficiently compensated even with a lower RoE.

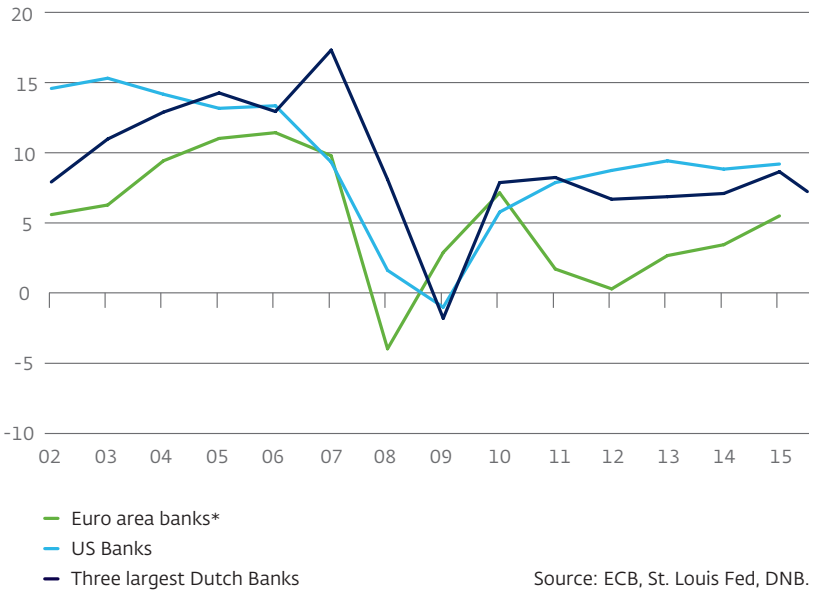
This study is organised as follows. Section 2 describes how the RoE of the three largest Dutch banks has evolved historically and how it compares with banks in the euro area and the US. Section 3 is dedicated to the estimation of the RoE of the three largest Dutch banks going forward. Section 4 discusses whether a double-digit RoE is still appropriate, given that banks' business models have become less risky.

2 Banks' RoE in a broader perspective

The RoE of the three largest Dutch banks has fallen significantly since the financial crisis, along with that of most Western banks. Factors explaining this decline include the weaker economic environment and stricter regulatory requirements. Now that the economic environment is improving, the Dutch banks' RoE has increased to a level comparable to that of US banks, which have already benefitted from economic recovery. In historical perspective, the current RoE of the three largest Dutch banks is not unusually low.

Figure 1 Banks' RoE: International comparison

Percent



Source: ECB, St. Louis Fed, DNB.

* Large institutions

In the years preceding the global financial crisis, the average RoE of banks in the euro area and the US was much higher than 10% (Figure 1). Banks operated with relatively low buffers, amplifying the RoE. A significant shift occurred once the crisis started. Banks' RoE fell abruptly as losses increased, which sharply reduced net income, and forced banks to increase capital buffers. The strengthening of buffers was initially necessary to regain investor confidence and later also imposed by regulators.

After 2009, the US economy started to recover more strongly than the euro area. As a result, US banks, on average, realised around a 9% RoE in 2015. In the euro area, however, the lingering sovereign debt crisis caused bank profitability to remain weak for much longer. European banks have only recently witnessed a slight improvement in RoE, amid a slowly recovering economic environment.

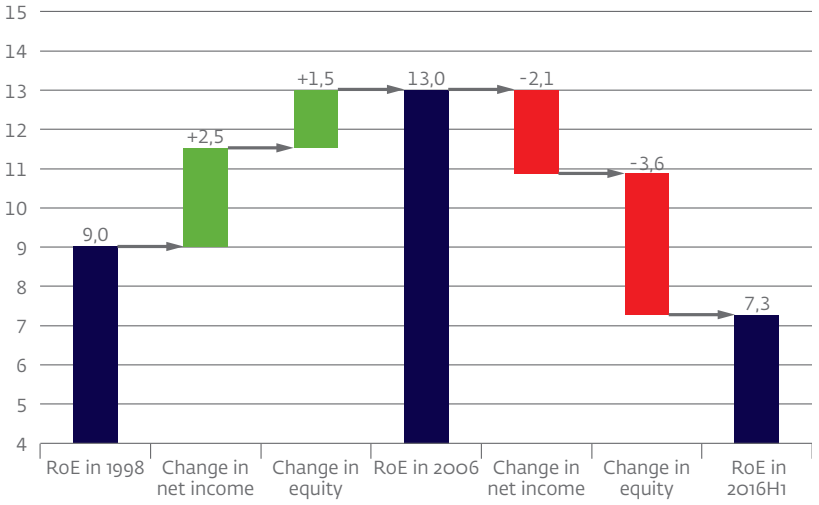
Similar to the general pattern, the three largest Dutch banks posted high returns just before the financial crisis and experienced a significant drop in RoE after 2007 (Figure 1). In the pre-crisis period, the RoE of the three Dutch banks increased from 9.0% in 1998 to 13.0% in 2006 through two routes (Figure 2).[4] First, banks significantly increased income, partly realised by undertaking non-core activities (e.g. investment banking). This lifted the RoE by 2.5%-points during the period 1998-2006. Second, the RoE was boosted by another 1.5%-points owing to increased leverage through lower equity.

The aggregate RoE of the three Dutch banks dropped by 5.7%-points between 2006 and 2016Q2 (Figure 2). Net income fell, largely due to increased loan losses, reducing the RoE by 2.1%-points, although banks to some extent managed to support profitability by increasing the interest

4 In 2007, the RoE of the three banks even reached 18.6%, but this number is distorted due to the sale of parts of ABN AMRO.

