

SUSTAINABILITY AND FINANCIAL MARKETS

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SUSTAINABLE CAPITAL: PRUDENTIAL SUPERVISION ON CLIMATE RISKS FOR BANKS

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1. Introduction

"A disruptive energy transition can result in substantial losses for the Dutch financial sector. If one of the stress scenarios will materialize the coming years, the total losses of Dutch financial institutions directly after the shocks could amount between EUR 48 billion and EUR 159 billion."

DNB in its autumn 2018 Overview Financial Stability Report²

1.1 *Climate and banks' solidity*

Looking back, the past years will be the years in which climate risks officially entered the Dutch supervisory stage. First, in October 2017, the Dutch Central Bank (*De Nederlandsche Bank*, DNB) published its 'Waterproof Report, in which it researched the climate risks on the Dutch financial sector.³ Then, in December 2017, it published its supervisory strategy document for 2018-2022, declaring 'fostering a forward-looking and sustainable sector'⁴ one of its three core priorities.⁵ Most recently, in October 2018, DNB published its autumn Overview Financial Stability Report (OFS Report), setting out the results of its energy transition climate risk stress tests.^{6,7} In addition to the gloomy numbers in the above quote, DNB analyses that in the most severe scenario for Dutch banks, the average capital ratio will drop from 15.6% to 11.3%; more than a 20% decline.⁸

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2 DNB Overview Financial Stability Report, Autumn 2018, p. 43.

3 DNB Report 'Waterproof? An exploration of climate-related risks for the Dutch financial sector', October 2017. October 2018.

5 DNB Supervisory Strategy 2018-2022, December 2017.

6 DNB OFS Report, p. 46. The conclusions in the OFS Report are based on the DNB report 'An energy transition risk stress test for the financial system in the Netherlands',

8 OFS Report, p. 44.

A bank inherently faces many risks that continuously jeopardize its financial solidity. The core task of a prudential supervisor on banks is thus to ensure that banks adequately mitigate those risks, among other things by holding sufficient own funds. In view thereof, banks are subject to a large number of very detailed capital requirements. In the European Union (EU), these rules are primarily laid down in the EU Capital Requirements Directive (CRD IV, as implemented in the Dutch Financial Supervision Act (*Wet op het financieel toezicht*, Wft)) and the Capital Requirements Regulation (CRR).⁹

The question is whether environmental sustainability risks, or *climate risks*, also affect a bank's financial solidity. DNB's Waterproof Report and OFS Report clearly assert that it does. Assuming that this indeed may be the case, the question to which extent prudential supervision should be applied as a policy tool currently is a hot topic of discussion at both an academic as well as a prudential supervision policy level.¹⁰ At a global level, this topic is picked up by the Central Banks and Supervisors Network for Greening the Financial System (the NGFS), in which (among others) the European Central Bank (ECB) and DNB participate.¹¹ Pursuant to their October 2018 First Progress Report, the NGFS members,

"acknowledge that climate-related risks are a source of financial risk. It is therefore within the mandates of Central Banks and Supervisors to ensure the financial system is resilient to these risks."¹²

This chapter discusses whether the competent supervisory authorities may, under the current CRD IV/CRR framework, require euro-zone banks to hold additional capital in view of their climate risks.¹³ So far, this legal prudential regulatory analysis of climate risks and capital requirements is uncharted territory.

9 Directive 2013/36/EU and Regulation (EU) no. 575/2013, respectively.

10 See for instance. Boot and Schoenmaker, 'Klimaatverandering vergroot risico's van banken, ook bij 'groene' leningen', *Het Financieel Dagblad*, 9 January 2018; the European Systemic Risk Board, 'Too late, too sudden: Transition to a low-carbon economy and systemic risk', Reports of the Advisory Scientific Committee (No 6, February 2016); the OFS Report; the Waterproof Report; DNB Supervisory Strategy 2018-2022; discussions at the NGFS (6 April 2018), see the conference report <https://www.dnb.nl/en/binaries/ngfs-climate-risk-conference-april-6th-2018_tcm47-378901.pdf?2018110921>; UK Prudential Regulation Authority Consultation Paper, 'Enhancing banks' and insurers' approaches to managing the financial risks from climate change' (Consultation Paper 23/18, October 2018).

11 Other members include a number of EU supervisors, but for example also the Japanese, Chinese, Australian and Mexican prudential supervisors. So far, the competent US supervisors do not (yet) participate.

12 NGFS First Progress Report (October 2018), p. 3.

13 This chapter uses Dutch banks as an example, but may analogously be largely applied to other banks and their competent authorities within the euro-area as well (at least from a legal point of view).

1.2 *Climate risk: a definition*

The definition of 'climate risk' used in this chapter builds on the definition and distinction made by DNB in its Waterproof Report.¹⁴ I shall take into account climate related risks only, which have a financial impact and which can be further distinguished between:

- (i) *physical risks*: risks resulting from increased climate change-related losses and damage, such as the effects of hurricanes, draughts, forest fires, floods, etc.; and
- (ii) *transition risks*: risks resulting from a disruptive transition to a carbon-neutral/low-carbon economy, such as the risk of sustainable innovation or legislation leaving unsustainable companies or assets behind, decreasing the profit models and value of those companies or assets.

Another distinction that should be made is between climate risks materializing towards the bank itself, and climate risks that have a financial impact on the bank's customers that are particularly exposed to Such risks. The latter includes, for instance, energy plants, factories and farmers, but also commercial real estate investors and home-owners.

By nature, climate risks have a number of characteristics that make them difficult to predict. For instance, they have a very broad and significant impact; e.g. on entire geographies and sectors). Also, they are uncertain in terms of timing; the impact may crystallize far beyond regular business planning cycles.

1.3 *Set-up of this chapter*

This Chapter is set up as follows. Part 2 will set out how, under the European Banking Union, prudential supervision is organized and which authorities are competent to supervise Dutch banks' compliance with capital requirements. Part 3 then looks at the content of the CRD IV/CRR capital requirements, both the standard requirements as well as the additional requirements a competent authority may impose. Part 4 discusses whether the CRD IV/CRR capital requirements framework contains explicit provisions allowing a competent authority to require a bank to take climate risks into account. Part 5 looks at supervisory priorities in practice and harmonisation of supervisory methodologies. Part 6 will draw conclusions: may competent authorities, under the current CRD IV/CRR framework, already require Dutch banks to hold additional capital in view of their

14 See p. 8 and p. 12 Waterproof Report.

climate risks?

As shall be set out below, in the Banking Union world we live in, prudential regulatory law is first and foremost a matter of EU law. Therefore, this chapter will refer to the relevant Union law provisions, and shall only explicitly refer to the Dutch Wft where such a distinction is relevant.

Unfortunately, this chapter cannot be all-encompassing. Firstly, it only discusses banks. That leaves out insurers and pension funds, among other financial institutions.¹⁵ Secondly, I shall not discuss indirect climate risks applicable to banks. This may include a drop in a client's share value as a result of bad environmental practices or interest rate risks as a result of a steeply increasing interest rate (i.e. typical market risks). Thirdly, this chapter is limited to the own funds (solvency) capital requirements applicable to banks. Hence, I shall not look in detail at other relevant requirements that CRD IV/CRR may prescribe on banks in this connection, such as liquidity, disclosure or risk management requirements. The same goes for the applicable business model analyses that a competent authority performs on banks.¹⁶ Fourthly, this chapter will only look at currently applicable positive law requirements under the current CRD IV/ CRR framework and not at future policy proposals. For instance, this chapter shall not comprehensively discuss the so-called green supporting factor that is currently being proposed at the EU level, and that in short entails lower risk weighting for green finance. The idea is that this should encourage banks to invest in 'green assets'.^{17 18}

2. Prudential supervision

2.1 *Introduction*

15 Of course, for insurance companies (especially the non-life sector) physical climate risks - given their potential damaging impact - pose an inherent capital risk.

16 This is not to say that for instance liquidity, disclosure, market risk, governance and/or business model risk are not relevant in view of prudential supervision on banks' climate related risks. To the contrary, these aspects may be crucial to managing climate risks and thus warrant a separate analysis.

17 The European Commission action plan, 'Sustainable finance: Commission's Action Plan for a greener and cleaner economy' (March 2018). As may also follow from this chapter, I agree with DNB that the prudential framework should not be used for political policy results. See Jacob Dankert (a.o.), 'A Green Supporting Factor - The Right Policy?', SUERF Policy Note, Issue No 43, October 2018.

