

Measuring cross-sectoral shifts in credit provisioning

An enhanced framework

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The financial crisis made clear that the credit intermediation process had in part shifted to non-bank entities, due to the emergence of shadow banking. Such cross-sectoral shifts have a long history and are likely to continue in the future, driven by several factors including financial innovation and new regulation. We discuss the consequences of using inadequate credit statistics for macroprudential policy. To avoid policy mistakes, monitoring of financial flows and related risks needs to be enhanced. In the Netherlands, this will be facilitated by a new statistical framework and extended macroprudential data collection powers.

Keywords: credit intermediation, non-banks, statistics macroprudential policy

JEL classification: E58, G21, G23

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1. Introduction

Credit growth is a strong predictor of future financial crises, and as such a very relevant indicator for policymakers.¹ Adequately measuring it has however proven to be a complex task. Methodological issues aside², an important reason for this is the potential for missing relevant information. The nature of the financial institutions involved in the credit intermediation process is diverse and evolves over time. Although banks typically play a persistent central role, credit can also be extended or facilitated by a myriad of other institutions such as insurers, pension funds, investment firms, securitisation vehicles and financing companies. For compilers and users of credit data, this creates the risk of only partially observing or misinterpreting the figures at hand. A case in point is the run-up to the global financial crisis of 2007-2008, when part of the credit creation process shifted away from banks to other financial institutions less well observed by statisticians and policymakers leading - inter alia - to the coining of the term *shadow banking*. However, such cross-sectoral shifts in credit supply have a long history prior to this period and are likely to continue in the future. The need to properly calibrate newly developed macro-prudential tools has recently added to the importance of accurate credit statistics.

Generalizing the case, the recent crisis has illustrated our lack of insight into the financial system's vulnerabilities. Cross-sectoral shifts in credit growth and other activities are just one example; banks' exposures to complex products and systemic linkages across financial institutions and markets are others. This lack of insight partly reflects fundamental uncertainty, which will always play a role, also in future crises. To some extent, however, it also reflects data gaps and insufficient use of the available information. For statisticians and policymakers alike, the conceptual question is how to maximize the potential to track such vulnerabilities in a financial system that will keep evolving in the future. Better and more timely information is an important element of recent regulatory reforms. At the international level, the G20 data gaps initiative was launched in 2009 to improve the data needs that were revealed by the recent financial crisis.³

Better information not just depends on "more data", but also on the ability of policymakers to focus on the most relevant indicators and combine data sources in a flexible way. This involves two main challenges. First, from a conceptual point of view, policymakers need to acknowledge that statistical indicators are likely to become less accurate over time. Due to financial innovation and regulation, the financial system evolves continuously, which may reduce the reliability of indicators.⁴ A specific example is "Goodhart's Law", which states that indicators become less reliable if they are linked to policy instruments.⁵ Second, from an operational perspective, sufficient

¹ See e.g. Schularick and Taylor (2012).

² See e.g. Carlier and Eggelte (2016) for a discussion on how pass-through capital flows have the potential to distort statistics on credit to the corporate sector, and ECB (2016) for a description of how the reporting of cash pooling activities can materially effect banks' business credit statistics.

³ This initiative addresses data gaps including, for instance, the improvement of financial soundness indicators, a monitoring framework for global systemically important banks and the extension of data sharing arrangements. See Heath and Goksu (2016).

⁴ See Borio (2010) and Eichner et al. (2015) for examples.

⁵ According to Goodhart's original formulation, "Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes", see Goodhart (1975).

flexibility is needed to ensure access to information when needed. Especially in a crisis, policymakers' data needs become more urgent and more specific. In practice, however, legal and operational obstacles hamper flexible access to information. Confidentiality may restrict access to existing data, while the possibility to collect additional data often lacks a legal basis.

This paper provides an illustration of the data challenges involved in measuring credit growth from the perspective of the Netherlands. To address the data challenges, DNB has enhanced its statistical framework to facilitate a flexible access to data. Elements of this enhanced framework are a more intensive cooperation between DNB and Statistics Netherlands, a better alignment of statistics and an extended legal basis to collect data for macro-prudential purposes.

