

London School of Economics and Political Science

The construction of a regulatory risk device: an examination of the historical emergence and performative effects of the Basel Committee on Banking Supervision's market risk framework

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Abstract

The thesis examines the historical developments in the conceptualisation of 'market risk' within the BCBS' Minimum Capital Requirements. It traces the ideas and practices around market risk management, from within the growth of modern finance theory between the 1920-70s, to their assimilation and reformulations in Basel's Market Risk Amendment, the Basel 2.5 Agreement and the Fundamental Review of the Trading Book. The central argument in the thesis is that the BCBS' market risk framework does not primarily embody a set of objective measurement instruments, but rather constitutes a strategic device, understood as a material and discursive assemblage involved in constructing the financial markets. This means that the framework is both contingently constructed and capable of producing performative effects, in line with the theoretical commitments and objectives embedded within it. Moreover, in addition to treating Basel's market risk framework as a strategic device, the thesis argues that it can also be reconceived as a technology of power. The framework's interventions have, unsurprisingly, predominantly supported the commercial interests of the major trading banks. However, this is not a unidirectional story: despite the many ways in which Basel's risk framework can be instrumentalised by powerful commercial actors, the thesis also demonstrates that it has the potential to be leveraged by a variety of actors to different and competing ends. Moreover, it is capable of reflexively reshaping the entities involved in its creation and ongoing reformulations. Thus, the thesis reveals the mutually constitutive nature between Basel's market risk framework and the various banks and regulatory entities which brought it into being. In doing so, the thesis further shows that focusing on these relationships helps to uncover new explanations of contemporary banking developments, and suggests that leveraging the mechanics of Basel's market risk framework might provide productive channels for interrupting these developments.

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Introduction

I. The Basel Committee on Banking Supervision's market risk framework

In the decades prior to the Global Financial Crisis, the traditional banking business of taking deposits and extending loans evolved into a more complex system, in which the banks borrow on the wholesale money markets and lend through the capital markets. As part of this evolution towards contemporary forms of 'market-based' banking, interest income derived from banks' loan-making activities was therefore largely replaced by a range of alternative sources of income, including fee income from the provision of financial services, as well as the growth of trading and principal investment activities.¹ Particularly from the early 1990s onwards, investment banks increasingly moved towards proprietary trading as their main source of profit – setting up trading desks for all the major financial markets, i.e. the equity and bond markets, commodity markets, derivatives markets, foreign exchange markets and the money markets.² Significantly, as a result of these changes, the large global banks have been able to accumulate extraordinary amounts of debt while simultaneously pursuing more aggressive investment activities.

Alongside these shifts, the banking industry also began accumulating enormous amounts of risk. Not only were the banks acquiring new kinds of risk because of their trading activities, but they further accumulated far greater amounts of risk by trading in high-risk assets like derivatives and securitised instruments. In response, prudential regulators from different jurisdictions extended their pre-existing capital adequacy regimes to incorporate novel 'market' risk exposures, associated with the expanding range of banking activities on banks' trading books.³ In the EU, the Capital Adequacy Directive set out a common framework for

¹ According to Erturk and Solari 'investment banks have always lived off fee income, but the real revolution was the relative decline of fee income... as proprietary trading became the main source of profit for investment banks.' Erturk, Ismail, and Stefano Solari. 2007. "Banks as Continuous Reinvention." *New Political Economy* 12(3): p381.

² Brett Christophers argues that the banks have become dominant actors in all of these financial markets, so that they are in fact better conceived as the interaction between banks rather than abstract financial markets that imply a high number of anonymous securities traders. Christophers, Brett. 2015. "Against (the Idea of) Financial Markets." *Geoforum* 66: 85–93.

³ A bank's trading book contains the financial assets that the bank has entered into with trading intent. The trading book is accounted for based on market values, meaning that it generates profits and losses as market prices move. A bank's banking book consists of financial instruments for which it does not have trading intent. This is most often because the bank intends to hold them to maturity or because they have no contractual maturity. The banking book is accounted for on a book value basis, meaning at their actual purchase price.

regulating securities firms and the securities affiliates of larger bank holding companies, whereas in the US, the Federal Reserve Board and the Securities and Exchange Commission (SEC) extended existing broker-dealer regulations to account for the increasing integration of banking and securities markets.⁴ At the international level, from the mid 1980s, the Basel Committee on Banking Supervision (BCBS) began to negotiate a new set of rules on market risk, to complement its first Capital Accord which only dealt with banks' credit risk capital charges. According to the BCBS, 'it was clear [even at the time of the first Accord] that banks' trading activities were expanding rapidly, particularly in the derivatives markets, and that the Accord's focus on credit risk would need to be widened.'⁵ Thus, after a period of protracted negotiations, the Basel Committee adopted the Market Risk Amendment (MRA or 1996 Amendment) in 1996.

In this thesis, I focus on the Basel Committee's evolving conceptualisations of market risk, including its shifting metrics for the measurement of market risk. The Basel Committee was established in 1974 by the central bank governors of the G10, and represented a new kind of transnational and voluntary, or consensus-based, mode of regulation. In the aftermath of World War II, as the Bretton Woods architecture governing capital mobility and exchange rate stability began to dissolve, the G10 countries sought to address the implications of growing financial globalisation. After a series of disruptions in international currency and banking markets, notably the failure of Bankhaus Herstatt in West Germany, the BCBS was set up and headquartered at the Bank of International Settlements (BIS) to facilitate communication and coordination on financial matters of cross-border concern. In the early years, the Committee's first set of objectives was to close the gaps in international supervisory coverage and ensure a level-playing field between banking groups operating across different jurisdictions. Having agreed on the foundational principles for home versus host regulators and supervisors, the BCBS's priority then turned to the establishment of minimum capital requirements. The first major agreement was the Basel Capital Accord, known as Basel I, consisting of a credit risk measurement framework. Subsequent amendments were made to expand the range of risks underpinning Basel's capital regime, as well as to the measurement approaches the banks

⁴ Dale, Richard. 1996. *Risk and Regulation in Global Securities Markets*. John Wiley & Sons. p65.