18 See Section 1:24(1) Wft. Such a clear formal definition of the purpose is not included in EU legislation.

Pursuant to the Wft, the scope of prudential supervision includes all rules aimed at the solidity of a bank and the stability of the financial system.¹¹ Prudential supervision rules on banks are rather technical and financial in nature. Thus, before discussing whether banks may be required by their prudential supervisors under the current CRD IV/CRR framework to hold additional capital in view of climate risks, it is crucial to have a general grasp of the contents of these prudential rules as they currently stand. First we shall look at how prudential supervision is organized and which authorities are competent to supervise Dutch banks' compliance with capital requirements.

2.2 *Competent authorities*

2.2.1 The SSM

Over the past five years, the prudential regulatory landscape has been overhauled significantly. Prudential supervision on banks has become almost completely a European affair. Since 4 November 2014, prudential supervision on Dutch banks is exercised by the ECB within the Single Supervisory Mechanism (SSM), which is one of the pillars of the EU Banking Union.^{19,20} Below I shall briefly discuss the most relevant aspects of the SSM.¹⁰

2.2.2 The Single Rulebook

The prudential requirements applicable to banks established in an EU member state are fully EU based. The financial crises over the past years have laid bare an uneven playing field in the interpretations of prudential rules and supervisory methodologies between EU member states. As a result, in order to promote supervisory convergence, the so-called 'Single Rulebook' is applied within the SSM. The Single Rulebook includes all harmonised material rules of the EU Banking Union. This also entails the prudential requirements of the CRR, all further technical delegated regulations thereunder from the European Commission (Implementing Technical Standards and Regulatory Technical Standards) and guidelines from the European Banking Authority (EBA) under the CRR. The Single Rulebook also contains an ever-growing set of Q&A's from the EBA.

19 This chapter shall not discuss other elements of the EU Banking Union, such as the new Single Resolution Board or the envisaged European Deposit Guarantee Scheme.

20 See for instance: Danny Busch and Guido Ferrarini, *European Banking Union*, Oxford University Press 2015, Chapters 4 and 5 and B. Bierman and L.J. Silverentand, *De juridische en praktische gevolgen van het SSM: van het Frederiksplein naar de Kaiserstrasse*, *TFR* 2014, no. 11. A user-friendly overview of the main supervisory processes, procedures and methodologies can be found in the 'Guide to banking supervision', published by the ECB on 29 September 2014. See: www.bankingsupervision.europa.eu.

The SSM legal framework, which sets forth the procedural/formal supervisory framework for the ECB and national competent authorities within the member states (NCAs), is primarily laid down in the directly applicable SSM Regulation and the SSM Framework Regulation.²¹ With regard to its supervisory tasks, the ECB is authorised to adopt further regulations, guidelines, recommendations, manuals and decisions. An important ECB manual in this connection, setting out the ECB's supervision within the SSM, is the SSM Supervisory Manual.²²

Some of the frameworks included in the Single Rulebook, such as the EBA guidelines and Q&A's, but also ECB manuals, are strictly speaking not directly applicable legally binding acts, but 'soft law'.²³ As such, generally speaking, a 'comply or explain' principle applies to these rules. For instance, the ECB (or an NCA) may depart from its own policies if there are factors in specific cases that justify doing so, and if sufficiently motivated. Also such diversion must be compatible with the general principles of EU law (such as particular equal treatment, proportionality and the legitimate expectations of supervised entities).²⁴ A similar principle applies to divergence by other competent authorities from EBA guidelines that are addressed to them.

2.2.3 SSM prudential supervision

The actual supervision on banks is also EU based. The ECB is the prudential supervisor of *all* banks with a seat within the Euro currency area. As a result it is the largest banking supervisory authority in the world. The ECB conducts direct prudential supervision with regard to 'significant' banks (Sis). With regard to the other - 'less significant' - banks (LSIs), the direct prudential supervisory authority has been delegated to the NCAs (in the Netherlands DNB).²⁵ The ECB will indirectly have ultimate influence over supervision on LSIs by conducting overall oversight hereon. For instance, the ECB provides directly applicable methodology

21 Regulation (EU) 1024/2013 and Regulation (EU) 468/2014 (ECB/2014/17), respectively.

22 SSM Supervisory Manual, European banking supervision: functioning of the SSM and supervisory approach, March 2018.

23 These policy provisions are level 3 rules under the so-called Lamfalussy process. For a more detailed overview of EU soft law implications, also see: L.A.J. Senden, 'Soft law and its implications for institutional balance in the EC', *Utrecht Law Review* 2005/2; and V.P.G. de Seriere & B.C.G. Jennen, 'De betekenis van 'soft law' in de financiële toezichtwetgeving', *Ondememingsrecht* 2017/143.

24 See p. 3 of the SSM Supervisory Manual and the Court of Justice of the European Union 28 June 2005, Joined Cases C-189/02, C-202/02, C-205/02 to C-208/02 and C-213/02, ECLI:EU:C:2005:408, para. 209.

25 Also see Court of Justice of the European Union, judgement 16 May 2017 *Landes-creditbank v ECB*, 1-122/15, ECLI:EU:T:2017:337, para. 50-64.

frameworks that NCAs must comply with in their supervision. The ECB can also at all times decide to conduct direct supervision on certain LSIs, in order to safeguard the consistent application of high supervisory norms.

Whether a bank is considered 'significant' is determined at consolidated group level of the institution. If a bank established in a participating member state (or its ultimate financial holding) at the highest consolidation level within the group satisfies one of the relevant SSM significance criteria, it qualifies as 'significant'.²⁶ For instance, if the total value of a banking group's assets is more than EUR 30 billion, such group qualifies as significant.²⁷ All banking subsidiaries in the same significant group established in a participating member state are also considered a significant entity.²⁸ They thus fall under direct supervision of the ECB. Accordingly, the ECB directly supervises approximately 82% of banking assets in the Euro area.

In practice, the day-to-day supervision of a significant bank is largely assigned to a *Joint Supervisory Team (JST)*, which is under the management of the ECB. In JSTs, ECB employees and employees of the NCA in which a significant bank is active will participate. As a result, significant banks deal with multi-nationality supervisory account teams. It goes without saying that the different nationalities on the JSTs, and in the ECB's management, bring their own (national) supervisory culture and dynamics. This supervisory culture does not always reflect the Dutch supervisory culture as practiced by DNB and that the Dutch banks were used to prior to the SSM. This has a material impact on supervisory practices as well as priorities. Below, in part 5,1 will discuss this in further detail.

2.2.4 Supervisory tasks under the SSM

The question is which regulatory topics fall under the scope of the SSM. The ECB only applies prudential supervision on banks if tasks and powers are explicitly assigned to it pursuant to the SSM Regulation.²⁹ These supervisory tasks and powers relate to the supervision of compliance with the regulatory CRD IV/CRR framework for banks. To the extent relevant for this chapter, those tasks include:³⁰

26 See art. 6(4) SSM Regulation.

27 For the Netherlands, on the basis of the abovementioned criteria, currently the following groups are considered significant: (i) ABN AMRO Group N.V., (ii) ING Groep N.V., (iii) Coöperatieve Rabobank U.A., (iv) de Volksbank B.V. (v) Bank Nederlandse Gemeenten N.V. and (vi) Nederlandse Waterschapsbank N.V.

28 Art. 40 Framework Regulation.

29 On the basis of Art. 4(1) SSM Regulation. This means that the NCAs retain a number of supervisory tasks towards their significant banks, such as supervision on compliance with anti-money laundering rules.

30 The ECB is also responsible for e.g. the granting and revoking of bank licences and the

- (i) the supervision of a bank's compliance with CRR capital requirements;
- (ii) the supervision of a bank's compliance with CRD IV rules on sound and controlled business practices, risk management processes, internal control mechanisms, remuneration policy and effective 'Internal Capital Adequacy Assessment Procedure' (the ICAAP); and
- (iii) the conducting of the overall 'Supervisory Review and Evaluation Process' (the SREP) on a bank.

In relation to those tasks, the NCAs no longer exercise supervision over the Sis. When supervising Sis, the ECB has the power to take measures if the bank does not comply, or will likely not comply, with the relevant prudential legislation and regulations.³¹ In such circumstance, the ECB has a number of specific far-reaching powers.

In its supervision, the ECB must apply the same regulatory framework as the NCAs. It must primarily take into account directly applicable Union law; i.e. the Single Rulebook.³² When it concerns EU directives, such as CRD IV however, the ECB is required to apply the national legislation into which the directives have been transposed. In those cases, the ECB thus applies the Wft and its further regulations. Still, for further guidance on the CRD IV rules, the ECB relies on interpretations (if any) from the Single Rulebook.