The remainder of this paper is structured as follows. Section 2 discusses credit data by sector over time. Section 3 shows the implications of using different sectoral credit aggregates for the credit gap in the scope of the countercyclical capital buffer, and therefore the need for complete data. Section 4 describes the enhanced statistical framework for collecting and compiling these data. Section 4 concludes.

2. Credit statistics in the Netherlands

Credit provisioning by main financial sectors

Traditionally, in the Netherlands banks are the major providers of credits⁶ to households and businesses (non-financial corporations). However, in the first decades after the Second World War, the Netherlands – just as many other countries – operated a policy of credit restrictions. This was done by formulating credit growth restrictions, which were part of monetary toolkit of De Nederlandsche Bank (DNB).⁷ Until the early 1990s, DNB regularly imposed curbs on lending with the aim of keeping the growth in the money supply – and therefore inflation – under control. This prompted the development of credit vehicles outside the banking system, such as “near banking”, in which businesses began lending to each other – with or without the mediation of a bank – or institutional investors took over a part of the intermediation function. DNB responded to these developments by extending the scope of credit restrictions. Presumably, there will be similar sectoral shifts in the future, for instance to the shadow banking system.

This is reflected in the credits to households and businesses (non-financial corporations) granted by institutional investors (insurance companies, pension funds and investment funds). In early 1990s, institutional investors' share in total loans, as well as for credits to households as for credits to businesses, was 28% (Graph 1). This amounted to 25% of GDP. The main loan components were residential mortgages granted by insurance companies and credits to businesses by pension funds. At that time insurance companies were a major player on the Dutch mortgage market, having a market share of 15%. In addition, credits to businesses by pension funds accounted for 15% of the total loans to non-financial corporations. This was supported by a lively

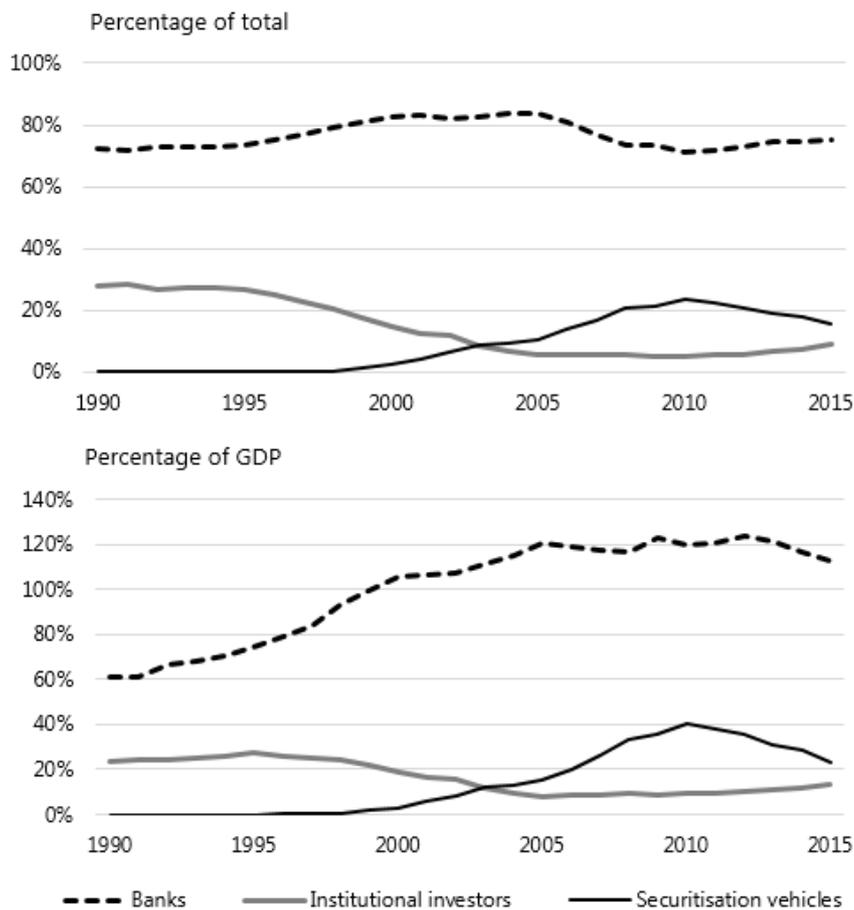
⁶ Meant here are private loans, excluding debt securities.