⁵ Basel Committee on Banking Supervision. 1993. Prudential supervision of netting, Market Risks and Interest Rate Risk – preface to the consultative Proposal. p2.

were required to follow.⁶ Aside from the introduction of the MRA, Basel I has been revised twice, in Basel II and Basel III. These Agreements revised banks' measurement frameworks, added new risk factors and introduced further requirements in relation to banks' internal assessment and disclosure practices. With regards to market risk specifically, the MRA was first revised in the Basel 2.5 Agreement, and again after the Global Financial Crisis, as part of the Fundamental Review of the Trading Book (FRTB).⁷

As shown in this brief history, capital requirements have always represented a central aspect of the BCBS' banking standards. Their purpose is to ensure that banks set aside a sufficient amount of 'own equity' so that when losses are incurred, they are first absorbed from banks' own funds. By forcing the banks to put their capital at risk, an intermediate aim of a capital framework is to establish a disincentive for the banks' shareholders and managers from taking on excessive risk. Together, these interventions support the resilience of the banking system, and ultimately aim to safeguard its stability and protect the banks' creditors - including depositors as well as the taxpayers who are implicated via the state's public backstops.⁸ Importantly, constructing a capital adequacy framework requires the creation of a taxonomy of risks, as well as a set of principles or metrics to calculate the quantities of the different risk categories identified. As mentioned above, for the first time, the Market Risk Amendment of 1996 extended Basel's Capital Accords beyond credit risk and added a new market risk category. It defined market risk as '[t]he risk of losses in on and off-balance-sheet positions arising from movements in market prices' and includes 'risks pertaining to interest rate-related instruments and equities in the trading book; and foreign exchange risk and commodities risk throughout the bank.'⁹ Alongside this definition, the Amendment also institutionalised a two-tiered measurement system, in which a select group of banks were permitted to use their internal models to measure their market risk exposures.

⁶ See Goodhart 2011; Tarullo, Daniel K. 2008. *Banking on Basel: The Future of International Financial Regulation*. Peterson Institute.; 'The Basel Committee: a brief history' available at https://www.bis.org/bcbs/history2_obsolete.htm

⁷ BCBS. 2009. "Revisions to the Basel II market risk framework." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements; BCBS. 2019a. "Minimum capital requirements for market risk." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

⁸ As discussed in Chapter I, most states provide both an insolvency as well as a liquidity backstop to their banks.

⁹ Basel Committee on Banking Supervision. 1996. *Amendment to the Capital Accord to Incorporate Market Risks*. Basel: Bank for International Settlements.

Although there exist a variety of prudential regimes that might regulate the banks more or less effectively, in the context of a system which relies heavily on capital requirements as a core plank of its prudential framework, determining how much capital the banks must set aside constitutes the most important problem.¹⁰ According to the BCBS, it is guided by two competing objectives. First, the Basel Committee is clearly concerned with the societal interest in the stability of the banking system.¹¹ Banks that hold insufficient capital are at risk of insolvency, and because of the systemic repercussions of bank failures, regulators attempt to set sufficiently strict requirements to maintain the resilience of the banks. On the other hand, the BCBS is also concerned about the effects of higher capital on the costs of lending. Because capital funding, as opposed to debt funding, is comparatively more expensive, the Basel Committee also seeks to counterbalance any potential disincentives to banks' investment and market-making activities. Conversely, from the banks' perspective, the quantity of capital that they must set aside affects both their profitability and the competitive conditions of the financial markets. If a bank has lower requirements, this not only frees up capital for higher yielding investments, but it will also entrench the bank's market dominance in relation to competing financial institutions that have higher capital requirements. Thus, as Hadjiemmanuil argues, 'each development in risk-based standards has been fraught with conceptual difficulties, as it always raises questions of accounting consistency, accuracy, and competitive equality.'¹²

Based on these different effects, the crucial point is that capital requirements, including their underlying risk frameworks, both constrain but also enable private risk taking. Moreover, if a capital framework permits the use of different risk measurement approaches (as the MRA does), it will also play a significant role in creating and sustaining unequal market hierarchies. Thus, not only do banking regulators affect the distribution of losses produced by banks' excessive risks, but they also produce particular market landscapes by influencing the quantity and forms of risk taking that occur within a banking system. Significantly, as part of

¹⁰ Tarullo 2008, Chapter Two

¹¹ BCBS. 2010. "An Assessment of the Long-Term Economic Impact of Stronger Capital and Liquidity Requirements." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

BCBS. 2019. "The Costs and Benefits of Bank Capital – a Review of the Literature." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

¹² Hadjiemmanuil, C. 1996. *Banking regulation and the Bank of England: discretion and remedies*. LLP Professional Publishing. p211

these processes, by directing what particular financial institutions are able to do, and over time, how they develop, the regulators simultaneously end up reconfiguring underlying market structures. It is from this perspective - one which appreciates the productive and enabling role of the legal and calculative frameworks that make up regulatory risk regimes - that the thesis is interested in examining the market risk requirements of the BCBS' Capital Accords. While, as mentioned above, the BCBS had already introduced a first Basel Agreement on credit risks, the thesis focuses on its market risk requirements because these are the requirements that coincided with the evolution of banking towards market-based banking. Based on the hypothesis that regulatory risk regimes are productive, and capable of producing significant market-shaping effects, the thesis aims to explore the specific market risk techniques which were incorporated to regulate, and therefore also shape, the shifts in the nature of banking.

The story of the thesis therefore starts in the 1980s, when the Basel Committee began negotiating a market risk amendment to complement Basel I's credit risk framework. Formal efforts to extend Basel's purview beyond credit risk in fact started several years before the adoption of Basel I. Although, during the 1980s, the priority of the Committee and its members, particularly the US and the UK, was to reach an international agreement for credit risk, research on market risk had already begun at the turn of the decade. Basel's first public report on market risk was disseminated in 1980, and focused on foreign exchange risk. In 1986, for the 37th meeting of the Basel Committee, a formal discussion on interest rate risk was scheduled, and that same year, John Beverly from the Bank of England was appointed head of the interest rate risk subgroup. While Basel's initial focus was on interest rate risk, further subgroups looking at other dimensions of market risk soon followed. The Danielsson foreign exchange subgroup was created to further study exchange rate risk, and after the 1987 New York Stock Exchange crash, the Mackenzie subgroup was established in 1988 to focus on investment risk in equity securities.¹³ Eventually, their efforts were brought together under a common market risk methodology, published in the BCBS' first Consultative Proposal for the MRA in 1993. In the thesis, I will be exploring the choices and assumptions made in

¹³ Goodhart 2011, p230

Basel's efforts to create, and later revise, its market risk framework, as well as the effects of these choices on the banking business and its wider financial market environment.