3. Capital requirements

3.1 Introduction

Playing a crucial role in the financial system, banks are subject to a very granular set of capital requirements. These rules are set out in CRD FV, CRR, and a very large number of underlying binding technical standards and Guidelines (together composing the Single Rulebook). More specifically, CRR contains the EU implementation of the Basel III framework.³³ After the financial crises, the capital requirements levels for banks have been materially increased.

granting of a declaration of no-objection for qualifying shareholdings in a bank. These tasks are assigned to the ECB with regard to all banks; significant and less significant banks.

31 Art. 16 SSM Regulation.

32 See art. 4(3) SSM Regulation.

33 Please note that a Basel FV framework has been agreed upon in December 2017. Also, at the EU level proposals for an update to CRD IV/CRR, not surprisingly referred to as 'CRD V/CRR H', are currently being discussed. It is expected that CRD V/CRR II will have to be implemented some time in 2021.

To the extent relevant for this chapter, in addition to a minimum leverage ratio and liquidity ratios the CRD IV/CRR framework contains a solvency or *minimum own funds requirement*.³⁴ In short, a bank must maintain a buffer of own funds (simply speaking, equity capital) in relation to the *risk-weighted exposure* on its assets. The risk-weighted amount will generally be determined by taking into account the specific bank's risks relating to its assets. In other words, the higher the bank's risk exposure on its assets, the higher the capital buffer a bank must maintain.

A bank's capital requirements are divided into three 'pillars'; a standard capital buffer (Pillar 1), a bank-specific buffer (Pillar 2) and a disclosure/ transparency requirement (Pillar 3). Below, this chapter discusses the Pillar 1 and Pillar 2 requirements in further detail.³⁵

3.2 Pillar 1 requirements

3.2.1 Minimum capital requirement

Each bank's minimum 'Pillar 1' capital adequacy buffer must be at least 8% of its risk-weighted exposure on its assets.³⁶ In addition, a bank is required to hold additional buffers such as (i) a phased-in capital conservation buffer of 2.5%, (ii) a counter-cyclical buffer (which currently stands at 0% in the Netherlands) and (iii) a buffer for systemic importance. Thus, a regular bank's minimum Pillar 1 capital requirement is around 10.5% of its total risk-weighted exposure.³⁷

Those capital buffers must be filled with strong, loss-absorbing, capital that meets a number of requirements. The strongest form of capital is regular share capital/equity, including share premium and freely distributable reserves (Common Equity Tier 1).^{38/39}

34 This chapter does not discuss the non-risk weighted minimum requirement for own funds and eligible liabilities (MREL) or minimum total loss-absorbing capacity (TLAC) capital requirements.

35 Pillar 3 relates to market discipline, and not to quantitative or qualitative capital requirements as such. Pillar 3 complements the minimum capital requirements and the supervisory review process with a set of disclosure requirements. As a result, I will not discuss Pillar 3 in this chapter.

36 Art. 92 CRR.

37 Other than the ECB, DNB has decided not to phase-in the 2.5% capital conservation buffer but to immediately apply it fully as of the entry into force of CRR. In this chapter, [shall not discuss the so-called Pillar 2 guidance.

38 Art. 26 CRR.

39 In addition, but to a much lesser extent, banks may fill their capital buffers with highly loss absorbing non-equity capital, such as (i) subordinated perpetual capital instruments that are contingently convertible into equity (Additional Tier 1) and (ii) subordinated

3.2.2 Pillar 1

The Pillar 1 minimum capital requirement takes into account the standard risk types that each bank faces. Thus, to the extent relevant for this

loans with a maturity of more than five years (Tier 2).

chapter, the total risk exposure amount of a bank shall be calculated as the sum of the bank's exposure under the following types of risks:⁴⁰

- (i) credit risk; and
- (ii) operational risk.⁴¹

These risks, their sub-risks and the way in which the Pillar 1 total risk exposure amount of a bank shall be calculated, are set out in CRR in great detail. Below, I shall briefly discuss these risks.

(i) Credit risk

Each bank must calculate the risk weighted exposure amounts for its *credit risk* in respect of all of its business activities.⁴² A bank's core business is to grant loans. Thus, one of its inherent risks is that those loans will not be fully paid back (and turn into non-performing loans (NPLs)), for instance as a result of a client/debtor's bankruptcy.

A bank's credit risk on a particular outstanding loan depends on the creditworthiness of the debtor (i.e. the likelihood of that debtor not paying back its debts), and the bank's exposure (i.e. the loss amount if that debtor were to fail). This results in particular - riskier - types of debtors or loans receiving higher standard risk weights under CRR. A number of examples may clarify this. An exposure to an AAA-rated central government such as Australia (e.g. if the bank has Australian government bonds on its balance sheet) receives a risk weight of 0%.⁴³ The exposure on a regular Dutch corporate for which a credit assessment (by a credit rating agency) is not available, shall be assigned a standard 100% risk weight.⁴⁴ A bank's exposure associated with particularly high risks, such as speculative immovable property financing, is assigned a standard 150% risk weight under CRR.⁴⁵

It goes without saying that the higher the risk weight on a loan, the more capital the bank must hold for such exposure, and the more expensive the loan will be to

40 Art. 92(3) CRR.

41 In this chapter, I shall not discuss other Pillar 1 risks such as market risk or credit valuation adjustment risk.

42 Credit risk is determined in accordance with Title II CRR.

43 See art. 114 CRR.

44 See art. 122(2) CRR.

45 See art. 128(2)(d) CRR.

the bank. Thus, the bank will typically ask a higher interest rate for such loan.

(ii) Operational risk

Under CRR, operational risk is defined as the risk of loss resulting from a bank's inadequate or failed internal processes, people, systems or from external events.⁴⁶ The standard CRR own funds requirements in connection with operational risks are based on the average operational income of the bank over the past three years.⁴⁷ This operational income will subsequently be multiplied with a standard 15%, or a percentage linked to the relevant business area in which that operational income was achieved.

3.2.3 Standardised approach vs internal models

Some banks are more complex and sophisticated institutions than others. As a result, often the standardised risk weight approaches as set out in CRR, do not fit each specific bank. The banks themselves have much more information (on their clients, exposures, losses, etc.) on the basis of which they can assess the risks related to their own specific business, than a standardised CRR model could ever take into account. In fact, one could argue that a bank's core business is assessing and pricing risks.

Thus, banks can either use the Standardised Approach (SA) under CRR, or they can use their own - much more advanced - internal models (subject to supervisory authority permission). For instance, on credit risk, competent authorities shall encourage significant institutions with material exposures and counterparties to develop and use an internal credit risk assessment capacity and internal ratings based (IRB) approach for calculating own funds requirements for credit risk.⁴⁸

The banks' own historical data on clients may under the IRB-approach result in higher or lower risk weight percentages estimates for particular sub-sets of clients or exposures, than would be the case under an SA- model. Pursuant to CRR, such IRB estimates must meet a number of strict requirements. One of those is that the estimated risk parameters - such as the probability of an obligor's default and the expected loss given such default - shall be derived using both historical experience and empirical evidence, and shall not be based purely on judgmental considerations. The less data an institution has, the more conservative it shall be

46 See art. 4(1)(52) CRR. Pursuant to that definition, operational risk also explicitly includes both legal risk and model risk.

47 Operation risk is determined accordance with Title III CRR.

48 See art. 77 CRD IV.

in its estimation.⁴⁹

For instance, if a bank is competent in managing specific credit risks for a particular client-base, it may historically have very low client defaults and related losses. As a result, its risk weight for such particular client type may be lower than under SA. Dutch residential mortgages are a good example hereof. Historically, the Dutch borrow relatively high sums for their houses, but repay their mortgage with fervor. As a result, the Dutch banks' internal models for residential mortgages calculate a lower risk-weight than the SA would dictate.⁵⁰

Supervision on the use of internal models is strict, as a risk of banks 'marking their own papers' is inherent to the IRB-approach. For instance, a bank must have sound stress testing processes in the assessment of its capital adequacy. Stress testing shall involve identifying possible events or future changes in economic conditions that could have unfavourable effects on the bank's credit exposures and assessment of its ability to withstand such changes.⁵¹ Also, the banks permitted to use an IRB-approach are subject to benchmarking. They must report the results of the calculations of their internal approaches for their exposures included in benchmark portfolios. In that way, competent authorities can monitor the range of risk weighted exposure amounts among peer banks. If particular institutions diverge significantly from the majority of their peers or if there is a wide variance of results, competent authorities shall investigate the reasons, and may take corrective measures.⁵² Given the importance of correct internal models, starting 2017 the ECB and NCAs have made the review thereof a priority. In the so-called TRIM-project (targeted review of internal models), the competent authorities investigate banks' internal models in various risk areas.⁵³

49 See art. 179(a) CRR.

50 This chapter shall not discuss the Basel IV output floors of 72.5% of the SA outcome.

51 See art. 177(1) CRR. Also see the EBA Final Draft Regulatory Technical Standards on assessment methodology for IRB approach (EBA/RTS/2016/03).