⁷ See De Greef, Hilbers and Hoogduin (1998).

market for private loans which existed in the Netherlands before the introduction of the euro.

In the subsequent years, institutional investors' share declined to 5% in 2008 (9% of GDP) due to both the strong increase in lending by banks, especially residential mortgages, and a shift in investments by institutional investors towards more liquid assets, particularly securities, in conjunction with a more active investment policy and the development of an European market for corporate bonds which drove out private loans to the background.

Graph 1: Credits to households and businesses by granting sector



In recent years, lending by institutional investors increased again, especially since 2012 with an annual average of 12%. In particular, investments in residential mortgages grew strongly. In 2015, lending to households and business reached a peak at EUR 92 billion. Due to the low interest environment and the search for higher yields, institutional investors expanded their investments in private loans and in particular in residential mortgages, also through new mortgage lenders or platforms. Investments in mortgages may also be boosted by the fact that Dutch life insurers prove to be relatively vulnerable to a prolonged low interest environment, which can be explained by long-term insurance liabilities and shorter term investments (known as the duration mismatch).⁸ The provision of mortgage loans – which in the

⁸ See De Nederlandsche Bank (2014)

Netherlands typically have fixed interest rates over a long period – provide a natural match with their liabilities that reduces their duration gap. Moreover, the current low-interest rate environment provides an additional incentive to enter the mortgage market, where interest rates are higher than in other fixed-income markets with a low risk profile.

Despite the strong increase, institutional investors' share of total credits granted by the main financial sectors in 2015 was 9% (14% of GDP), still well below its highest levels in the beginning of the nineties. Although e.g. the outstanding residential mortgage loans granted by insurance companies almost doubled in size, the share of insurers in the total of outstanding residential mortgages is still half of the 15% it was twenty years ago. Credits to businesses provided by pension funds, the other major historical component of loans granted by institutional investors, remain subdued in recent years. Outstanding amounts tumbled to only a tenth of the level of the early 1990s, and accounted for only 1% of the total loans to businesses in 2015 (declining from 15%).

In the meantime, in 1996 the first securitisation in the Netherlands took place. Securitisations involve bundling of credit assets, especially bank loans to households and businesses, which are then packaged and sold as marketable debt securities via dedicated securitisation vehicles. Securitisations constitute an additional source of funding, especially for banks. For this reason, the issuance of securitisations expanded enormously in the first decade of this century, mainly to finance the strong credit growth, particularly residential mortgages. In the years following the outbreak of the credit crisis (mid-2007), it became increasingly difficult to place securitisations with external investors, as trust in these products had been compromised. Still, a large number of retained securitisations were carried out. Banks did not sell these securitisations in the market, but retained them, principally for use as collateral in obtaining liquidity from central banks. From late 2009, placed (external) securitisation issues picked up again, although they have remained below pre-crisis levels, due in part to the market's continued ill reputation, stricter rules governing securitisations and weakened credit growth. Outstanding securitisations (placed and retained) reached a peak level at EUR 253 billion in 2010, with a 24% share in the total loans to households and businesses (34% for just households) and 40% of GDP.⁹ In recent years, the favourable general funding terms prevailing on financial markets, which partly reflect the accommodating financing facilities offered by central banks, reduced incentives for banks to securitise assets. Furthermore, as already mentioned above, banks scaled back their exposure to residential mortgages, also reducing their funding requirements. The substantial expiring securitisations, both placed and retained, led to a further drop in outstanding securitisations to pre-crisis levels (about 16% of share in the loans of the non-financial sectors and 23% of GDP).