Figure 2 Level and change in RoE during 1998-2016

Percentage aggregate of three largest Dutch banks



Source: DNB.

margins on mortgages. Mainly by retaining part of their profits, banks increased capital buffers, which lowered the RoE by another 3.6%-points. As a result, the RoE of the three banks amounted to 7.3% in 2016Q2.[5] This is still significantly lower than just before the crisis, but close to that of US banks, which have benefitted from a stronger economic recovery. In historical perspective, an RoE below 10% is not exceptional for Dutch banks. In fact, RoEs in the Dutch banking sector averaged at 9% during the period 1980-2003 – even though the risk-free interest rate was significantly higher than today – rising to above 10% only in the run-up to the crisis.

5 The RoE for 2016Q2 is based on the 4-quarter sum of net income (as reported by the banks) over 20015Q3-2016Q2, divided by average equity over this period.

3 RoE prospects for the largest Dutch banks

In the coming years, stricter regulatory requirements are likely to weigh on Dutch banks' RoE. Changes in the risk weights methodology, which are currently being considered by the Basel Committee on Banking Supervision (BCBS), can have a material effect on the RoE of Dutch banks going forward. That said, banks are likely to try to mitigate the impact on their RoE of stricter requirements. In particular, banks can bolster their RoE by improving operational efficiency and passing on part of the rise in costs to clients. Considering all these effects together, we estimate that the future aggregate RoE of the three largest Dutch banks may drop to 4.7% under unfavourable assumptions if banks do not succeed in compensating the impact, but increase to about 9% under favourable assumptions. Under balanced assumptions, we estimate the aggregate RoE to be about 7%.

In this section, we estimate the future aggregate RoE of the three largest Dutch banks. We proceed in three steps. First, we estimate the impact of various regulatory requirements on the RoE of the three largest Dutch banks, taking the 2016Q2 RoE as a starting point. Second, we look at additional factors that may affect banks' RoE in the coming years. These factors include (i) further improving operational efficiency, (ii) passing on part of the costs of regulatory requirements to clients and (iii) declining loan losses and lower interest margins. Third, we attempt to quantify how a steepening of the yieldcurve or a continuation of the current low interest rate environment may affect bank profitability.

The analysis is conducted through scenarios. These scenarios correspond to assumptions that work out either favourably, unfavourably or balanced for banks' RoE. With respect to the changes in the risk weighting methodology as currently considered by the BCBS, we analyse three scenarios: a significant increase in capital requirements (Strict), a more moderate increase (Intermediate), and a limited increase (Mild). As regards the scope to

mitigate the decrease in RoE due to a regulatory tightening, we also present three scenarios: Adverse, Balanced and Benign. It must be cautioned that these scenarios are not predictions; their purpose is to explore how the RoE could be affected in the medium-term.

3.1 The impact of stricter regulatory requirements on Dutch banks' RoEs

To estimate future RoEs of the three largest Dutch banks, we must first determine the current and forthcoming regulatory requirements. Box 1 provides an overview of all the currently established and known forthcoming regulatory requirements taken into account in our calculations. This is based on minimum requirements that are already adopted in the European legislation, assumptions about additional demands from regulators and bail-in requirements from resolution authorities.

The large Dutch banks are fully on track in meeting the established and known forthcoming requirements laid out in Box 1 in terms of equity. Banks should still raise so-called AT1 instruments and other forms of debt securities that can be bailed in (e.g. subordinated bonds). AT1 instruments are hybrid debt securities that absorb losses automatically (are either converted to equity or are written down) when the capital of the issuing bank falls below a certain level. Other things equal, the net income of Dutch banks will be reduced if they issue more AT1 and bail-in debt instruments, because investors will demand a higher risk premium compared to senior bonds. On top of that, Dutch banks must make annual contributions to the deposit guarantee scheme (DGS), an additional regulatory policy measure that negatively affects profit.[6]

6 The DGS contributions shall be paid by banks until mid-2024. Besides to the DGS, banks also contribute to the resolution fund. However, the impact on profits is already included in the 2016Q2 RoE figures and therefore not considered in our estimations.

Box 1 Established regulatory requirements

We take into account the following minimum capital requirements in the European legislation, assumptions about additional demands from bank regulators and bail-in proposals from the resolution authorities.

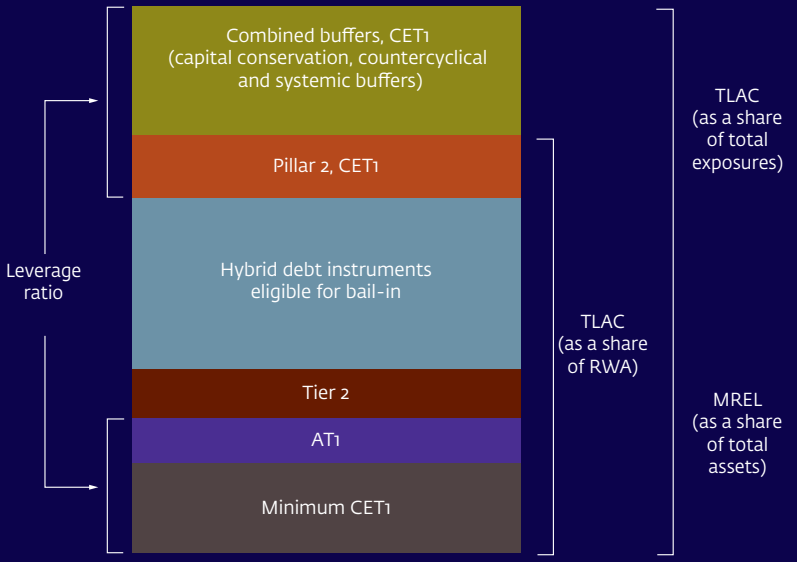
- **Equity requirements:** A requirement of 12.5% of RWA in Common Equity Tier 1 (CET1), the highest quality of capital. This is comprised of 4.5% minimum requirement, a 2.5% capital conservation buffer, 3% systemic risk buffer for large banks and 2.5% extra buffer to meet both Pillar 2 and countercyclical capital buffer requirements (Figure 3).
- **AT1 and subordinated debt instruments requirements:** Additional requirements in terms of loss-absorbing debt instruments, in so far they are not already met with CET1. These are comprised of a requirement of 6% of RWA in Tier 1 instruments[7], 8% of RWA in total capital instruments (also includes Tier 2 instruments), and 4% of total exposures in Tier 1 instruments (the Dutch leverage ratio requirement).
- **Bail-in requirements:** To meet European bail-in (MREL[8]) requirements, it is assumed that banks should hold an amount of 8% of their total exposure in Tier 1, Tier 2 or other eligible debt instruments. ING bank, as the only global systemically important bank in the Netherlands, also needs to meet 18% of RWA (or 6.75% of total exposures) in Tier 1, Tier 2 or other eligible debt instruments for global bail-in requirements (TLAC). As Figure 3 shows, instruments held for the combined buffers do not count towards the TLAC RWA requirement.