52 Art. 78 CRD IV.

53 Also see the ECB Guide for the Targeted Review of Internal Models (TRIM), February 2017.

Internal models can also be used by banks in relation to operational risk. In that area, a bank may also use the Advanced Measurement Approach (AMA), as opposed to the SA (or the Basic Indicator Approach). Competent authorities shall permit a bank to use AMA if its own operational risk measurement systems, data and stress tests meet a number of qualitative and quantitative standards.⁵⁴ In such event the bank would be much better at determining its operational risks itself. As an example, a bank must be able to map its historical internal loss data into certain external event types, such as internal or external fraud, damage to physical assets or business disruption and system failures.⁵⁵ However, the AMA models should not only include internal historical data but other key components as well. These other key components include for instance the use of external data, scenario analysis and business environment and internal control factors, and core modelling assumptions that permit capturing severe tail events and the related risk drivers or the expected loss.⁵⁶

As with the IRB-approach for credit risk, competent authorities very closely supervise the internal AMA models. CRR grants significant flexibility to banks in building their operational risk measurement system for calculating the AMA own funds requirements.⁵⁷ Such flexibility could potentially result in significant differences across banks with regards to the operational risk capital requirements outcomes. As a result, the Operational Risk RTS provide for a harmonized framework of requirements that a proper AMA must meet.

3.3 *Pillar 2 requirements*

3.3.1 Internal Capital Adequacy Assessment Process

As set out above, the Pillar 1 capital adequacy buffer only looks at a number of standard risks that each bank runs, as prescribed by CRR. However, each bank is different and may run a broader range of additional risks, depending on its specific banking business. Thus, in addition to a Pillar 1-buffer, each bank is required to hold an additional 'Pillar 2' capital buffer for those specific risks that are not sufficiently covered under its Pillar 1 requirements. As a starting point, a bank calculates its Pillar 2 buffer itself, but a bank's supervisory authority may impose

54 See art. 312(2) in conjunction with art. 321 and 322 CRR. Also see the Commission Delegated Regulation (EU) 2018/959 with regard to regulatory technical standards of the specification of the assessment methodology under which competent authorities permit institutions to use Advanced Measurement Approaches for operational risk (Operational Risk RTS).

55 Art. 322(3) and 324 CRR.

56 Art. 322(2) CRR.

57 Art. 322 CRR.

higher Pillar 2 buffers.

The bank calculates its additional Pillar 2 buffer on the basis of its Internal Capital Adequacy Assessment Process (ICAAP). Pursuant to CRD IV, through such an ICAAP, a bank shall continuously assess and monitor 'the amounts, types and distribution of internal capital that they consider adequate to cover the nature and level of the risks to which they are, or might be, exposed'.⁵⁸ An ICAAP must be proportionate and tailored to a bank's risk appetite and the nature, size and complexity of its activities. Setting up its ICAAP is thus primarily the bank's own responsibility.

Given that the Pillar 2 capital risks that banks must take into account in their ICAAP include all 'risks to which they are, or might be, exposed', those risks are very broad.⁵⁹ CRD IV also includes a number of specific risks that the ICAAP should in any event explicitly address.⁶⁰ In addition to credit, market and operational risks, this includes - to the extent relevant for this chapter - concentration risk⁶¹ and liquidity risk,⁶² which includes reputational risk.

3.3.2 Supervisory Review and Examination Process

The relevant competent authorities (i.e. the ECB for Dutch Sis and DNB for Dutch LSIs) will periodically assess a banks' ICAAP and capital position, also in view of *all risks* that that specific bank *is or might be* exposed to.⁶³ Such assessment is called a Supervisory Review and Examination Process (SREP).⁶⁴ As part of the SREP, the competent authorities shall determine whether the procedures implemented by the bank and the own funds held,

58 Art. 73 CRR.

59 Art. 73 CRR.

60 See art. 79-87 CRD IV.

61 Art. 81 CRD IV.

62 Art. 86 CRD IV,

63 This will be in annual intervals for larger banks, but may be less frequently for less complex banks.

64 See art. 97 CRD IV. In addition to the capital position, the SREP also takes into account a bank's liquidity position (the internal liquidity adequacy assessment process).

Bart Bierman ensure a sound management and coverage of the bank's risks.⁶⁵ EBA has set guidelines on the contents of the SREP, the Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP Guidelines).⁶⁶ In addition, the ECB has published its SSM SREP Methodology Booklet and has determined a harmonized methodology for all NCAs for conducting the SREP on LSIs (also see paragraph 5.3 below).⁶⁷ The list of SREP topics in CRD IV is non-limitative,⁶⁸ and the scope of the SREP shall cover all requirements of CRD IV and CRR.⁶⁹ In its SREP, the competent authority also reviews and challenges the relevant internal models of a bank and the assumptions underlying them.

Depending on the outcome of the SREP, the competent authorities have a large toolbox of possible qualitative and quantitative measures they can take in their SREP decisions. Most important to this chapter is the power to impose quantitative measures on the bank in the form of additional Pillar 2 capital buffers. The competent authority may for instance require a bank to hold additional own funds relating to elements of risks and risks other than the typical risks addressed in the bank's Pillar 1 requirement.⁷⁰ CRD IV specifies the situations in which such additional Pillar 2 capital requirement shall *at least* be imposed. This is for instance the case if elements of risks and risks were not covered or if the risks are likely to be underestimated, despite compliance with CRR.⁷¹ Following the SREP, competent authorities may for instance also require the institution to tighten credit-granting criteria for all or some product or obligor categories or reduce its exposure to, or acquire protection for, specific facilities.

obligor categories, sectors, countries, etc.⁷² As to the power to impose measures, it is important to note that as a starting point, the SREP is supposed to include a dialogue between the competent authority and the bank it supervises.⁷³ This allows the competent authority to discuss approaches taken by the bank in relation to its

65 In short, the four parts of a SREP are: (i) business model analysis, (ii) assessment of internal governance and institution-wide controls, (iii) assessment of risks to capital and capital adequacy, and (iv) assessment of risks to liquidity and funding and liquidity adequacy. In this chapter I shall focus on part (iii).

66 See EBA/GL/2014/13, as amended by the EBA Final Report on the Guidelines on the revised common procedures and methodologies for the supervisory review and evaluation process (SREP) and supervisory stress testing (EBA-GI.-2018-03). For a consolidated version, see <<https://www.eba.europa.eu/documents/10180/2282666/Guidelines+on+common+procedures+and+methodologies+for+SREP+and+supervisory+stress+testing+-+Consolidated+version.pdf>>.

67 See the SSM SREP Methodology Booklet and the 2018 LSI SREP Methodology Booklet. Also see part 4.6 of the SSM Supervisory Manual.

68 See art. 98 CRD IV and the SREP Guidelines (Guideline 120 and further).

69 See art. 97(3) CRD IV.

70 Art. 104(1)(a) CRD IV. The ECB has been granted this power on the basis of art. 16(1)(c) and 16(2)(a) of the SSM Regulation, whereas DNB has been granted this power on the basis of Section 3. Tilla Wft.

71 Art. 104(2)(b) and (e) CRD IV (as also implemented in the SSM Regulation and the Wft).

72 Pursuant to art. 104(1)(e) and (f) CRD IV, also see the SREP Guidelines, p. 176.

73 SREP Guidelines (para. 2.1.5).

risks, and to address concerns, prior to deciding to impose an actual measure.

3.3.3 Discretionary room competent authority

As set out above, pursuant to CRD IV, competent authorities have significant discretionary room in their SREP to (i) require banks to take certain risks into account and (ii) require banks to hold additional Pillar 2 capital on the basis thereof.

This discretionary room is confirmed by a very relevant judgement of the General Court of 13 December 2017 (*Credit Mutuel Arkea/ECB*).⁷⁴ In this case, the ECB has taken a SREP decision pursuant to which a significant bank (Arkea) had to hold additional (Pillar 2) capital for a potential (but not certain) future split-off of the bank from the Credit Mutuel group. The bank claims that the decision to impose additional capital was (i) the result of an error of law and errors of assessment at the ECB and (ii) disproportionate.