During the whole period, banks remained the dominant financial institutions granting credits to households and businesses. Their proportion of total loans outstanding increased from 72% in 1990 to a peak of 84% in 2004 and 2005 and returned to a lower level of 75% in 2015, almost their share in 1990. In recent years,

⁹ This excludes securitisations of loans which were not derecognised by the originators (meaning that the securitised loans were kept on their balance sheet) in order to prevent double counting. Non-derecognised securitisations are not the same as retained securitisations. Loans of both placed and retained securitisations could be derecognised or not derecognised. Retained securitisations are, therefore, included here, as far as the securitised loans have been removed from the balance sheet of the originator.

banks' declining position in the mortgage market, partly attributed to a regulatory tightening including higher capital requirements, and a decrease in corporate lending had a negative impact on the volume of banks' loan portfolios. On the other hand, the expiration of securitisations caused an increase in banks' outstanding credits, especially on loans to households (mortgages), as those loans were transferred back to the banks' balance sheets.

Credit provisioning by other sectors

The above-mentioned developments are shown on the basis of the major part of the financial institutions granting credits to households and businesses, in this case banks, institutional investors (pension funds, insurance companies and investment funds) and securitisation vehicles¹⁰. For these institutions, detailed information is collected by DNB and available for further analysis, also on a micro level. There are, however, also other financial institutions providing loans to households and enterprises, such as finance companies and other financial intermediaries. On an aggregated level, data for these institutions are included in the national accounts. Loans held by these financial institutions comprise about 5% of total loans granted to households and enterprises. However, with regard to frequency, lending details and to a certain extent coverage, there is room for improvement. Apart from that, households and enterprises are borrowing from other sectors as well, especially non-residents, households and non-financial corporations (e.g. through intercompany loans). The non-resident share in credits to households and enterprises is 20%. For a good understanding and interpretation more insight into the credit granting sectors is needed. Another issue is peer-to-peer lending, such as crowd funding. In the Netherlands, the amounts concerned are still small, but the case for monitoring of these developments and future inclusion in the macroeconomic statistics is indisputable. The intermediation platforms involved would be well positioned to provide data on what is essentially household-to-counterpart lending, strengthening the case to include them into the macro-economic statistics framework.

3. Different sectoral credit aggregates: implications for the credit gap

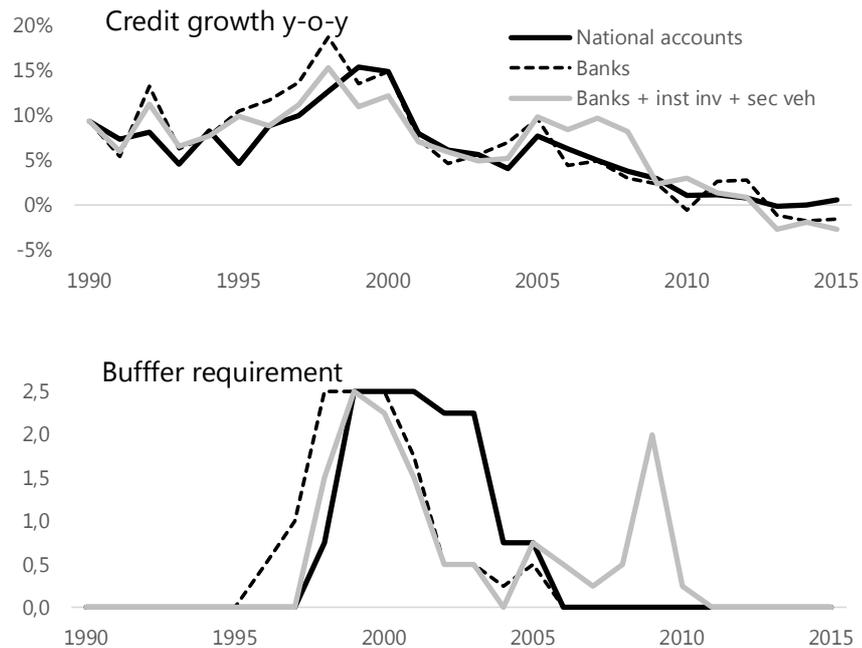
Credit data are important for new macroprudential policy tools that have been introduced in recent years. One of these tools is the countercyclical capital buffer (CCyB), which is part of the Basel 3 buffer framework.¹¹ The CCyB requirement varies over time and is set by national jurisdictions. Through this mechanism, banks are required to build up an extra capital buffer during booms which they can draw down in a recession.