7 Both CET1 and Additional Tier 1 instruments count towards Tier 1.

8 MREL: Minimum requirement for own funds and eligible liabilities, set for the three large banks by the European Single Resolution Board. TLAC: Total Loss Absorbing Capacity, set by FSB for G-SIBs. The TLAC requirements we assume are only applicable from January 2022 onwards. See DNB: Overview of Financial Stability, spring 2014 for background information on bail-in requirements.

- **Contributions to the Deposit Guarantee Scheme, Resolution Fund and Bank Tax:** Dutch banks must also meet three additional policy measures that directly affect their net income: the annual contributions to the deposit guarantee scheme (DGS), the resolution fund and the bank tax. The latter two levies are not explicitly considered in our estimations, as the impact on the RoE is already included in the 2016Q2 figures, which we take as the starting point for the analysis.

Figure 3 current and forthcoming regulatory requirements



Besides the regulatory requirements in Box 1, there is a discussion on the risk weighting used to calculate capital requirements. According to regulation, banks need to hold more capital for riskier exposures. Most regulatory requirements are therefore expressed in terms of risk weighted assets (RWA). Subject to supervisory approval, banks are allowed to estimate the risk weights through their internal models.

However, in response to the critique that the risk weighted approach is complex and introduces model risk, the BCBS has proposed to introduce a minimum level of risk weighting for credit exposures. The introduction of these so-called risk weight floors aims to prevent undue optimism in bank modelling practices, reduce model risk, and improve comparability of risk weights across banks. In addition, the BCBS has put proposals on the table which aim to constrain the use of internal models for certain portfolios for which there is little historical information available on default risk, as well as for estimating operational risk. In principle, these proposals will affect all measures in Box 1 that are expressed as a percentage of RWA.

The package of measures is still being negotiated by the BCBS and the final proposals are expected to be put forward around the end of 2016. The Group of Governors and Heads of Supervision (GHOS), which is the oversight body of the BCBS, has stated that the final package of measures should not lead to a significant overall increase in capital requirements. Nonetheless, for individual banks the new measures may lead to a significant increase in capital requirements. The largest Dutch banks may be particularly affected by risk weight floors because of their relatively high reliance on internal models and large exposure to residential mortgages, which carry relatively low risk weights. The latter is largely due to very low loss rates on mortgages, even after the recent correction in the housing market.

We apply scenario analysis to explore the impact of regulatory requirements on RoEs. In all three scenarios, Dutch banks will witness an increase in their RWA, which is likely to cause shortfalls in banks' equity as well as AT1 and bail-in debt instruments. More specifically, we assume that the three largest Dutch banks jointly face a CET1 shortfall of € 30 bn in the Strict scenario, € 20 bn in the Intermediate scenario and € 10 bn in the Mild scenario. In the absence of information about the outcome of the Basel 3.5 negotiations, these numbers are used for illustrative purposes, and the calculations should be interpreted with caution.

Impact analysis

We analyse the impact of the three scenarios on the RoE by applying the new rules to banks' balance sheets at 2016Q2. The CET1 shortfalls correspond to increases in RWA. This will also boost the required amount of AT1, and subordinated and bail-in debt instruments, insofar as these are expressed in RWA terms. Banks will have to replace senior bonds by these instruments; the resulting increase in funding costs will weigh on banks' RoEs.

Since the additional regulatory requirements improve banks' loss absorption capacity, one would expect the risk premium of senior debt to fall.[9] There is empirical evidence suggesting that banks with higher capital ratios have lower funding costs.[10] At the same time, however, the bail-in policy aims to remove the implicit insurance of governments for too-big-to-fail banks. This implicit insurance currently dampens the risk premium demanded by investors for senior debt, and its removal will have an offsetting-upwards-effect.

9 In the event of bankruptcy, senior debtholders will be repaid before junior debtholders and shareholders.

10 For empirical evidence of the negative relation between borrowing costs and bank capital; see e.g. Demirgüç-Kunt and Huizinga (2004) and Babihuga and Spaltro (2014).

In our calculations, we assume that the effects of higher absorption capacity and removal of the implicit government insurance cancel out.[11]

Figure 4 shows the impact of the assumed regulatory requirements on the aggregate RoE of the three largest Dutch banks under the Intermediate scenario. Relative to the 2016Q2 level, the RoE drops by 1.7%-points. This is largely due to the necessary increase in equity (i.e. drop in leverage) to meet regulatory requirements (-1.1 %-points). The additional drop of the aggregate RoE owing to the issuance of AT1 and bail-in debt instruments, which raises interest expenses, is estimated to be relatively small (-0.4%-points).[12] The impact of the contributions to the DGS is also small (-0.2%-points). The combined impact then reduces the RoE to 5.6% in the Intermediate scenario.