On the first objection, the Court indicated that pursuant to CRD IV the competent authority can take possible future events and the impact on a bank's risk into account in its SREP decision. In this connection the Court notes that Article 97(1)(a) CRD IV indicates that the SREP relates to the risks to which institutions 'are or might be exposed':

"In so far as the applicant claims that the ECB erred in law by taking account of its possible departure from the Credit Mutuel group, it should be noted that it is apparent from the wording of Article 97(1)(a) of Directive 2013/36 that the review to be carried out by the ECB relates to the risks to which institutions 'are or might be exposed', which necessarily entails the possibility of taking into account future events capable of altering their risk profile. Therefore, by basing its decision on the possible occurrence of a future event, the ECB did not commit any error of law."⁷⁵

The Court also concluded that the ECB did not make an error of assessment when it required additional capital for a potential event that the bank argued was not sufficiently likely to occur. In this connection, the Court holds that the ECB enjoys a broad discretion in the event of complex assessments, and that the Court can only marginally review the decisions resulting therefrom:

"It is settled case-law that, in the case of complex assessments, the EU authorities enjoy, in some areas of EU law, a broad discretion, so that review by the EU judicature of those assessments must necessarily be confined to verifying whether the rules on procedure and on the statement of reasons have been complied with, whether the facts have been accurately stated and whether there has been any manifest error of

74 General Court of the European Union 13 December 2017, *Credit Mutuel Arkea v ECB*, T-52/16, ECLI:EU:T:2017:902, JOR 2018/218, m.nt. Joosen.

75 *Credit Mutuel Arkea / ECB*, para. 175.

assessment or misuse of powers (...).

"The exercise of that broad discretion is not, however, excluded from review by the Court. Thus, not only must the EU Courts establish whether the evidence relied on is factually accurate, reliable and consistent but also whether that evidence contains all the information which must be taken into account in order to assess a complex situation and whether it is capable of substantiating the conclusions drawn from it (...).

"Likewise, where an EU authority has a broad discretion, respect for the rights guaranteed by the legal order of the European Union in administrative procedures is of even more fundamental importance. Those guarantees include, in particular, the duty of the competent institution to provide adequate reasons for its decisions. Only in this way can the EU judicature verify whether the factual and legal elements upon which the exercise of the discretion depends were present (...)." ⁷⁶

The Court rules that the future event on which the ECB based the risks and additional capital required, does not seem so improbable that taking it into account would amount to a manifest error of assessment by the ECB. ⁷⁷

On the bank's objection that the ECB decision was disproportionate, the Court reasons that the ECB must take the general EU law principle of proportionality into account, and explains what that principle entails. However, the Court also indicates that proportionality must also be weighed with the broad discretionary room of the ECB in this connection:

76 Credit Mutuel Arkea / ECB, para. 177-179.

77 Credit Mutuel Ark£a / ECB, para. 187.

"In addition, in so far as the applicant refers to the disproportionate nature of the imposition of additional capital as a precautionary measure, it should be noted that, according to Article 5(4) TEU, under the principle of proportionality, the content and form of Union action is not to exceed what is necessary to attain the objectives of the Treaties. The EU institutions are to apply the principle of proportionality as laid down in the Protocol on the application of the principles of subsidiarity and proportionality, annexed to the FEU Treaty.

"It is settled case-law that, in accordance with the principle of proportionality, which is one of the general principles of EU law, the acts adopted by EU institutions must be appropriate for attaining the legitimate objectives pursued by the legislation at issue and must not exceed the limits of what is necessary in order to achieve those objectives; where there is a choice between several appropriate measures, recourse must be had to the least onerous, and the disadvantages caused must not be disproportionate to the aims pursued (...).

"It must also be borne in mind that the assessment of the proportionality of a measure must be reconciled with compliance with the discretion that may have been conferred on the EU institutions at the time it was adopted (...)."⁷⁸

The Court decides that the ECB was entitled to take into consideration the possibility of the future split-off and the impact on the bank's capital in that connection, and that imposing additional capital to cover that possible event was not disproportionate.

The Court reviews the ECB's decision in light of a number of EU law principles such as the principle of proportionality and the duty to provide reasons. It should be noted that, while taking into account the ECB's broad discretionary room, the Court could have also applied other general principles of EU law such as legal certainty and legitimate expectations, non-discrimination (or equal treatment) and transparency.^{79,80}

I expect that the Court's decision would not significantly divert from a Dutch court's decision for a situation whereby DNB is the competent authority that has imposed an additional capital requirement on a less significant bank.⁸¹ Although

78 Credit Mutuel Arkea / ECB, para. 199-201.

79 Note that Ark&i did seem not challenge the ECB decision on the basis of the other (limited) principles that the ECB must take into account when taking decisions, such as the principle of due motivation (art. 33 SSM Framework Regulation).

80 Also see Craig & De Burca, *EU Lazo. Text, Cases and Materials*, Oxford University Press 2015, Chapter 15.

81 For an overview of the right of judicial review in relation to SSM measures, see for example: S.M.C. Nuijten, 'Rechtsbescherming bij toezicht onder het SSM', *Tijd- schrift voor Fimncieel Recht* 2014, no. 11, p. 469-478 and Danny Busch and Guido Ferrarini, *European Banking Union*, Oxford University Press 2015, Chapter 13.

DNB's decisions should comply with the Dutch general principles of good administrative governance (*algemene beginselen van behoorlijk bestuur*), a court shall likely only apply a marginal review of the decision taken by DNB in view of the discretionary room provided by CRD IV.

4. Prudential rules and climate risks

4.1 Introduction

So, as set out above, competent authorities have a broad discretionary room to require banks to take additional risks into account and to impose additional Pillar 2 capital in their SREP decisions. However, does the CRD IV/CRR capital requirements framework currently contain explicit rules on the basis of which a competent authority in any case can require the bank to take climate risks into account? Without aiming to be fully comprehensive, below we investigate a number of risk categories that banks need to address pursuant to CRD IV/CRR by holding additional capital, and analyze whether these may include climate risks.

4.2 Credit risk

One of the main potential risks for a bank following from both physical as well as transition climate risks in relation to a bank's client, is the failure of that client to repay its loan obligations. The creditworthiness of a borrowing client may decrease as a result of climate risk. This could for instance result from the fact that the client (e.g. a farmer) has severe losses due to a hurricane or a flood (physical risk). Another potential source of the decrease in creditworthiness of a client (e.g. a brown coal factory) could be an outdated (or prohibited) carbon-driven business model, and not sufficiently being able to adapt to a new regulatory environment (transition risk). Does a bank have to take these climate related credit risks into account for their Pillar 1 capital pursuant to CRD IV/CRR? And to what extent may a supervisory authority apply further requirements in its SREP?

In any event, CRR's SA standard risk weights do not explicitly pertain to climate risks. Nevertheless, climate risks may have an indirect effect on the SA risk weights. For instance, any downgrading of a corporate by a credit rating agency will obviously have an impact on the risk-weight attributed to that client, also if the reason of such downgrade is climate risk related.

A bank that uses an IRB approach may take climate risks into account when determining the specific risk weights for that specific client type in its internal models. It should be remembered that a bank applying IRB has a large degree of freedom as to how it designs and sets up its internal models, as long as these remain within the parameters of the CRR. Applying internal models, the bank must

subdivide obligors into sufficiently detailed pools of similar client characteristics, such as market segment, industry, geographical location, etc.⁸² Nevertheless, the risk weights are to be primarily determined on the foreseeability and probability of actual losses of that client. One of the main requirements for a bank's own estimates of the risk parameters is that it shall incorporate all relevant data, information and methods. Those estimates shall be derived using both historical experience and empirical evidence, and shall not be based purely on judgmental considerations. The estimates shall be plausible and intuitive and shall be based on the material drivers of the respective risk parameters.⁸³ In addition, the Pillar 1 credit risk capital requirement is calibrated to cover client losses that occur within a one-year horizon.⁸⁴ Thus, although the internal models must be forward-looking, (i) they are inherently based on historic data that have been fed into that model, and (ii) they have a one-year horizon only.

This may be problematic where the climate risks have not yet materialized into historic data, and are purely based on future/forward-looking models or hypotheses that predict risks materializing in a longer term. This is particularly the case for transition climate risks. For instance, so far, brown energy companies may have performed historically well, and a concrete tipping point in this connection as a result of transitional events does not yet seem sufficiently predictable. In any case, such tipping point is not foreseeable within one year from now.

This is different for foreseeable physical risks, such as hurricane risks for Caribbean or Floridian corporate and real estate loans or the risk of failing harvests for farmers in certain parts of Africa. For such events there is sufficient data for banks with such an exposure to take this risk into account. Also, the likelihood of defaults and losses within the next year are much higher.