¹⁰ Securitisation vehicles do not grant new loans but acquire already provided loans. They are included here to prevent that securitised loans which are transferred to such vehicles and removed from the balance sheet of the originator, would be missing in the data on outstanding credits.

¹¹ Three other macroprudential instruments that have been activated in The Netherlands are non-cyclical systemic capital buffers, the loan-to-value limit and the loan-to-income limit. See De Nederlandsche Bank (2016a).

The so-called “credit gap” is used as a common reference guide to set country-specific CCyB rates, although countries have flexibility to use additional indicators as well.¹² The credit gap is defined as the deviation from the credit / GDP ratio from its long-term trend, which is determined using a one-sided Hodrick-Prescott filter. In principle, credit should be a broad aggregate, including credit extended to households and firms by banks as well as non-banks. Based on this general guidance, it is up to the national authorities to choose the best aggregate.

Graph 2 Credit gaps and countercyclical buffer rates
Mechanical translation of credit gaps into CCyB buffer rates



The graphs above present credit growth rates and a mechanical translation into CCyB rate for three credit aggregates: (1) bank credit, (2) banks, institutional investors and securitisation vehicles and (3) a broad credit aggregate, published in the Dutch national accounts. The latter is the one currently used; the other two are the series as presented in Section 2. While growth rates of the three aggregates follow similar trends over a long period, there are also years in which they diverge significantly. This can have important implications for the associated CCyB rates. With a mechanical application of the broadest aggregate, the CCyB requirement would have been released about three years later than with the other two aggregates, which may have helped to contain the build-up of risks prior to the crisis. Moreover, with the “bank + institutional investors + securitisation vehicles” aggregate, the buffer guide would have turned positive again in 2009.¹³

¹² See BCBS (2010).

¹³ Mechanically translating this into a higher buffer requirement, this would imply that the CCyB would have a pro-cyclical impact. In practice, however, the CCyB would have been released due to the crisis, so banks would not have to build up capital.

Of course, CCyB decisions are not mechanically linked to credit data and also require judgement. Nonetheless, this example shows that using different credit aggregates may have a significant impact on key policy indicators. To make an assessment which aggregate is most accurate, a deeper analysis of their main differences is needed.¹⁴ While a broad aggregate is most likely to be immune to cross-sectoral shifts, it is also more likely to include elements that distort the indicator's function to reflect financial stability risks. For instance, the broad national accounts aggregate includes business-to-business lending, including intercompany loans through Dutch subsidiaries of foreign multinationals that are hardly relevant for the Dutch economy.¹⁵

Another element to take into account is the difference between continuous statistics as mostly applies to the - secondary (integrated) - national accounts and up-to-date statistics as mostly applies to the - primary (source) - sectoral statistics. In the national accounts priority is often given to the strategy of continuity in published time series. This means that data from different reference periods must be mutually comparable and do not contain breaks, which result from e.g. changes in the reporting population. In this case figures that denote a level, such as the amount of outstanding credit, may not always reflect the most up-to-date information available. Usually national accounts data are revised at periodic intervals to take such new information on board. Nevertheless, the implication of this strategy is that national accounts data do not always represent the best information on level figures that is available.¹⁶

4. Enhancement of the statistical framework

The analysis in Section 3 makes clear that comprehensive data on loans, including the financial flows between financial and non-financial sectors, are important for monitoring and policy analysis. Currently, most of these data are collected by DNB through several statistical requirements, such as sectoral statistics, sector accounts (as part of the national accounts) and the balance of payments. These data are used by Statistics Netherlands, which adds other sources for the compilation of the national accounts. However, for some financial sectors the data gathering is not comprehensive or detailed enough, at least not on a more frequent (than annual) basis. There are some weak spots, which require enhancement of the data collection to avoid that new developments are not taken on board. In the Netherlands, a new statistical framework will facilitate an improved monitoring of the financial sector as a whole.¹⁷

¹⁴ See, for instance, the analysis by the European Systemic Risk Board (Detken et al, 2014), which compares the performance several specifications of the credit gap, using different credit aggregates.