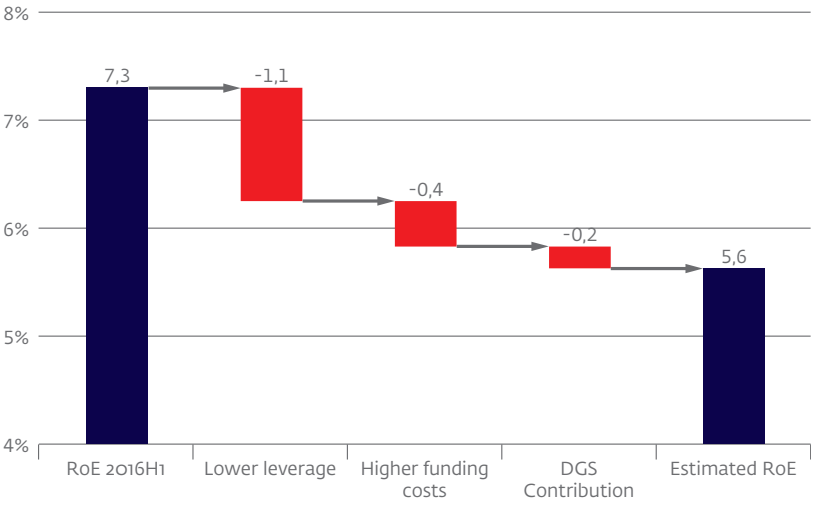
Obviously, both alternative scenarios have a different impact on the RoE. In the Strict scenario, with a larger increase in capital requirements, the partial effect of regulatory requirements on aggregate the RoE is estimated to be -2.1%-points. In the Mild scenario, with a limited increase in capital requirements, it is -1.3%-points.

11 Our assumption is consistent with the choices made by other authors. For example, Miles et al. (2013) also do not make an explicit calculation of the effect higher capital buffers on the cost of debt. We review this assumption and available empirical evidence in Appendix A.

12 The assumed difference in interest rates between AT1 instruments and senior debt is 550 basis points. This is the difference of AT1 yield of 12 large European banks (6.2% in 2015, on average) and the IBOXX senior unsecured yield for European banks (0.74% in 2015). The assumed difference in interest rates between bail-in debt and senior debt is 100 basis points based on IBOXX European banks data in 2015.

Figure 4 Impact of regulatory requirements on RoE

Aggregate of three Dutch banks, Intermediate scenario



Source: DNB.

3.2 Possible improvements of profitability

In this section, we look at three factors – efficiency savings, pass-through of costs and a decline in losses and interest margins – that may affect profitability and mitigate or exacerbate the impact of stricter regulatory requirements on RoEs. Given the uncertainties, we work again with three scenarios (Adverse, Balanced and Benign) for calculating the impact of each factor.

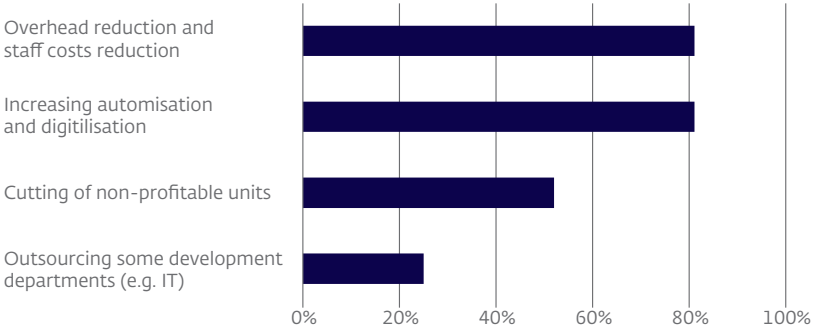
1 Efficiency savings

RoEs can be improved if banks manage to reduce costs. Many banks see cost cutting as the primary tool to boost profitability in the near future.

For instance, in a questionnaire conducted by the European Bank Authority (EBA) in December 2015,[13] more than three-quarters of the responding banks indicated they intend to lower costs through reductions of overheads and staff expenses (Figure 5).[14] A big majority of European banks also intends to achieve saving through increasing automatisation and digitalisation. Cutting non-profitable business units and outsourcing some departments are also areas where banks wish to realise efficiency gains.

Figure 5 Primary target for reducing costs

Percentage of respondents agreeing



Source: EBA Risk Assessment Report December 2015.

The risk assessment questionnaire (RAQ) includes surveys from 37 European banks (including ABN AMRO, ING and Rabobank).

13 The risk assessment questionnaire is a semi-annual survey, asking European banks a number of multiple-choice questions. The latest sample contains 37 European banks including ABN AMRO, ING and Rabobank.

14 Staff costs accounted for roughly 60% of operating expenses of the three Dutch banks.

Even though substantial cost-cutting has already been undertaken since the crisis, the three Dutch banks envisage further improvement of their cost-to-income ratios. We assume that the aim of Dutch banks in cutting costs is to achieve their most ambitious cost-to-income targets (56% for ABN AMRO, 50% for Rabobank, 50% for ING bank).[15]

In the Benign scenario, all three banks succeed fully in attaining these cost-to-income targets through cost reduction. In the Balanced scenario, banks achieve only half of these efficiency gains. In the Adverse scenario we assume no cost reduction. In the Intermediate regulatory scenario, the aggregate RoE is estimated to rise 0.8%-points and 1.6%-points in Balanced and Benign scenarios, respectively, due to cost savings. Obviously, in the Adverse scenario, there is no improvement in the RoE.