This is not to say that banks and competent authorities do not need to also apply a forward-looking approach to credit risks on exposures. A relevant example of an exposure class for which forward-looking climate risk related developments are explicitly required to be taken into account for determining risk weights and exposure values, is real estate lending. Pursuant to CRR, competent authorities shall at least annually assess whether the SA risk weight of real estate exposures are appropriately based on (a) the loss experience, but also on (b) forward-looking immovable property markets developments. This includes the standard risk weights for real estate exposures secured by mortgages on residential property (i.e. our housing loans) and for exposures secured on commercial immovable property

82 See art. 169-173 CRR.

83 See art. 179(1)(a) CRR and the Final Draft RTS on Assessment Methodology for IRB (EBA/RTS/2016/03).

84 See art. 4(1)(54) CRR in combination with art. 153 and 154 CRR,

located in the territory of that competent authority.⁸⁵ There are similar rules in the valuation of immovable property that is used as collateral for a loan. Banks must monitor the value of the property on a frequent basis and must carry out more frequent monitoring where the market is subject to significant changes in conditions.^{86, 87} Such forward- looking developments or changes could be climate risk related. This may be a foreseeable decrease in value as a result of (for instance) potential physical damage (physical risk) or laws requiring houses to be better insulated (transition risk). Where such developments materially occur, competent authorities and banks may thus be required to take such climate risks into account for the calculation of capital held for credit risk on real estate exposures.

Another example of an area whereby a forward-looking approach needs to be taken into account in accordance with the CRR is specialized project lending; for instance a loan for a power plant or factory.⁸⁸ The risk of such exposures lies in the profitability of the asset or project financed rather than the borrower (mostly a special purpose vehicle). In determining risk

85 Art. 124 CRR.

86 At a minimum once every year for commercial immovable property and once every three years for residential property.

87 See art. 208 CRR.

88 See art. 153(5) CRR.

weight the bank must take into account the political and legal environment and asset characteristics.

In its ICAAP, while determining its Pillar 2 capital, a bank may be required to go beyond its 'literal' Pillar 1 approach. In principle, a bank has its own responsibility and discretionary room to design its ICAAP and internal models. However, when assessing the ICAAP, the competent authority may in its SREP for instance challenge the bank's internal risk analyses, models and assumptions. As set out above, the competent authority may also go further than the Pillar 1 risks and has significant discretionary room to take all potential risks of the bank into account. Based on the SREP Guidelines, this would partly also include climate risk drivers.

For instance, in its SREP review, the competent authority shall explicitly take the geographical location of institutions' exposures (i.e. country risk) into account.⁸⁹ Pursuant to the SREP Guidelines, such country risk includes for instance "the risk arising from the potential for an event (e.g. a natural or social/political event) affecting the whole country to lead to default by a large group of debtors (collective debtor risk)".

As another example, the SREP Guidelines provide that on specialized lending credit risks, the competent authorities should consider the profitability of the projects, the impact of changes in regulation on future cash flows and the impact of changing market demand.⁹⁰ This could in my view include an assessment of transition climate risks in relation to that specific project.

Last but not least, the most important forward-looking tool in relation to credit risk is that CRD IV also requires that a bank shall have in place sound stress testing processes for use in the assessment of its capital adequacy pursuant to its ICAAP.⁹¹ Competent authorities may, depending on the outcome of the stress tests, require additional Pillar 2 capital from a bank.⁹² Stress testing shall involve identifying possible events or future changes in economic conditions that could have unfavorable effects on the bank's credit exposures and assessment of the bank's ability to withstand such changes.⁹³ The banks' regular stress tests are subject to supervisory review. The stress test must be meaningful and consider the effects of severe, but plausible, scenarios. They may also have a longer horizon than the standard one-year horizon. Thus in my view, competent authorities may request

89 Art. 98(1)(h) CRD IV.

90 SREP Guidelines, guideline 160-162 (2014 version).

91 See art. 97(1)(c) and 100 CRD IV.

92 See art. 97(1)(c) and 104(1) CRD IV.

93 See for example the ECB Guide to the internal capital adequacy assessment process (March 2018), p. 32 *et seq.*; the EBA Draft Guidelines on institution's stress testing (EBA/CP/2017/17); and art. 177 CRR in relation to IRB banks.

banks to take *severe* physical and/or transition climate risk related scenarios into account in their own stress tests.

In addition to the bank's own stress tests, the competent authorities themselves may also apply top down stress tests to the banks they supervise in order to facilitate their SREP.⁹⁴ These stress tests can be both microprudential stress tests (looking at a single institution) and macroprudential stress tests (looking at the banking sector and feedback or network effects). These thematic stress tests can certainly also take climate risks into account. A number of competent authorities is already investigating the possibility of applying such stress tests to banks.⁹⁵ It should be noted that these authorities acknowledge that including climate risk scenarios in the stress tests faces some serious analytical and methodological challenges. This is partly due to a lack of coherent data and predictability of the risks.

4.3 *Operational risk*

The other relevant risk category that banks need to take into account is operational risk. Climate risks, and especially physical climate risks, may result in possible losses/damages to the bank. An example would be datacenters or headquarters of the bank that are destroyed by climate disasters. CRD IV requires banks to implement policies and processes to evaluate and manage the exposure to operational risk, and also to cover *low-frequency high-severity* events.⁹⁶

Operational risk is by its nature more forward-looking than credit risk. Already under their Pillar 1 requirement, banks using the AMA approach must take into account damage to physical assets, including losses arising from loss or damage to physical assets from natural disaster or other events.⁹⁷ Again, the models should focus on a one-year horizon.⁹⁸ This shall of course also include low-frequency high-severity climate related events. Banks using AMA must use internal and external data and scenario analysis. The internal data are mostly historical, and may not yet take into account future climate risks. However, pursuant to CRR, banks must use scenario analysis of outside experts together with external data to evaluate their exposure to high severity events, such as climate disasters. Over time, the bank must validate and reassess such assessments through comparison to their actual loss experience to ensure their reasonableness. The external data must especially be used when there is reason to

94 Art. 100 CRD IV.

95 See NGFS First Progress Report (October 2018), p. 8.

96 Art. 85 CRD IV.

97 Art. 324 CRR.

98 Art. 322(2) CRR.

believe that the bank is exposed to infrequent, yet potentially severe, losses.⁹⁹

As set out above, banks that do not use the AMA approach will calculate their Pillar 1 operational risk capital requirement on a more historical average operational income of the bank. However, the requirement to take into account low-frequency high-severity events also applies to these banks. As a result, in my view a competent authority may require the bank to assess the relevant physical climate risks and to hold additional capital if there are foreseeable concerns in that connection.

The banks must themselves articulate what risks constitute operational risk, but in accordance with the SREP Guidelines the competent authority's review thereof shall include a number of sub-risks such as reputational risk, model risk, ICT risk, conduct risk, etc.¹⁰⁰ As a result, the competent authority has a broad range of sub-risks to require additional Pillar 2 capital.

Operational risk for instance also includes reputational risk.¹⁰¹ This is especially the case for larger banks, for instance in particular where those banks are listed on a stock exchange.¹⁰² It goes without saying that a large climate risk related topic is the damage of non-sustainable activities on a bank's reputation. This includes for instance banks presenting themselves as being very sustainable, but in practice not acting the part. Another example of this is banks having a very large client base of non-sustainable clients. This risk is aggravated in current times of social activism and social media exposure.

In accordance with the SREP Guidelines, competent authorities should consider both internal and external factors or events that might give rise to reputational concerns in respect of the bank. They should for instance consider (i) media campaigns and consumer-association initiatives that contribute to a deterioration in the public perception and reputation of the bank, and (ii) dealing with sectors that are not well perceived by the public (e.g. weapons industry, embargoed countries, etc.).

Not all operational risks need to be mitigated by holding additional capital. They can for instance also be mitigated through qualitative standards, such as sound policies or procedures (such as a business continuity policy, or a legal risk policy). Nevertheless, if the financial consequences of operational risks are quantifiable

99 See art. 322 CRR.

100 SREP Guidelines, guidelines 235-271 (2014 version).

101 See SREP Guidelines, guidelines 298 et seq. (2014 version). Reputational risk is also a sub-risk of liquidity risk and business model risk.

102 See SREP Guidelines, guideline 269 (2014 version).

(damages or costs), the competent authority can also require the bank to hold additional capital. This could for instance be the case if it is probable that the bank must replace its IT systems or must move to other headquarters within the foreseeable future.