More specifically, the thesis is interested in developing two broad research questions. First, it is interested in the ways in which market risk definitions and models are constructed and revised, including the actors who are involved, and the interests and logics through which they perceive their projects. Second, once a market risk framework is temporarily stabilised, the thesis questions how it intervenes in the networks in which it operates. What kind of effects can be attributed to it? Moreover, in what sense can it be said to produce independent effects, so that we might gain greater analytical clarity by treating it as a distinct object of analysis? Since these questions are directed specifically at the construction and effects of *Basel's* market risk framework, it is worth saying a few words as to why the analysis is targeted at this level, rather than at a comparison of national frameworks. Although formally the BCBS only produces best practice guidelines and soft law standards, its membership has grown from the G10 to 45 institutions from 28 jurisdictions, and all members must fully implement the Committee's standards. More importantly, many of its capital standards have been introduced not only in member state countries, but in most countries with active international banks.¹⁴ Therefore, even if a focus on the BCBS can only reveal certain dimensions of the interactions between regulatory risk frameworks and changes in the banking industry, it does capture the processes which affect the formulation of the most influential national frameworks. And significantly, by honing in on the the processes of international standard setting, we can better engage with the multiple levels at which the banks have succeeded in shaping the standards that affect them.

II. Theoretical foundations and methodology

To answer the above questions, the thesis is primarily grounded in the Social Studies of Finance (SSF) but also draws from political economy literatures to balance some of the potential blind spots of an SSF approach. Significantly, both of these theoretical traditions treat financial markets as complex webs of social interactions, rather than simply as a

¹⁴ 'The Basel Committee: a brief history' available at https://www.bis.org/bcbs/history2_obsolete.htm

mechanism dedicated to the efficient allocation of capital. They therefore share a common ground in rejecting the orthodoxy of neoclassical economics, which borrows from the methodology of the natural sciences to identify specific causal relationships and establish a set of enduring market laws. At a deeper level, both SSF and political economy approaches reject the orthodoxy's underlying assumptions about individual and state actors, notably with respect to their 'rationality' or 'utility maximising' behaviour.¹⁵ Instead, these assumptions are treated as the means by which consensus on orthodox understandings of the nature and role of the financial markets are consolidated. In this regard, Johnna Montgomerie's comparison of the literatures on financialisation and International Political Economy also maps on to the similarities and differences between SSF and political economy perspectives on finance. According to Montgomerie, '[B]oth [frameworks] emphasise the historical, socio-cultural or political foundations of recent transformations in financial markets' but 'each approach frames the myriad of issues surrounding innovations in finance using different objects and subjects of analysis.'¹⁶ As a result, she argues that 'greater engagement between the literatures would provide new fruitful avenues of research.'¹⁷

When SSF emerged in the 1990s, many of the scholars who spearheaded the SSF discipline were trained as Science and Technology Studies (STS) practitioners, coming from a tradition of historical studies or ethnography.¹⁸ During these early years, scholars in the discipline were inspired by Michel Callon's seminal essay, calling for greater attention to the market's 'devices' - understood as 'a simple way of referring to the material and discursive assemblages that intervene in the construction of markets.'¹⁹ Born out of these incipient interests, a new research programme emerged on the 'mechanistic world of theories, artefacts and formulas' and their significance as explanatory variables for understanding economic outcomes.²⁰ Especially in the formative stages of SSF, much of the research was particularly interested in

¹⁵ As Alex Preda writes, 'interactions are not seen as homogenous and conforming to a general pattern of rationality, but as quasi-closed, inward-looking and differentiated, characterized by specific cognitive properties and dynamics.' Preda, Alex. 2007. "The sociological approach to financial markets." *Journal of Economic Surveys* 21(3): p525.

¹⁶ Montgomerie, Johnna. 2008. "Bridging the Critical Divide: Global Finance, Financialisation and Contemporary Capitalism." *Contemporary Politics* 14(3): p234.

¹⁷ Ibid. p233.

¹⁸ Preda, Alex. 2012. "Pandora's Box: Opening up Finance to STS Investigations." *Italian Journal of Science & Technology Studies* 3(2): p25.

¹⁹ Callon, Michel. 1998. "Introduction: The Embeddedness of Economic Markets in Economics." *The sociological review* 46(1_suppl): p2.

²⁰ Beunza, Daniel. 2019. *Taking the Floor: Models, Morals, and Management in a Wall Street Trading Room*. Princeton University Press.p7.

economic models, and their active role in the market's processes of valuation. In the same essay by Callon, he also talked about the theory laden nature of economic models, and their ability to shape economic decisions and developments, to the extent that these models may even substantiate the theories that created them.²¹ Inspired by John Austin's speech act theory, Callon referred to this mechanism as 'performativity', a concept which has since been developed by a growing network of SSF scholars. For example, in a major study on the Black-Scholes options pricing model, Donald MacKenzie and Yuval Millo demonstrate that although the model initially produced inaccurate results, once it was accepted by a critical mass of investors, options prices began to conform to the model's predictions. In the words of the authors, 'option pricing theory [...] succeeded empirically not because it discovered pre-existing price patterns but because markets changed in ways that made its assumptions more accurate.'²²

Although SSF has greatly expanded the range of its objects of study, this thesis is interested in its ongoing investigations concerning the role of economic models, particularly of financial risk models. Here again, MacKenzie and Millo's work continues to inspire much of the research in this field. Reflecting on 'the usefulness of inaccurate models', as the title of an article by the two authors reads, they argue that the success of risk management 'should be attributed primarily to their communicative and organizational usefulness and less to the accuracy of the results they produced.'²³ Indeed, despite the claims of the risk management industry, risk models are not capable of accurately predicting the future. However, the risk management industry continues to grow because risk models do enable more efficient communication, perform a number of organisational and operational tasks and further facilitate the regulation of financial trading.²⁴ Looking at financial risk management from this perspective, SSF thus turns away from questions about the analytical consistency within

²¹ On the question as to why Callon and subsequent SSF scholars have dedicated so much attention to economic, and specifically pricing models, Preda explains that this is '[b]ecause the starting point has been provided by the empire of financial economics itself, namely by the quest to forecast prices of financial securities.' Moreover, '[w]hile financial economics sees such pricing models as a benchmark mirroring the rational behaviour of market participants, SSF did mostly historical studies of pricing models, seeing them as social instruments by means of which participants reach some consensus. As in STS, much of the research work has thus been focused on the long and difficult processes of building consensus, and demonstrating the ways in which these instances of consensus constitute the core building blocks of particular social spaces.' Preda 2012, p26-27.