¹⁵ See Eggelte, Bijlsma and Carlier (2016).

¹⁶ See Bos (2007).

¹⁷ This will improve data contributions to the Financial Stability Board's shadow banking monitoring exercise, see FSB (2015) and Van der Veer et al. (2015).

Enhanced statistical reporting and closer cooperation by authorities

In the new statistical framework, the close co-operation between DNB and Statistics Netherlands, which already existed for the collection and compilation of statistics, has been further strengthened. A new, consistent report has been developed for all financial sectors and the non-financial corporations, with the aim of compiling high-quality sector statistics (and meeting the relevant ESCB legislation), which will also serve as input for the national accounts. While the balance of payments takes a centre stage in the current Dutch system, in the new system it will be “derived” from the sector accounts. That is because there will be a comprehensive and consistent reporting framework that reconciles data for all observable sectors, covering both domestic and cross-border transactions and positions. Reporting institutions will have to provide a complete balance sheet and profit and loss account, with a breakdown by counterparty country and sector if relevant. The new process primarily focuses on the production of quarterly statistics. This will meet users’ demand for consistent and high-quality quarterly macroeconomic statistics.¹⁸ For this purpose, the balance of payments and the national accounts will also be aligned.

In addition, the division of labour between DNB and Statistics Netherlands will change. DNB will collect and compile all the data for financial institutions and data on securities (which are processed through the ESCB Centralised Securities Database), while Statistics Netherlands will do so for the non-financial sectors. This is in line with the competences and comparative advantages of both institutions.

Although the focus in the new statistical framework will be on quarterly data, DNB will collect and compile data on securities for all sectors on a monthly basis. This will provide basic input for the monthly balance of payments and will also produce monthly data for e.g. securities holdings statistics, which are increasingly used for policy analyses. Other data for all financial sectors needed for sector statistics and sector accounts (and balance of payments) will be gathered on a quarterly basis (except for data on banks, which on the basis van ECB Regulations will continue to be collected monthly).

As mentioned, in this new framework of monthly and quarterly reports the coverage of institutions will be improved. This will be achieved through the implementation of a direct reporting regime for the larger entities in the subsectors that are currently compiled using indirect sources, such as annual reports. This is the case for finance companies and other financial institutions, such as financial holdings and head offices of financial institutions. Some of these groups of institutions are certainly relevant to monitoring lending to non-financial sectors and shadow banking developments. For others, this relevance seems more limited ex-ante, but they still are needed for establishing a coherent framework for flows between all financial sectors and thus to provide policymakers with a complete picture of the financial sector on quarterly basis.

Extended data collection powers

The changes discussed so far are important to increase the availability and consistency of macroeconomic statistics. The internally consistent sectoral accounts and balance of payments data provide a powerful combination to policymakers: the

¹⁸ See Bieleveldt and Claassen (2014).

former provides detailed data on balance sheets and domestic exposures, while the latter provides rich information on international capital flows. Furthermore, given that entities in all financial subsectors will be subjected to direct statistical reporting, the risk of vulnerabilities shifting away into unobserved parts of the system is reduced.

However, these statistics are not specifically designed for financial stability purposes. In practice, there are also data needs and queries that go beyond the data that are collected for macroeconomic statistical requirements. In such cases of further information needs, DNB will collect additional data on an ad hoc basis. Legal powers to collect information have been extended in the Banking Act in 2015 (see box). More specifically, DNB can request data to support its financial stability task and, its task to collect and produce statistics, and to comply with information requests from international organisations (BIS, FSB and IMF). As an example, DNB recently used these legal powers to collect a granular loan-by-loan dataset of financial institutions' credit exposures to the commercial real estate sector.