4.4 Concentration risk

Pursuant to CRD IV, banks should also address concentration risks as a Pillar 2 risk.¹⁰³ This includes for instance concentrations of exposures to counterparties in the same economic sector, geographic region or from the same activity or commodity.

In the event of a bank that has a specifically high concentration of exposures in a physical climate risk affected area, the competent authorities may be more inclined (and allowed) to have the bank's models take this concentration risk into account. This is for instance the case if a bank has a high concentration of borrowers that are farmers in areas where climate disasters (draught, flooding) are more likely to occur. The same could apply where a bank has a high concentration of exposures on clients in for instance carbon intensive industries. In these transition sensitive economic sectors, transition climate risk could have a severe impact. Such a concentration risk impact is also one of the conclusions of DNB's stress test on disruptive energy transition.¹⁰⁴

4.5 Sub-conclusion

In principle, a bank is responsible for its own internal models and ICAAP. However, the discretionary powers of the competent authority in requiring banks to take certain risks into account in determining their additional Pillar 2 capital are broad. This is even the case if those risks are not explicitly mentioned in CRD IV or CRR. Climate risks for one are not specifically addressed in the current CRD IV/CRR framework. However, the relevant rules do refer to certain risks and calculation methods thereof, for which climate risks could be a risk driver. Thus in my view, a competent authority may apply the following CRD IV /CRR capital provisions to require a bank to take climate risks into account in its ICAAP.

In assessing its credit risk, a bank can be required to assess physical climate risks on a specific, sufficiently large and material, client pool, especially if it uses the IRB approach. This is particularly the case if the climate risks have already materialized and are included in historical data. In my view, taking into account transition climate risk of a client pool, which by its nature is less foreseeable and

103 Art. 81 CRD IV 98(l)(b).

104 OFS Report, p. 46.

probable (in the near future, a one-year horizon), does not have an explicit CRD FV/CRR basis given a lack of certainty. Nevertheless, the competent authorities may require a bank to perform a forward-looking stress test using transition climate risk scenarios in relation to its exposures. A bank may especially be required to look at climate risks where it has particularly large concentrations of exposures that may be affected by climate risk.

In assessing its operational risk, a bank may be required to hold capital for the physical climate risks that apply to the bank itself as a low-frequency high-severity event. This is especially the case for banks that use the AMA approach. In this connection, forward-looking scenario analyses and external data may be used to assess the level of risk, and whether additional capital would be required.¹⁰⁵

5. Supervisory practice, priorities and harmonisation

5.2 Introduction

As set out above, under CRD IV and in line with their discretionary room the competent authorities may, under circumstances, require a bank to take into account certain climate risks when determining its capital requirements. This is in any case the event for the additional Pillar 2 buffer that banks must hold in relation to their specific risks.

However, the question is whether in practice the ECB and DNB would likely require such climate risks to be taken into account. Does climate risk currently have supervisory priority over other risk categories that are currently focus points of competent authorities? Also, under the harmonized SREP methodologies within the SSM, can an NCA (such as DNB) require its LSIs to assess such risks, if the ECB does not require this from Sis?

5.2 Risk priorities

In our experience, the ECB tends to be a more formalistic and financial risk driven prudential supervisor than DNB. The ECB, under its relatively new mandate, is still looking to set up its primary supervisory function in accordance with the text of the Single Rulebook.

DNB however has proven over the years that it has adopted a somewhat more pragmatic, or even idealistic, approach. In terms of priorities, DNB often looks beyond the literal rules and tries to address the topics and risks that it actually

¹⁰⁵ It should be noted that my conclusions that climate risks may to a certain extent be required in the assessment of e.g. credit and operational risk, similarly applies to a number of external risks that have a physical and/or transition impact. Such current external risks include geo-political risks, regulatory risks, technology risk, etc.

considers harmful to the stability of banks (even if these topics are unregulated).¹⁰⁶ For instance, in 2010 DNB became a pioneer on the topic of conduct and culture in the board room and suitability of board members, topics that only recently have also become regulated focus points at the EU level.¹⁰⁷

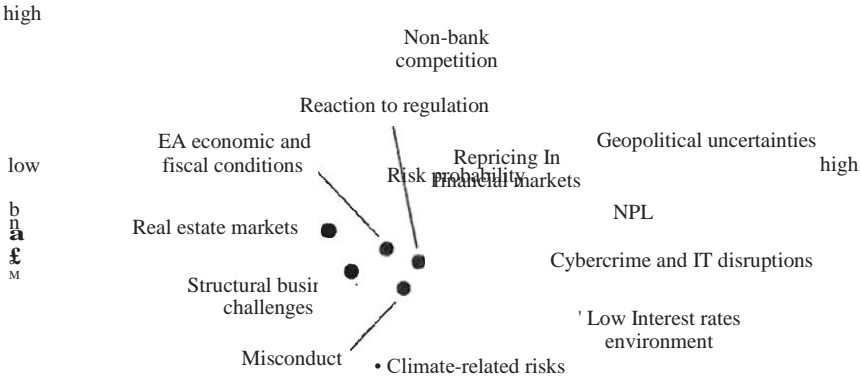
106 Also see: Joanne Kellermann (ed.). *Financial Supervision in the 21st Century*, Springer-Verlag Berlin Heidelberg, 2013.

107 See the DNB Brochure *Behaviour and culture in the Dutch financial sector* (October 2015), and the Joint ESMA and EBA Guidelines on the assessment of suitability of members of the management body and key function holders (EBA-GL-2017-12) and the ECB Guide to fit and proper assessments (May 2017). The adoption by ECB of culture and ethics as a theme becomes apparent from a very recent speech by Dnntele Nouy, the Chair of the Supervisory Board of the ECB: *Ethics in banking - from Cordon Gekko to George Bailey* (7th Congress of the Solvay Schools and their Alumni, Brussels, 15 October 2018 <https://www.bankingsupervision.europa.eu/press/speeches/date/2018/html/ssm.spl81015.en.html>>).

So, in line with its more financial stability approach, for 2019 the ECB identified the following key SSM supervision risk priorities:¹⁰⁸

- (i) geopolitical uncertainties (including e.g. Brexit and risks of trade wars);
- (ii) the stock of NPLs and potential build-up of future NPLs,
- (iii) cybercrime and IT disruptions.

More specifically, the ECB has mapped its identified risk drivers as follows:¹⁰⁹



For the first time, climate-related risks have become a risk priority of the ECB. This is not entirely surprising as the ECB is one of the members of the NGFS. As such it is part of the group of supervisors investigating how to embed climate risks in prudential supervision. It is interesting to see that the ECB has so far assessed climate risk as a low risk, low impact risk driver. The ECB explains its assessment as follows:¹¹⁰

"Climate-related risks do not pose a threat to the financial stability in the euro area in the short term. However, banks can be impacted indirectly, but nonetheless materially, by more frequent and severe extreme weather events or by the ongoing

108 See: ECB Banking Supervision: Risk Assessment for 2019 (October 2018), p. 2.
 109 ECB-Banking Supervision: Risk Assessment for 2019 (October 2018), p. 1.
 110 ECB Banking Supervision: Risk Assessment for 2019 (October 2018), p. 5.

transition to a low-carbon economy. Weather phenomena could cause destruction in business sectors to which banks are exposed (e.g. agriculture) or destroy their collateral holdings. In addition, the transition to a low-carbon economy could impact certain economic sectors (e.g. fossil fuel companies, energy-intensive sectors, utilities, transport and building companies). Banks therefore need to take adequate action to manage their exposures to such sectors."

Thus, in the short term, the ECB does not consider climate risks an acute issue. The ECB's risk outcome and priority on climate risks may increase if for instance specific client sectors will start to be hit by the relevant climate risk. Over the past two years, the ECB has been conducting sector research where actual NPLs have already occurred. A recent example of this is the shipping sector. The ECB has indicated that in the future, building on the experience of the pilot exercise for shipping exposures, it intends to apply the same approach also to other relevant asset classes. In its 2017 Annual Report, the ECB already notes that in addition to shipping the NPL classification researched include the oil and gas sector.¹¹¹ In this connection, it is important to note that the ECB is wary of the boundaries of its regulatory powers; i.e. the powers to create additional rules resulting in capital requirements. When the ECB set out its final guidance on NPLs in March 2018, it made explicitly clear that its guidance constituted supervisory expectations and not legally binding regulatory requirements. When consulting this document end of 2017 without that clarification, the ECB received questions around the risk of it overreaching the its mandate.¹¹² We thus hold it unlikely that the ECB will draw up guidance with regulatory capital requirements on climate risks.