²² MacKenzie, Donald, and Yuval Millo. 2003. "Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange." *American journal of sociology* 109(1): p107.

²³ Ibid.

²⁴ Ibid.

particular risk methodologies, or the accuracy with which they represent financial and economic realities, to questions about how these risk methodologies are constructed, and the ways in which they reshape the realities they purport to merely describe.²⁵ Moreover, in comparison to other socio-political approaches to the study of finance, SSF highlights the specific significance of market devices in shaping economic outcomes. It thus replaces an interest in questions about ‘who talks to whom’ with a focus on the market’s socio-material underpinnings.²⁶

In examining the Basel Committee’s evolving market risk framework, the thesis is guided by SSF’s theoretical moves, treating it as a material and discursive assemblage, or market ‘device’, involved in the construction of financial markets. Indeed, Basel’s market risk framework, first incorporated in the MRA and subsequently revised in later reforms, is approached as a material entity, as it is made up of fixed quantitative parameters and methodologies, as well as a discursive entity, in the sense that these parameters and methodologies are constituted by a constellation of substantive ideas and choices. In line with the SSF literature, the reason I focus on Basel’s market risk framework as a socio-material device is because it facilitates an examination of the ways in which it, and by extrapolation regulatory risk frameworks more broadly, are capable of producing important industry and market-shaping effects. As emphasised by many SSF scholars, what a model or artefact is capable of doing depends on how it has been made, and the specific ideas and techniques embedded within it. In the case of Basel’s market risk framework, the thesis will demonstrate that the set of logics and interests that make up the framework enabled it to support a number of important shifts with respect to the production and distribution of financial risk, as well as facilitating the transition to a market-based form of banking intermediation. Importantly, these effects cannot all be explained as a result of the framework being deliberately calibrated and made to work in the service of a specific range of background

²⁵ In this way, SSF actually develops a longer history of risk studies that have sought to challenge the objectivity of risk calculations, examining the way particular events and activities come to be characterised as risks. These histories highlight the frames of vision and modes of calculative rationality that have enabled us to represent, understand and talk about risk. They reveal the different discursive frames through which we have imagined and acted upon understandings of ‘the future’ or ‘the uncertain’, and how the rising dominance of probabilistic risk calculations have channelled our activities in relation to the future.

²⁶ Beunza 2019, p8. See also Preda: ‘it is precisely the fact that global finance is grafted upon global dedicated technological systems... together with the widespread use of analytical technologies of varying complexity, which should make us push [our] investigations more and more onto these systems’ rather than simply focusing on the greed of private finance, and how to regulate it.’ Preda 2012, p30.

actors. Rather, as explored in Chapter Five, Basel's market risk framework often produces effects that are not deliberately intended, nor even anticipated, by those who created it. Moreover, this framework has actually produced effects which reflexively reshape the actors who made it, thereby channelling the formulation and implementation of some of these actors' embedded interests.

As mentioned above, however, the thesis also draws from political economy approaches, which have criticised SSF for ignoring the role of wider power relations. According to Montgomerie, for example, narratives that focus on questions of performativity can help explain important developments in financialisation, but they are also 'surprisingly agnostic on the power relations inherent in these processes.'²⁷ As she writes,²⁸

Examining the financial markets at the heart of contemporary global capitalism raises significant questions about how finance expands into new areas as well as the conditions of inclusion and exclusion into these culturally constituted practices. Which groups have access to these forms of knowledge and new technologies has profound effects for all the others who are left to experience the outcomes.

In a similar vein, a number of authors including Ismail Erturk, Julie Froud, Sukhdev Johal, Adam Leaver and Karel Williams have also focused on the significance of market devices, but in a manner that foregrounds the political struggles in global finance. According to them 'the Callon-inspired SSF usage too readily obscures the political dimension of the device, and the assemblages within which devices are embedded and mobilised.'²⁹ More specifically, they argue that by focusing on the micro-relations embedded within specific socio-technical artefacts, SSF 'downplays the important political connections that support the financial interests that lie within particular assemblages.'³⁰

In contrast to SSF's notion of a market device, Erturk et al. propose to trace its meaning back to Foucault's conception of the device, or what he calls the *dispositif*. According to Foucault, 'a dispositif has a pre-dominantly strategic function, [involving] a rational and concerted

²⁷ Montgomerie 2008, p245.

²⁸ Ibid.

²⁹ Erturk, Ismail, Julie Froud, Sukhdev Johal, Adam Leaver, and Karel Williams. 2013. "(How) do devices matter in finance?" *Journal of Cultural Economy* 6(3): p337.

³⁰ Ibid. p339.

intervention in relations of force, either so as to develop them in a particular direction or so as to block them, stabilize them, or exploit them.³¹ By emphasising the relations of force that cut through or sustain particular market devices, Erturk et al. argue that these devices can be drawn into a much more explicitly political analysis of the ways in which financial markets operate and evolve. The underlying goal of this approach is therefore to recover a greater attentiveness to the political context of market devices, as '[p]ower and financial interests are an integral part' of how these devices are marshalled to function in their interests.³² To the extent that power relations and political struggle evidently play a significant role in banking regulation, I will also attend to the underlying social and political relations through which Basel's market risk device was created, and continues to be reformulated. The position adopted in this thesis is that both market devices, as well as the market participants more traditionally conceived as 'agents', are shaped relationally, and that we should not discount the influence of powerful background actors just because their interventions are more difficult to isolate.

Just as we should heed SSF's call to take seriously the effects of market devices – because they play a role in shaping market actors' self-perception, including their interests and how they relate to each other – we must further attend to the wider political context in which these devices are created and reformulated – as they will also reflect the logics and interests instilled within them through background power struggles. Thus, following both SSF and political economy approaches, the thesis investigates how Basel's market risk framework was constructed and consolidated as well as its ensuing interventions in banking and finance. Inspired by Latour's arguments on 'an empiricism of matters of concern', the thesis re-inserts Basel's market risk fact, or framework, back into the particular history of its manufacture, revealing the actors and relations which sustain it as an objective fact.³³ Based on fourteen expert interviews and a series of publically available policy and archival documents, the thesis retraces the negotiations which produced the MRA, and later the Basel 2.5 Agreement and the FRTB.³⁴ In other words, through these empirical studies, the thesis retraces the strategic

³¹ Foucault, Michel. 1994. "Le jeu de Michel Foucault" in *Dits et Ecrits* 2(3) p299.