The two elements of the DNB's statistical framework – enhanced access to regular statistics and powers to collect additional information – are in line with recent studies on statistical data collection for financial purposes.¹⁹ The overall view in these studies is that authorities should follow two-step approach. The first step is the use of general information, typically aggregate data, to spot imbalances.²⁰ The second step is to collect information that is needed for more specific analysis, which may be triggered by general concerns in step 1. As it is impossible to specify in advance what would be needed for step 2, it is most efficient to arrange flexible access to information, and give the relevant authorities – in this case DNB – legal powers to collect information. In order to use these powers quickly and effectively, it is considered helpful that DNB can leverage on the existing reporting relationships and registers of financial entities that exist for the purposes of for the macro-economic statistics.

The enhanced regular statistical framework and the possibility to extend the gathering of data lead to more complete data sources, which should facilitate policymaking. Together with other initiatives by various international organisations to close data gaps – among which data on derivatives, securities lending, G-SIFIs (Global Systemically Important Financial Institutions) and loan-by-loan data – this is important to provide the information that is needed for policies to promote financial stability.

DNB's extended data collection powers

After the recent crisis, it was concluded that data collection powers of DNB should be extended to improve monitoring and analysis of systemic risk. The new data collection powers are included in the Bank Act, and are linked to DNB's new financial stability task as well as its statistical task.

In its motivation to this extension of the Bank Act, the Government referred to the need to be able to collect data from firms that usually do not report to DNB, for instance because they are not regulated. Moreover, a reference was made to

¹⁹ See Borio (2010), Cecchetti et al. (2010) and Eichner et al. (2015).

²⁰ This goes beyond the statistical framework described in this paper, which focuses on data reporting for statistical purposes, but also includes other information (e.g. asset prices, non-financial statistics).

international data gaps and the importance to meet data requests from international organisations, particularly the BIS, the FSB and the IMF.

A number of checks and balances are put in place to ensure that DNB's extended powers to not lead to excessive administrative burden. DNB should always check first whether a specific data need can be met with the information DNB already possesses through its other tasks (such as monetary policy, statistics and supervision). If that is not the case, a three-step procedure must be followed:

1. Check whether the information is available in other government agencies, such as the tax authority.
2. If this is not the case, check whether the information is available in non-government organisations that are financed by the government or by levies. Examples are the land registry and the Chamber of Commerce.
3. If the information is not available from any of these sources, DNB can request information from enterprises, corporate bodies, institutions and professionals. These may be institutions that are regulated by DNB, such as banks, or non-regulated firms.²¹

This approach acknowledges that it is hard to know in advance what information is needed to monitor financial stability risks, as relevant developments may take place outside the regulated sectors. In addition, it is important firms can be requested to provide information even if they are not "responsible" for specific risks. For instance, the land registry collects relevant information on real estate which may be used.

Finally, in the implementation of its data collection powers, DNB closely cooperates with Statistics Netherlands. This is because much of the information in step 1 and 2 is already available in the databases of Statistics Netherlands, which also has a lot of expertise in linking various datasets. This facilitates access to the data in a format that can easily be used for risk analyses.

5. Conclusion

Better and more timely information is essential to get more grip on financial stability risks. Due to regulatory reforms, more data is becoming available for risk analyses. However, just "more data" is not enough. Policymakers should also enhance their access to information when data gaps arise and have the flexibility to collect additional data. An example, which is explored in this paper, is the importance to track cross-sectoral shifts in credit provisioning. Credit aggregates play an important role in setting macro-prudential instruments. But credit-based indicators are likely to change over time, as we have seen in the past, leading to inadequate statistics.

To avoid policy mistakes, monitoring of financial flows and related risks needs to be enhanced. In the Netherlands, this will be enhanced by a new statistical framework that involves closer cooperation between DNB and Statistics Netherlands, a better

²¹ In the case of information from regulated firms, the possibility to request information is relevant insofar as DNB cannot do this on the basis of its other tasks, such as monetary policy or supervision. An example is recent data collection on real estate, see De Nederlandsche Bank (2016b).

alignment and coverage of statistics and an extended legal basis to collect data for macro-prudential purposes.

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