2 Pass-through of costs

Since all three Dutch banks face similar regulatory requirements, bank lending rates may adjust to reflect the banks' increased interest expenses (due to e.g. replacing senior debt with AT1 and bail-in debt instruments). In this way, banks may be able to pass on part of the increased costs to their clients. In addition, the regulatory requirements will cause the funding mix of banks to change towards more equity financing. Although no interest is paid on equity, banks typically calculate a cost of capital for internal purposes, which they may also be able to pass on to their clients. For instance, the imposition of risk weight floors may force banks to hold more capital for their mortgage exposures. Banks can try to pass on the extra cost of capital to borrowers. The cost of capital typically lies above interest paid on other liabilities, since pay-outs to shareholders do not benefit from the tax shield and shareholders bear more risk.

15 These data are taken from recent communications on the banks' websites.

The extent to which lending rates adjust to reflect higher costs depends on a number of factors: the degree of competition in the sector (including from non-banks), the price elasticity of demand and the willingness of banks to defend market share at the expense of profitability. Against this uncertain background, we assume that in the Benign scenario banks can meet the demand for credit, while fully passing on increases in their cost of debt and cost of capital[16] as a result of stricter regulation. In the Intermediate scenario, only a partial pass-through (50%) is considered. In the Adverse scenario, there is no possibility to charge clients more.

In the full pass-through under the Benign scenario, the aggregate RoE of the three banks increases by 1.5%-points (in combination with the Intermediate regulatory scenario). A partial pass-through under the Balanced scenario increases the RoE by 0.8%-points. There is no positive impact on the RoE in the Adverse scenario.

3 Declining loan losses and interest margins

In the coming years, economic conditions are expected to improve further, with real GDP growth in the Netherlands picking up to 2.0% in 2018 according to the latest DNB forecast.[17] Dutch banks will ceteris paribus benefit from the economic recovery due to lower loan losses. In fact, loan impairments and provisioning had already almost halved in 2015 compared to the previous year and dropped further in the first half of 2016 and, therefore, supported the RoE of the Dutch banks. Provisions are now below

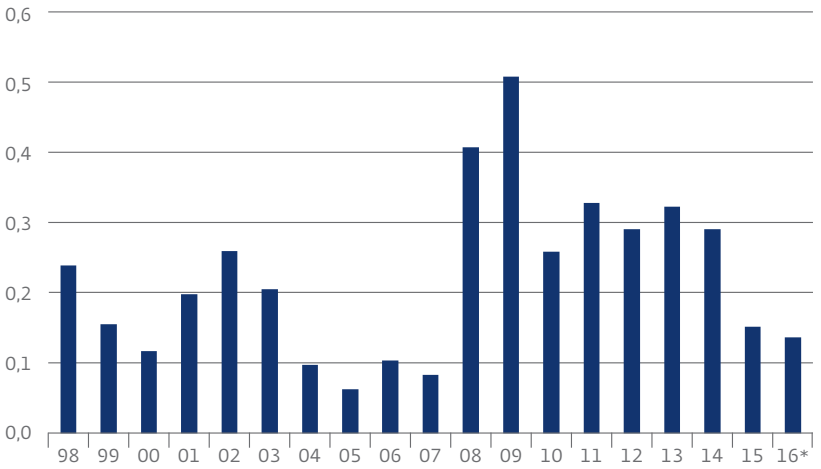
16 As before, the assumed difference in interest rates between AT1 instruments and senior debt is 550 basis points based on observed interest rates in 2015. Based on recent quantitative estimates conducted by the ECB, we assume that the cost of capital is 8% (Source: Frison et al., 2015).

17 See DNB: Economic Developments and Outlook, June 2016.

levels observed in the pre-crisis period 1998-2006, which contains a full economic cycle. Therefore, banks are unlikely to profit much further from the economic recovery.

Figure 6 Impairments and provisions

Percentage of average assets, aggregate of three largest Dutch banks



Source: DNB.

* 2016 figure based on the 2015Q3-2016Q2 average.

On the other hand, intensified competition may have a negative impact on profitability, due to lower net interest margins (i.e., the difference between a banks' interest income and expenses). During the crisis years, Dutch banks' interest margins have benefited from reduced competition. This enabled banks to keep interest margins at relatively high levels, without losing much

market share.[18] The average interest margin of the three largest banks in the period 2015Q3-2016Q2, as a share of assets, was about 4 basis points above the pre-crisis mean (1998-2006). Given the high leverage in the banking sector, this difference still has a substantial positive impact on RoEs.

Recently, competition in the Dutch financial sector is intensifying. For example, insurers and foreign banks are already increasingly active in the domestic mortgage market. This may affect the interest margins of Dutch banks. In the Adverse scenario we assume that margins of banks will fall back fully to their pre-crisis levels. On average, this has a negative partial effect on the RoE of about -0.6%-points (in the Intermediate regulatory scenario). In the Balanced scenario, the adjustment is assumed to be only 50%, and the negative RoE impact is -0.3%-points. In the Benign scenario, we assume that interest margins stay at current levels.

3.3 Combined effects under the three scenarios

Table 1 sums up the RoEs in the three different regulatory scenarios (on the vertical axis), combined with the three scenarios of factors that may mitigate the impact of higher regulatory requirements (on the horizontal axis).[19] The top left cell presents a combination of the Strict regulatory scenario and Adverse conditions. In this case, the negative impact on the RoE is the highest as banks (i) experience a substantial increase of their RWAs, (ii) are unable to realise any efficiency gains, (iii) cannot pass on

18 For a part, price competition has been under pressure due to constraints set by the European Commission on banks receiving State aid (see Jansen et al., 2013). Furthermore, banks may have experienced less competitive pressure in their lending business as they collectively exercised restraint to expand their loan portfolio (because of difficult finding conditions and deterioration of creditor quality).