³² Erturk et al. 2011

³³ Latour, Bruno. 2005. *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press. p7.

³⁴ The interviewees who agreed to be mentioned by name include: Christine Cumming, Richard Farrant, Beverly Hirtle, Dino Kos, Sebastiano Laviola, Erik Musch and Uwe Traber.

constructions of Basel's market risk device. In terms of archival research, I used the Bank of England's archives to examine the reports of UK representatives who participated in the BCBS' negotiations, and relied extensively on the BIS archives published in Goodhart's early history of the BCBS.³⁵ As for the policy documents, I reviewed all of the BCBS' online publications, including working papers, reports, consultations, guidelines and standards, and examined the documents specifically relevant to Basel's market risk analyses and negotiations.

Finally, with respect to the interviews, I focused on the BCBS' representatives who were directly involved in the Committee's market risk research and negotiations. Many of the interviewees held high level positions as Chairs and leading researchers at the most influential subgroups, including Basel's market risk subgroup and the Models Taskforce. The interviewees were selected based on lists of negotiators identified in the archival and publically available policy documents, as well as by asking known negotiators to refer me to other important colleagues. The interviews were conducted as semi-structured interviews, in which I developed a broad set of themes relevant to the research, while leaving it to the interviewees to lead me to more specific questions and developments. Based on all of the above empirical investigations, the thesis seeks to reveal the variety of actors, as well as the tensions and struggles, involved in formulating Basel's market risk framework, including the specific logics and interests embedded within its definition and metrics. Ultimately, in examining the scenography of the gradual consensus built around market risk, the thesis aims to better understand its core components, in the hope that this will further clarify the ways in which it intervenes, or is likely to intervene, in its wider banking context.

III. Thesis arguments and chapter outline

Based on these theoretical foundations, the thesis takes a contrasting approach to that of mainstream accounts of financial risk management - including those of the leading risk management textbooks, the banking industry as well as the official position of the BCBS - which treat Basel's risk frameworks as a set of neutral and observational instruments. Indeed, conceptualisations of risk in mainstream economic and finance theory associate the notion

³⁵ Goodhart, Charles. 2011. *The Basel Committee on Banking Supervision A History of the Early Years 1974–1997*. Cambridge: Cambridge University Press

of risk with properties of objectivity and human calculability. They assume that the future can be calculated as long as we process the right data and employ the correct methods. Risk measurement systems have therefore come to be treated as scientific tools - based on observation, empirical testing, mathematical analyses of volatility, correlations and so on - aimed primarily at helping us to better comprehend the financial markets, and the different risks which inhabit them. Thus, the Basel Committee has increasingly come to rely on complex risk models to measure banks' risk exposures, which are then off-set by corresponding capital requirements. Even after the Global Financial Crisis, the BCBS continues to focus on elaborating its complex and detailed risk measurement infrastructure, assuming that it will be able to contain, or at least materially mitigate, the risks within the financial system

In contrast, this thesis treats financial as well as regulatory risk frameworks as socially constituted practices, with the potential to reshape the realities they describe. While market risk concepts and practices represent real world events and activities, the thesis argues that their conceptual boundaries are produced from a multiplicity of social struggles and alliances, and themselves constitute productive socio-material devices through which the banks and banking regulators shape their environments and their places within them. Thus, as the BCBS negotiates the definition and metrics of market risk, these contingent and strategic formulations have the potential to constrain, but also to enable, amplify and allocate the riskiness of banks' trading activities. Moreover, as intimated in Part I above, by orchestrating the risk landscapes of the financial markets, Basel's market risk framework also ends up producing critical market-shaping effects. Indeed, by regulating banks' market risk exposures, the thesis goes so far as to argue that Basel's market risk framework also supported the banks' transition to a market-based system of intermediation, and that it continues to influence the specific ways in which this emerging system continues to evolve.

While part I suggests that Basel's framing of market risk mainly plays a productive function by determining *the level of capital* that a bank must set aside, this thesis will show that its implications are far more consequential. Particularly in prudential regimes that place a significant emphasis on capital requirements, the framing of their underlying risk categories is significant beyond its immediate effects on the quantity of capital that the banks are required to maintain. As argued in Chapters Three to Five of the thesis, the specific

formulations of Basel's market risk measurement approaches also influence the banks' regulatory and financial market environments by organising the function and style of banking regulation; determining the forms of expertise that are relevant in banks' risk management processes, as well as the regulation of these processes; affecting the relations of authority between the banks and their supervisors; and consolidating specific investment and organisational practices within the banks' internal business and managerial operations. Furthermore, all of these elements contribute to wider macro shifts in the banking industry, which further reflexively reshapes the particular institutions that inter-relate and evolve within it. It is in light of these effects, then, that the thesis further claims that market risk is an instrument or technology of power, but one that can be leveraged by a variety of actors within its network.

Chapter One sets out the contemporary history and socio-political context in which the arguments of the thesis will be developed. It examines the recent historical shifts in banking, describing the transition from traditional deposit funded loan making to contemporary forms of wholesale funded market-based banking. As part of this narrative, the chapter introduces the major background actors and developments that will also play a part in the story of the construction of Basel's market risk device, as well as its productive effects on the business of banking. Significantly, the thesis' later chapters will refer back to Chapter One's description of the industry's shifts in the last five decades, to highlight the ways in which Basel's market risk framework is imbricated in, or has facilitated, many of these developments. Chapter One therefore also serves to highlight the stakes of the thesis' arguments concerning the BCBS' market risk capital rules. Although these rules represent just one type of market device, or microstructure in finance, this thesis will show that Basel's market risk framework nonetheless provided the conditions of possibility for important macro level changes in banking and finance.