Again, DNB seems to be further ahead of the supervisory curve.¹¹³ DNB has made "fostering a forward-looking and sustainable sector" one of its three supervision priority area's for 2018-2022.¹¹⁴

"We foster a forward-looking approach in institutions, based on a "through-the- cycle" horizon. We will also devote more attention to sustainability. This includes the impact of climate risks and policy and the effect of other relevant sustainability risks

111 ECB Annual Report on supervisory activities 2017 (March 2018), p. 25.

112 Final Addendum to the ECB Guidance to banks on NPLs: supervisory expectations for prudential provisioning of NPEs, March 2018.

113 Note that DNB is not alone in this. The UK Prudential Regulation Authority (PRA) has published a consultation paper in which it require banks and insurers to take climate risks into account in their risk management tool and scenario analyses. See: Enhancing banks' and insurers' approaches to managing the financial risks from climate change (PRA Consultation Paper 23/18, October 2018).

114 DNB Supervisory Strategy 2018-2022, p. 21-27.

on the financial sector. These are longer-term risks, but can also already have an impact in the medium term, and they therefore require our immediate attention."¹¹⁵

On sustainability, DNB wants to analyse the potential impact of sustainability risks and aims to be a 'thought leader' among peer supervisors. As shown above, this is currently a phase that DNB is already very active in.¹¹⁶ Subsequently, DNB aims to examine how sustainability risks can be included on a more systematic basis in the supervisory process. Although DNB is cautious as to the possibility of using the applicable prudential frameworks for *stimulating* sustainable finance, it does not exclude the possibility of applying these frameworks to mitigate financial risks:

"(...) it should be noted that prudential legislation and regulations are not in principle intended to stimulate sustainable financing. Prudential regulations are primarily intended to ensure the solidity of financial institutions."¹¹⁷

It follows from the OSF Report that DNB suggests using prudential rules in relation to (transition) climate risks. In the OSF Report, DNB recommends that banks take into account the possible implications of a disruptive energy transition in their risk management, to review sector concentration risk and to develop relevant stress tests.¹¹⁸

5.3 *Harmonised SREP methodologies*

So can DNB require the Dutch LSIs that it supervises to take climate risks into account, if the ECB does not require the same from Sis?

In order to promote convergence in the manner in which NCAs conduct their SREP, and in order to create a level playing field among banks in the euro-zone, the ECB has published an SSM LSI SREP Methodology.¹¹⁹ This harmonized methodology will first be applied to the high priority LSIs, and needs to be applied fully by 2020.¹²⁰ It provides for a minimum level of harmonisation in the assessment of SI and LSIs. It thus builds on the principles and methods used in the direct supervision of the Sis by the ECB as set out in the ECB's SSM SREP

115 DNB Supervisory Strategy 2018-2022, p. 21.

116 See for the impact analysis phase: the Waterproof Report and the OFS Report. For the thought leadership phase: see this book, the opening speech of the Central Banks and Supervisors Network for Greening the Financial System by Mr. K. Knot (6 April 2018), and F. Elderson 'From mission to supervision: putting sustainable prosperity on the agenda of the Dutch Central Bank', Sustainable Finance Leadership Series, London School of Economics (4 July 2018).

117 DNB Supervisory Strategy 2018-2022, p. 27.

118 OFS Report, p. 46.

119 LSI SREP Methodology Booklet, 2018 edition (LSI SREP Methodology).

120 LSI SREP Methodology, p. 3.

Methodology Booklet. However, taking into account the principle of proportionality, it allows NCAs to be more flexible and to apply a simpler SREP that is tailored to the LSIs' specificities and less-complex nature and size, and to consider national differences.¹²¹ This proportional approach means that the SREP approaches may be less complex for smaller banks, while still using a harmonized methodology.¹²²

The NCAs thus have a level of flexibility to determine the SREP for LSIs. However, given the proportionality intention of the LSI SREP Methodology to use this flexibility to make the SREP less complex for smaller banks, the question is whether a NCA should apply additional, more complex, risk drivers (such as climate risks) to these LSIs. From a legal point of view, the answer seems no. This would generally not fit the principle of proportionality. If these risks were to be applied to banks, they should be applied first to the largest and most complex, significant banks. That would be the prerogative of the ECB, not of the NCAs. This is the more so since climate risks pose a global risk that would apply in all Euro countries. They are not a national specificity of one single country. This could be otherwise if specific LSIs are potentially hit relatively hard by climate risks, for example in view of their geographic location or specific exposures portfolio. The principle of equal treatment would in my view also entail that not only specific banks can be required to assess climate risks, if their similar peer banks - with a similar risk profile - are not required to do the same.¹²³

6. Conclusion

At the time of writing this chapter, the impact of climate risks on the financial solidity of banks is a pressing topic of research and policy debate. Recent supervisory research shows that climate risks may have a severe financial impact on banks. Looking at the above, can competent prudential authorities on the basis of the current CRD IV/CRR framework require

banks to take climate risk into account when assessing their capital adequacy?

Prudential supervisory rules, and specifically capital requirements, are intended to safeguard the financial solidity of banks. They are not intended to foster another moral/policy outcome, such as a more sustainable world, no matter how urgent or justifiable such outcome is.¹²⁴ Nevertheless, if climate risks have a potential impact

121 LSI SREP Methodology, p. 4.

122 LSI SREP Methodology, p. 9.

123 In practice, the NCAs will likely try to find room to deviate from the LSI SREP Methodology where they deem this required. It remains to be seen how much deviation the ECB will allow those NCAs.

124 This is in line with the Tinbergen rule asserting that, in short, a policy instrument can

on the solidity of the banks, and thus pose an actual risk to the bank's solvency, the prudential rules should come into play.

Currently, no specific CRD IV/CRR rule explicitly takes climate risks into account. However, as follows from the above, under the current CRD IV/ CRR framework, a competent authority has a number of explicit legal provisions it can use to require banks to assess their climate risk impact on other risks. Climate risks, both physical as well as transitional, may have an impact on a bank's credit risk, operational risk, and concentration risk. These risks should in accordance with CRD IV/CRR be specifically considered in a bank's capital requirements. This does not mean that banks' internal models should necessarily include climate risks. This depends on, among other things, the nature and size of the relevant client or exposure pools, the question whether historical data are already available, the possibility to include forward-looking elements, the predictability and foreseeability of the impact in the short and medium-long term, etc. Climate risks can in any case be included as a scenario in forward-looking stress tests or scenario analyses in a bank's ICAAP.

In any case, as confirmed in the Credit Mutuel Arkea/ECB judgment, under CRD IV, in their SREP competent authorities may require the banks to include *all* risks to which they *are or might be exposed* in their ICAAP. This also entails the possibility of taking into account future events capable of altering such a bank's risk profile. In view of that, a competent authority can require a bank to take such risks into account in for instance its internal models or in forward-looking stress tests. This may even result in the bank having to hold additional Pillar 2 capital if that would mitigate a concrete, yet future, climate risk. This is the more so since, as also confirmed in the Credit Mutuel Arkea/ECB judgment, the competent authority has very broad discretion in taking its SREP decisions. A court can only marginally assess those SREP decisions.

However, according to Credit Mutuel Arkea/ECB, those SREP decisions should still meet general principles of EU (or, where relevant, national) administrative law. This means that a requirement to take into account climate risks and/or a decision to hold additional capital in view thereof, should (for instance) meet the principle of proportionality (i.e. the requirement should not apply to smaller and less complex banks), the duty to provide reasons (i.e. climate risk must be sufficiently probable to that bank and duly motivated by the authority), and the principle of equal treatment (similar banks should be subject to similar requirements).

only serve one policy objective. Also see Jacob Dankert (a.o.), *A Green Supporting Factor - The Right Policy?*, SUERF Policy Note, Issue No 43, October 2018.

As a result, in my view competent authorities cannot apply 'climate risk' as a generic risk to a bank, but must specifically determine which exact elements of climate risk have an actual potential adverse impact on that bank's risk profile and on which specific risks to a bank's capital. If there are measurable, scientifically substantiated and sufficiently probable financial impacts on a bank resulting from climate risk, it is prudent - and in line with CRD IV/ CRR - to take those into account in determining a bank's required capital. At this stage, climate risk data collection and analysis and forward-looking stress tests seem to be the proper prudential methods. Additional Pillar 2 capital should only be required if the actual climate risks are sufficiently quantifiable and if this is particularly warranted as the most prudent available mitigating outcome in relation to the climate risk exposure of a bank.

In any case, it is important to apply the same risk categories to all banks within the SSM in a harmonized, equal and proportionate manner. Thus, within the Banking Union, a global risk such as climate risk should not be a prudential supervisory priority of one single NCA, but only of the SSM as a whole.