19 A more detailed breakdown is presented in Appendix C.

the costs of debt and capital to their clients and (iv) face lower interest margins. Under such adverse conditions, the aggregate RoE is estimated to be reduced to around 4.7%. If Adverse conditions are combined with the less stringent regulatory scenarios, the RoE increases to 5.3%.

Under Balanced circumstances (second column), the aggregate RoE drops much less from its current level and remains close to 7%, irrespective of the regulatory scenario. Finally, in the Benign scenario (third column), the aggregate RoE is around 9%, again with only small differences between regulatory scenarios.

Table 1 Combined effect regulatory scenarios and financial conditions

		Financial and economic conditions		
		Adverse	Balanced	Benign
Regulatory conditions	Strict	4.7%	6.8%	8.9%
	Intermediate	5.0%	7.0%	9.0%
	Mild	5.3%	7.2%	9.0%

Source: DNB.

The numbers reported above are aggregated for the three largest Dutch banks, masking heterogeneity between banks. Depending on the scenario and their exact business model, individual banks may be able to achieve returns that deviate from the average figure. Banks are also likely to implement higher regulatory requirements in different ways, particularly by retaining earnings, issuing new shares or reducing risk-weighted assets (see Box 2).

3.4 Alternative assumptions on the economic environment

As a robustness check, the range derived in the previous section can be compared to estimates obtained with bank profitability models that aim to capture the relation between the economic cycle, the demand for loans and bank profitability. Using five bank profitability models from the existing literature, we estimate the RoE impact under a scenario in which the yield curve steepens due to an economic recovery (see Appendix B). The models show that this has a positive impact on bank profitability, with a median RoE impact of 0.4%-points.

Next, we turn to the potential effects of a long period with low interest rates. Although it is unclear whether the current low-interest environment will persist long enough to affect the RoE in the medium to long term, the five models can be used to quantify the impact on bank profitability relative to its current level (see Appendix B). All models indicate that this will have a negative impact on the RoE, with the median estimate being -0.4%-points.

Box 2 Instruments to increase the capital ratio

In addition to improving their profitability, banks have three other instruments available to meet these requirements: increasing their equity by reducing dividend payouts, raising equity by issuing new shares (or similar forms of bank capital) or reducing risk-weighted assets by selling or discontinuing parts of their portfolio.

Retaining earnings

The most straightforward instrument available for banks to increase their equity, is to pay out a smaller share of their profits in the form of dividends. These dividends amounted to approximately one half of net profits in 2015. By retaining part of their earnings, banks can gradually increase their equity buffers. A long transition period for the requirements to fully kick in can facilitate this.

Issuing new shares

Issuing new shares is another instrument that banks have available to increase their equity. Compared to retaining earnings by reducing dividends, which contributes to a gradual increase in equity buffers over time, share issuance can help to relatively quickly and substantially increase equity.

Reducing risk-weighted assets

Thirdly, banks may improve their capital ratios by reducing their (risk-weighted) assets, such as through securitizing or selling parts of their portfolio. If the sale price exceeds the portfolio's book value, selling assets increases the amount of equity, in addition to reducing risk-weighted assets. Banks could also attempt to reduce their risk-weighted assets by reducing the growth of credit to households and firms. However, a reduction in credit supply by an individual bank would reduce its market share as well as its income (e.g. fees and interest) and profits. This would have a negative impact on banks' profitability and on their ability to retain earnings in the future.

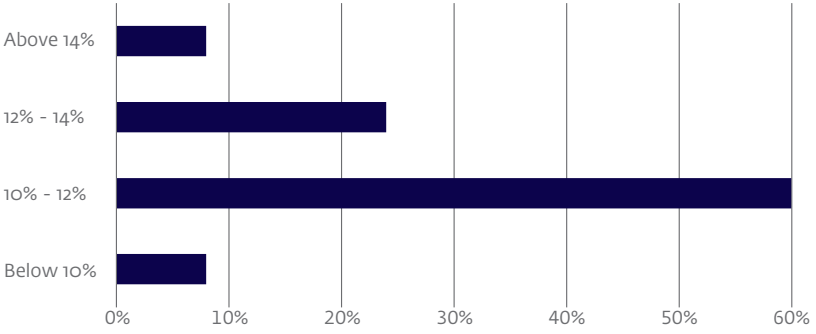
4 Are current RoE targets too high?

Although the RoE of banks has fallen considerably since the financial crisis, many banks continue to pursue double-digit RoE targets. These targets may be difficult to attain in the face of the upcoming stricter regulatory requirements. However, that should not necessarily pose a problem. Stricter regulation has improved banks' risk profiles, which means shareholders can be adequately compensated with lower, yet more sustainable, returns.

Banks' resolve in reaching the double-digit territory for the RoE has not wavered, even though the realised RoE has fallen sharply since the crisis, owing to weaker earnings, higher capital buffers and less risk-taking. The RoE target of ABN AMRO and ING is between 10% and 13%. In 2015, both banks managed to meet this range. Rabobank does not have a conventional RoE target. Instead, the bank aims to increase its return on invested capital to 8%, from 6.5% in 2015.

Figure 7 The required RoE on a long-term basis

Percentage of respondents agreeing



Source: EBA Risk Assessment Report December 2015.

The risk assessment questionnaire (RAQ) includes surveys from 37 European banks (including ABN AMRO, ING and Rabobank).

Internationally, double-digit RoE targets are no exception: the results of EBA's risk assessment questionnaire (December 2015) showed that the majority of responding banks consider an RoE between 10% and 12% to be necessary for the long-term viability of their businesses (Figure 7). Around one-tenth of the respondents consider a single-digit RoE target sufficient to compensate their shareholders.

Banks typically argue that they are targeting a double-digit RoE to meet shareholders' demands. Shareholders require an additional return on top of the risk free interest rate, to compensate them for bearing the risk of holding banks' stocks. An RoE below the return required by investors is not considered sustainable, as this may make it difficult for banks to re-invest profits, rather than pay dividends.