Chapter Two provides another background chapter, but specifically with respect to the origins of Basel's market risk framework in modern finance theory in the 1920s. The purpose of Chapter Two is to highlight the contingent and strategic foundations of this framework, by investigating the ideas and practices from which it emerged. In doing so, Chapter Two shows that the construction of market risk involves choices which cannot be made entirely

objectively. Instead, like any risk category, its substantive definition and metrics are necessarily constructed from the perspective of a group of actors, or more broadly, through the resolution of different unfolding struggles that involve a specific set of logics and interests. More specifically, this chapter demonstrates that Basel's conceptualisation of market risk originated in modern finance theory, notably in modern portfolio theory and its subsequent developments in capital asset pricing models, options pricing formulas, and risk-adjusted return on capital (RAROC) frameworks such as the banks' Value-at-Risk (VaR) frameworks. As a result, Basel's market risk framework was shaped based on a distinct set of logics - including the logics of quantitative and statistical risk management, a set of practice-oriented and profit-maximising (or RAROC) logics, and the logics of efficient markets - all of which entail specific repercussions for the practical use, as well as the 'leveragability', of this risk device.

Chapters Three and Four then turn to the start of the thesis' empirical interventions, looking at Basel's negotiations of market risk and more specifically the boundary work involved in the production of its first comprehensive treatment of market risk. This includes the Consultative Proposal of 1993 as well as the final text adopted in the Market Risk Amendment of 1996. Chapter Three focuses on the Consultative Proposal, which defined market risk as the risk of losses arising from adverse movements in market prices, including interest rates, exchange rates and equity values.³⁶ It further produced the 'Building Block Approach', which largely inherited modern finance theory's conception of investment risk, but also integrated a set of competing regulatory priorities through a grid-like system of regulatory risk weights. Following this analysis of the Consultative Proposal, Chapter Four looks at the final three years of the BCBS' negotiations, between the publication of the Proposal in 1993 to the adoption of the Amendment in 1996. Significantly, after the publication of the Consultative Proposal, the major trading banks came together in opposition against the Building Block Approach. Instead, they advocated for a two-tiered measurement approach, which would include an additional Advanced Approach, permitting the largest banks to use their internal VaR models to measure their risk exposures.

³⁶ BCBS. 1993. "Supervisory Treatment of Market Risks." (The 1993 Consultative Proposal). *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements. p1.

The purpose of these chapters is to demonstrate that the idea that the BCBS produced a set of scientific or objective instruments to measure banks' market risks is inherently problematic. Rather, the thesis shows that the Committee drew from the specific body of ideas and practices discussed in Chapter Two, and further developed them based on the objectives of the regulatory entities involved as well as the interventions of the major banks. Accepting that Basel incorporated, or produced, a neutral set of calculative instruments, or even that this is what Basel should do, only serves to obscure and thus reinforce the logics and interests embedded within its risk framework. This is not to say that Basel's measurement approaches are simply passive tools, under the command of powerful background actors for the purposes of carrying out their hidden market interests. However, I argue that it matters that the Building Block Approach was rooted in the intellectual foundations of modern finance theory, as the latter are much more closely aligned with the interests of the major trading banks, as opposed to alternative historical and systemic approaches to banking regulation. Moreover, these foundations meant that, after the publication of the Proposal, the banks could more easily leverage the underlying principles of the Building Block Approach to demand a more 'rigorous' Advanced Modelling Approach. This Advanced Approach not only deepened Basel's risk framework's commitment to the efficient market hypothesis, but further eliminated any serious engagement with the implications of market uncertainty, notably that it turns any discussion about the future into an 'irreducibly political space.'³⁷

Having discussed the contingent foundations of the 1996 Amendment's market risk framework, Chapter Five extends Chapters Three and Four's analyses by examining its strategic effects.³⁸ In doing so, Chapter Five demonstrates that this framework represents a significant market device, which helped the banks to build-up and expand their trading book activities. Moreover, as argued in Chapters Three and Four, because Basel's risk device produces effects based on a set of perspectives internal to the banks' trading objectives,

³⁷ Reddy, S.G. 1996. "Claims to expert knowledge and the subversion of democracy: the triumph of risk over uncertainty." *Economy and Society*, 25(2): p288.

³⁸ 'Strategic' and 'performative' are used interchangeably in describing the effects of market risk. As discussed above, devices, or assemblages, are formed and evolve through their distinct logics, based on the relations constituting them within the networks they belong to. They are therefore able to produce strategic, or performative, effects, as a result of the contingent logics which they embody. Using the term 'strategic' highlights the fact that their effects may result from their own interventions, or from being 'enlisted' by the interventions of surrounding actors (just as market devices are also capable of listing other actors within their networks).

Chapter Five argues that it can further be reconceived as a technology of power. Despite this reframing, however, it is not a technology of power in any straightforward sense of the term, because it is not purely subservient to the interests of the banks nor of any other group of background actors. Instead, it often produces effects that are not deliberately intended, nor even anticipated, by the banks, even if these effects do not necessarily challenge their immediate interests. Most importantly, I will show, Basel's market risk framework produces effects which reflexively reshape the actors who created it, thereby channelling the articulation and perpetuation of some of its embedded interests.³⁹ Through these multifaceted operations, Chapter Five shows how Basel's risk device ends up amplifying and redistributing risk in various ways, and in the process, producing important market-shaping effects.

Finally, based on the theoretical framework elaborated in the first five chapters, Chapter Six concludes the thesis by developing a new set of arguments in relation to the Basel Committee's post Global Financial Crisis market risk reforms – including Basel 2.5 and the Fundamental Review of the Trading Book (FRTB). The purpose of this chapter is to provide a different perspective from which to investigate the strengths and weaknesses of these reforms, focusing on their continuities with the Market Risk Amendment, as well as the problematic effects that flow from these continuities. The second half of the chapter then offers a number of suggestions as to how the BCBS, and other prudential regulators, might respond more productively to the weaknesses of these market risk regimes. As Chapter Six argues, by consciously treating regulatory risk frameworks as strategic devices, as well as instruments of power, Basel can more clearly identify the ways in which it is leveraged by the banks, and moreover find ways to themselves reinforce the regulatory concerns and priorities already embedded within it. In doing so, the BCBS would become more attentive to the ways in which regulating risk also amplifies and redistributes risk, with a view of channelling these effects in the interest of less, and more useful, forms of risk-taking. Looking at Basel's FRTB, Chapter Six provides a number of specific suggestions as to how these objectives might be achieved.

³⁹ This is important because, as discussed above, it means that neither devices nor the actors which are traditionally conceived as the primary agents (or causal factors) can claim explanatory primacy. It is through their interactions that economic outcomes are produced.

Chapter I, Contemporary shifts in banking & finance

Introduction

Chapter One examines the recent historical shifts in banking, tracing the transition from traditional deposit funded loan making to contemporary forms of wholesale funded market-based banking. The purpose of this chapter is to provide a historical context for the thesis, to situate the subsequent chapters' investigation of the role of the BCBS' market risk framework within these broader contemporary shifts. Chapter One thus sets out the major background actors and developments that will also play a part in the story of the construction of market risk, as well as its performative effects on the wider environment it operates within. Most importantly, in exploring the performative effects of market risk, Chapters Three to Five will refer back to the industry developments discussed here, to demonstrate the ways in which Basel's market risk framework facilitated some of these developments. Chapter One therefore also serves to highlight the significance of investigating regulatory risk frameworks such as the Basel Committee's market risk regulations. Indeed, although they represent just one set of microstructures, these regulations nonetheless provided the conditions of possibility for many macro level changes in banking and finance.

Part I of this chapter describes the traditional system of banking, looking at its mechanics as well as the reasons why the banking industry has always been so powerful. At the same time, Part I also examines the inherent fragilities of the banking business, which explain why many governments have resorted to the use of capital requirements to stabilise their banks. Importantly, this section highlights the role and significance of capital requirements frameworks, thus providing an explanatory context for the struggles between the banks and the regulators in formulating the Market Risk Amendment and its subsequent modifications. Part II then considers why banks' business models started to change. It starts by describing the more popular story which foreground 'the forces of competition', before offering a complementary narrative, looking at the banks as 'agents of innovation'. Highlighting the agency of the banks offers a more accurate representation of the transformations in banking, and further contextualises the thesis' later analyses of the banks' active interventions in the establishment of Basel's market risk frameworks. Finally, Part III describes the contemporary

shifts to market-based, or shadow, banking. In describing these changes, Part III also considers some of the arguments as to why banking has become both more globalised, as well as more unstable.

I. Traditional commercial banking

i. The business of banking

Prior to the expansion and globalisation of banking in the 1960s, banks operated on a simpler business model in which they offered loans to commercial enterprises, government and, to a lesser extent, households, and themselves borrowed funds by issuing deposit accounts as well as through the interbank lending market. Banks' profits were derived from collecting the difference in spreads between the lower yield they paid on their short-term deposit liabilities, and the higher yield they received from offering longer-term loans.⁴⁰ Despite this relatively simple structure, there has been much disagreement about the precise framing of these processes, particularly with respect to the manner in which the banks funded themselves (the liabilities side of banks' balance sheets). Although this thesis is primarily engaged with developments concerning banks' investment activities (the assets side of banks' balance sheets) - notably with respect to the risk frameworks which underpin these activities - Chapter I provides an overview of the transformations on both sides of banks' balance sheets, looking at changes in banks' financing as well as their investment mechanisms.⁴¹ Because these two dimensions of the banking business have co-evolved, examining their historical developments together will help to better explain their contemporary forms.

The traditional view of banking presents banks as 'intermediaries', because their function is seen as gathering the savings of depositors and channelling them, in the form of loans, to those who need to borrow. In this view, banks do not generate new value but simply facilitate

⁴⁰ Heffernan, Shelagh. 2005. *Modern Banking*. John Wiley & Sons.; Casu, Barbara, Claudia Girardone, and Philip Molyneux. 2006. Introduction to Banking. Pearson education. Mehrling, Perry. 1996. 'Economics of Money and Banking'. *Coursera*, available at <https://www.coursera.org/learn/money-banking>

⁴¹ Kern Alexander describes banks' balance sheets as follows: '[o]ne side of the balance sheet describes the bank's assets (for example, loans, investments, cash, buildings, and equipment), while the other side of the balance sheet lists its liabilities, which include mainly debt and capital. Debt liabilities include deposits and other borrowings. Capital includes shareholder equity in the form of paid-in capital [as well as a few other asset classes].' Alexander, Kern. 2015. "The Role of Capital in Supporting Banking Stability." In *The Oxford Handbook of Financial Regulation*, Oxford University Press. p336-37.

the meeting of creditors and debtors by themselves borrowing from depositors, and using the funds acquired to make longer-term loans. In doing so, banks demand a higher interest on the debts they issue as payment for their services, and as compensation for the risks they incur. A well-known, and more refined, variant of this explanation is offered by the theory of 'fractional reserve banking'.⁴² From this perspective, banks are described as maintaining only a fraction of the deposits they receive, enough to meet the typical demands of short-term withdrawals. The rest of the deposits are then used to create loans. Banks are thus still perceived as intermediaries, because they only redeploy the funds borrowed from their depositors rather than using, or producing, their own forms of money. In contrast to simple intermediation theories however, fractional reserve banking does seek to explain how the banking system 'as a whole' is capable of stretching the total money supply, based on the 'money multiplier' logic.⁴³

From the perspective of most modern theories of banking, this traditional view is inadequate to the extent that it represents banks simply as 'channelling' idle funds towards more productive parts of the economy. In contrast, modern accounts of banking explain that banks actively create value or money. These 'credit creation' theories reveal how banks create new deposits, i.e. bank money, as they create new loans, and thus how banks have the power to generate money out of a series of accounting manoeuvres. Banks expand both sides of their balance sheets, adding a loan to their assets (a promise to pay from the borrower to the bank), and a deposit equivalent to their liabilities (a promise to pay from the bank to the borrower). The difference is that the loan will mature at a later date in time, and at a higher interest rate, whereas the bank promises to honour any of its borrowers' payments, or demands for cash, on demand. In other words, banks buy and sell debt in the expectation that the cash flow from their loans, or the debts they purchased, will exceed their own promises to pay. Traditionally, the way banks financed themselves was thus intricately linked with their loan-

⁴² According to Sgambati, '[t]his notion can be extensively found not only in mainstream textbooks of economics but also in critical accounts of modern banking, money and finance, and is used as an educational tool for learning money creation.' Sgambati, Stefano. 2016. "Rethinking Banking. Debt Discounting and the Making of Modern Money as Liquidity." *New Political Economy* 21(3): p276.