In contrast to the realised RoE, the required RoE by investors is not directly observable. In the same risk assessment questionnaire conducted by EBA, the majority of responding banks (around 60%) indicated they used a required RoE below 10% in their current financial planning. Model-based estimates made separately by the EBA[20] and the ECB[21] suggest that required returns for European banks have been falling in recent years, and are currently in the single digit territory. According to EBA's results based on top 30 EU listed banks in 2015, the EU average required RoE (excluding Greece) was about 9%. The ECB estimated that the required RoE for 33 major euro area banks has fallen over the past few years to around 8%. One factor driving the decline of required returns on bank equity is a fall in the risk free interest rate. The risk free rate has shown a declining trend since 1990,

20 See report on the EBA risk assessment questionnaire (June 2015).

21 See Frison et al. (2015).

and as a result, interest rates are currently very low from a historical perspective and may stay low for a prolonged period in the future.

Based on our analysis, the aggregate RoE of the three largest Dutch banks in the Intermediate scenario, about 7%, is below the currently required RoE range of 8%-12%. Individual banks may be able to achieve returns that are one or two percentage points higher. However, a lower outcome should not necessarily lead to dissatisfaction among shareholders. As bank leverage is decreased, the risk premium required by shareholders could also fall, other things being equal. In other words, lower leverage combined with banks' emphasis on cost efficiency do not necessarily lead to a less attractive risk-adjusted return for shareholders.

Appendix A
Bank capital requirements and cost of funding

Two distinct regulatory developments may affect the price of senior debt over the coming years. First, since higher equity financing better protects banks' creditors against adverse shocks, the cost of debt is expected to fall when regulators require further increases in bank equity. Second, bail in policy aims to remove the implicit insurance of governments for too-big-to-fail banks. The implicit insurance dampens the risk premium demanded by senior debt holders. Quantifying the impact of these policies is extremely uncertain. Any empirical evidence is necessarily backward looking and may be uninformative for the future.

Empirical evidence suggests that there is a small negative relationship between measures of solvency and risk premia of senior debt. For instance, Babihuga and Spaltro (2014) show that the CDS spreads of 25 large Western banks in the period 2001-12 are negatively related to the level of a bank's capital ratio in the long run. On average, a 1 percentage point increase in total bank capital reduces CDS spreads by 0.26 basis points. Aymanns et al. (2016) focus on a much larger sample of banks and find that banks with a 1 percentage point higher level of solvency[22] tend to pay, on average, 2 basis points less on their total liabilities over the period 1993 to 2013. These results imply that increasing capital may help drive down funding costs. The estimate of Aymanns et al. implies that a 1 percentage point higher level of solvency has a positive effect on the RoE of about 0.2 percentage points; using the estimate of Babihuga and Spaltro, the positive effect on the RoE would be negligible.

Another strand of the academic literature has tried to directly quantify the too-big-to-fail (TBTF) subsidy embedded in historical senior bond spreads.[23]

22 Solvency measure is comprised of the leverage ratio, Tier 1 capital ratio, and total regulatory capital ratio.

23 For a detailed survey see Kroszner (2013) and Siegert and Willison (2015).

The empirical estimates vary widely across different methodologies, different samples of banks, and different time periods. They range from 6 basis points (Hindlian et al., 2013, for the six largest US banks relative to other banks over the longer period 1999 to mid-2007) to 100 basis points (Acharya et al, 2014, for on the top decile US banks in the year 2009). Focusing on banks operating in six major EU countries, Bijlsma et al. (2014) estimate the TBTF-subsidy to be 67 basis points for large banks and 121 basis points for G-SIBs during 2008-2011. Two studies (Lester and Kumar, 2014; Hindlian et al. 2013) find that TBTF banks had in fact a funding disadvantage in the year 2013.

Regarding these empirical estimates, one may doubt as to whether they are fully caused by bail-out expectations. For example, the difficulty with analysing the differences in funding costs between large and small banks is that the lower funding costs for the former could also be the result of other factors, such as diversification benefits (Demsetz and Strahan, 1997), economies of scale (Hughes and Mester, 2013, and Kovner et al., 2014) and liquidity of market instruments (Chen et al., 2007). A funding cost advantage for large firms is also observed in other industries, which may raise doubts that the lower funding cost for larger banks is fully caused by bail-out expectations.[24]

Another line of reasoning recognises that senior spreads may not change much from current levels once banks replace the implicit government guarantee with a large layer of capital and subordinated liabilities that are first in line to absorb losses. From the perspective of the senior debt holders, the guarantee is simply borne by a different party. This reasoning was example followed by Moody's, a rating agency. Moody's reduced the

24 see e.g. Araten and Turner (2013) and Kroszner (2013).

systemic uplift contained in the ratings of Dutch systemic banks' senior unsecured debt in 2015 due to the introduction of the BRRD. Yet this was wholly and in some cases more than offset by a lower assumed 'loss-given-failure' for senior creditors, due to a higher layer of loss absorbing capacity. In our study, we also take into account that policy makers will require banks to build up such a layer (see box 1). We did include the impact of the increased funding costs associated with this layer in our estimates of RoE (about 0.4 percentage points), based on observed differences in spreads between senior debt and subordinated liabilities (see footnote 16).

Appendix B
Bank profit and the macro-economic environment

This appendix explores how alternative assumptions about the economic environment may have an additional effect on the RoE of banks. The outcomes are obtained using five models that aim to capture the relationship between the economic cycle and bank profitability.[25] While a range of such models is available in the literature, these models share a number of limitations: they are less suitable for capturing long run dynamics of bank profitability; they do not sufficiently account for the additional effects associated with 'catch up' growth following a deep economic downturn (in terms of exceptional loan losses and interest margins), and they typically deliver results for the banking sector as a whole, rather than at the level of individual banks.

Moreover, in order to apply these models, we must make assumptions on long-term economic conditions, in particular on how interest rates may evolve in the long run. On the one hand, the yield curve, which is currently relatively flat from a historical perspective, is expected to steepen in the long run, as the economic recovery becomes more robust. This may support the net interest income of Dutch banks. On the other hand, interest rates are currently very low from a historical perspective and may stay low for a long period. This may have negative effects on interest income, for two reasons. First, as the yield curve shifts down, interest earned on the banks' assets will decline. However, banks may be unable to lower their cost of funding to the same extent, especially as some clients may not accept negative interest rates on their deposits, putting downward pressure on net interest income. Second, a flat yield curve reduces the opportunities for banks to benefit from maturity transformation.

25 The models are taken from Bolt et al. (2012) and (2013); Albertazzi, U., and L. Gambacorta, (2009); Bikker, J.A. and H. Hu, (2002). See Appendix B.

Table 2 presents for the five models we used the expected change in the return on assets of banks in basis points, following a percentage point change in certain macroeconomic variables. For example, an increase in economic growth of 1%-point is associated with an increase in the return on assets of banks in the range of 6.2 to 13.5 basis points in the long run, depending on the model. Similarly, a steeper yield curve and a decrease in unemployment is associated with higher bank profits.

Table 2 Impact selected variables on RoE: model estimates

	Change in RoA in bps for a 1%-point change in each variable				
	(1)	(2)	(3)	(4)	(5)
Economic growth (%)	6.2	10.0	7.0	13.5	7.0
Unemployment rate (%)	–	-5.0	-7.0	-3.2	-3.1
Long-term interest rate (%)*	21.3	–	7.0	7.5	5.8
Short-term interest rate (%)**	-19.6	–	-7.0	-7.5	-5.8
Inflation (%)	-2.8	1.0	0.0	–	–

Source: Model 1: Albertazzi and Gambacorta (2009), Table 3, model (5). Models (2) and (3): Bikker and Hu (2002), Table 2, columns (2) and (3). Models 4 and 5: Bolt et al. (2013), Table 2, models (1) and (2) without effect for severe recessions.

* Netherlands

** Euro area

The impact of economic recovery

To estimate the expected change in the RoE under an economic growth scenario, we used the five models to estimate the expected change in return on assets as a result of the improvement in economic conditions and changes in the yield curve. To obtain the changes in economic variables, we compare the 'moderate recovery scenario' of the Netherlands Bureau for Economic Policy Analysis[26] (Table 3) with the situation at end 2015. For models 1-3, we correct for the fact that they provide estimations pre-tax. Subsequently, to obtain the range of RoE impact indicated in the main text, we multiply all results by the aggregate leverage (i.e. assets divided by equity) of the three largest Dutch banks under the Intermediate scenario.

Table 3 CPB Moderate recovery scenario

	Moderate recovery scenario 2016-2023
Economic growth	1.5%
Unemployment rate	5.7%
Long-term interest rate*	3.1%
Short-term interest rate**	2.1%
Inflation	2.0%

* Netherlands
** Euro area

Source: CPB (2014)

26 CPB (2014).

The RoE impact of a steepening yieldcurve ranges from 0.07%-points to 0.88%-points, the median estimate being 0.36%-points. Macro models predict an improvement of loan margins as the yieldcurve steepens. This effect counteracts the competition-driven compression of interest margins in our Adverse and Balanced scenarios which have an impact of, respectively, -0.5%-points and -0,3%-points on the RoE.

The impact of a low interest rate environment

To estimate the expected change in RoE under a scenario in which interest rates remain persistently low, we modify the moderate recovery scenario to include a further decline of interest rates. Specifically, the short-term interest rate is assumed to decline further to -0.4% from its end-2015 level, while the long-term interest rate declines to 0.2%. The resulting yieldcurve is both much flatter and below the yield curve of the moderate recovery scenario. We then use each model to estimate the expected change in return on assets as a result of this low interest rate scenario, compared with the unmodified moderate recovery scenario. Finally, we multiply all results by the aggregate leverage of the three largest Dutch banks under the Adverse scenario. The resulting RoE-impact ranges from -1.34%-points to -0.02%-points, with the median estimate being -0.39%-points. Three out of five models produce results close to the median.

Appendix C
Detailed breakdown impact scenarios on RoE

Regulatory conditions	Strict			Intermediate			Mild		
RoE 2016H1	**7.3%**			**7.3%**			**7.3%**		
Lower leverage	-1.4%			-1.0%			-0.6%		
Higher funding cost (AT1)	-0.2%			-0.2%			-0.2%		
idem (subordinated debt)	-0.2%			-0.2%			-0.2%		
DGS	-0.2%			-0.2%			-0.2%		
RoE after regulatory measures	**5.2%**			**5.6%**			**6.0%**		
Economic and financial conditions	Adverse	Balanced	Benign	Adverse	Balanced	Benign	Adverse	Balanced	Benign
Reduction in provisions	0.0%	0.1%	0.2%	0.0%	0.1%	0.2%	0.0%	0.1%	0.2%
NIM impact	-0.6%	-0.3%	0.0%	-0.6%	-0.3%	0.0%	-0.7%	-0.3%	0.0%
Pass-through	0.0%	1.0%	2.0%	0.0%	0.8%	1.5%	0.0%	0.5%	1.0%
Cost efficiency savings	0.0%	0.8%	1.5%	0.0%	0.8%	1.6%	0.0%	0.9%	1.8%
Estimated RoE	**4.7%**	**6.8%**	**8.9%**	**5.0%**	**7.0%**	**9.0%**	**5.3%**	**7.2%**	**9.0%**

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