⁴³ The idea is that as banks make loans, their borrowers spend these funds elsewhere in the economy, the recipients of which will in turn place the funds received in another bank deposit (at the same or a different bank). These funds can then be loaned out again, despite the original borrower not yet having paid back in full. This process can continue up to a certain limit, which is the extent to which the total money supply can expand under a fractional reserve banking model.

making activities - banks generated their own deposit financing as part of the process of creating new loans.⁴⁴

These conflicting theories have important implications for how we understand banks' social functions, and the government support they receive to perform these functions. By characterising banks as 'intermediaries', the orthodoxy treats them as neutral agents whose role is simply to maintain a social equilibrium, matching the aggregate demand and supply of credit. Money and credit are thus kept distinct, in that the former is defined by deposits, and serve as the means for exchanging goods and services, whereas the latter are defined by bank loans, and are settled through the exchange of money. However, the fact that credit and money overlap - in that banks' debts constitute one form of money - implies that banks wield an enormous amount of power over the societies in which they operate.⁴⁵ This is because all of our promises or debts to each other ultimately rely on the credibility of banks' debts to each and every one of us. Even if banks engage in irresponsible or fraudulent activities that undermine their promises, in moments of crisis we remain compelled to protect them and the credibility and value of their debts, in order to maintain the security of our own positions.⁴⁶ Historically, this implicit protection has led banks to maximise their loan making in ways that have generated cyclical crises, the costs of which they have mostly managed to externalise.⁴⁷

Turning to an examination of the assets side of banks' balance sheets, because banks traditionally made their profits from collecting net income interest, they generally held onto their loan assets until they matured. This required banks to attend more closely to their borrowers' ability to meet their interest payments, as well as to repay their loans as they became due. Banks' investment decisions were thus largely focused on ascertaining the creditworthiness of their borrowers. Indeed, before the 1980s, when banks were not yet able to sell off huge quantities of assets originated on their own balance sheets, making

⁴⁴ Mehrling 1996.

⁴⁵ Sgambati 2016, p276.

⁴⁶ Konings, Martijn. 2018. *Capital and Time: For a New Critique of Neoliberal Reason*. Stanford: Stanford University Press.

⁴⁷ The point here is that although the traditional banking model was in some respects safer than contemporary forms of banking, it has always operated based on an expansionist logic enabling the banks to behave in extractive ways. And it is precisely these powers that have allowed the banks to innovate and re-invent themselves, which in part explains the transformations towards market-based forms of banking described in sections II and III of this chapter.

assessments of creditworthiness constituted a significant aspect of what banks did, and of the skills and capacities that they needed to develop.⁴⁸ Moreover, before the advent of credit scoring technologies, these assessments entailed costly data collection processes because determining the riskiness of loans required the accumulation of detailed information about their borrowers, and this information was mostly of a non-public and ‘relational’ nature.⁴⁹ As a result, banks frequently complemented these information collection processes with the development of personal relationships, particularly with their industry clients.⁵⁰

However, this account of banks’ traditional loan making activities has also been challenged, on the basis that banks’ borrowing prerogatives have meant they are much less concerned about their own borrowers’ ability to repay their debts than is usually claimed. According to these critiques, because banks are able to borrow so freely from society, they have simultaneously managed to make society liable for their debts. Banks can therefore engage in predatory and reckless forms of lending, without ever worrying about questions of insolvency, crises or austerity.⁵¹ Yet, despite their unique privileges, it is not the case that banks have always possessed unchecked borrowing powers. First, while they can pay their customers in deposit money, banks must pay each other in central bank reserves. They must therefore always ensure that they have sufficient reserves, or at least a guaranteed access to central bank reserves, to cover their debts to other banks. And second, as discussed below, in exchange for the state support they receive, banks are subject to regulations which limit their ability to make excessively risky investments. The real problem is that banks have become so central and powerful that they continuously re-invent themselves in ways which escape the above constraints. This will be the subject of Part II of this chapter, and further explains why and how banks have shifted towards contemporary forms of market-based banking.

⁴⁸ Lapavitsas, C., and P. L. Dos Santos. 2008. “Globalization and Contemporary Banking: On the Impact of New Technology.” *Contributions to Political Economy* 27(1): 31–56.

⁴⁹ Ibid.

⁵⁰ Ibid. See also Hardie, Iain, David Howarth, Sylvia Maxfield, and Amy Verdun. 2013. “Banks and the False Dichotomy in the Comparative Political Economy of Finance.” *World Politics* 65(4): 691–728.

⁵¹ As Sgambati writes ‘banks want us to get into debt regardless of whether we will honour it or not, because in the meantime they can make masses of money out of it. Debt is their goldmine.’⁵¹ Sgambati 2016, p275.

ii. Systemic vulnerabilities and regulatory responses

Although banking has always occupied a privileged position, and has consistently found ways to protect its privileges, the traditional banking system is often described as being more stable in comparison to contemporary forms of market-based banking. This relative stability is attributed to the fact that, even though the banks could issue their own debts and sources of funding, the types of debts which the banks historically financed themselves were far less developed than they are today. Moreover, on the assets side of their balance sheets, banks mostly invested in longer term loan assets which were marked to model rather than marked to market. And, as already mentioned, because banks' assets were held to maturity, this further meant that they selected their loans more carefully and monitored the quality of these loans throughout their lifespan. Nevertheless, the banking system has also always been marked by inherent fragilities, and governments have historically responded to the latter by subjecting banks to a series of capital adequacy requirements. In discussing these questions, this section foreshadows the importance of governments' and Basel's capital adequacy frameworks, notably the conceptions of risk which underlie them.

The vulnerabilities in banking arise from the distinctiveness of banks' business models, which depend on a much higher degree of leverage than in most other industries. As discussed in section I above, banks' liabilities consist almost entirely of debt, either in the form of deposits or of interbank loans, whereas they only consist of a low proportion of equity or 'own capital'. As a result, banks are particularly vulnerable to credit risk, i.e. the risk of default or of a deterioration in an asset's creditworthiness, because a small number of non-performing loans can rapidly drive a banking firm into insolvency. Moreover, since banks specialise in trading debts of different maturities, they are also exposed to liquidity, or cash-flow, risk. Banks minimise their cash holdings because cash produces no yield, however, the consequence is that they are constantly at risk of failing to meet their payment obligations. Finally, liquidity and credit risk are connected because depositors understand that their banks are vulnerable to failure, which makes them susceptible to panics and bank runs, thus turning liquidity into solvency crises.⁵²

⁵² Armour, John, Dan Awrey, Paul Davies, Luca Enriques, Jeffrey N. Gordon, Colin Mayer, and Jennifer Payne. 2016. *Principles of Financial Regulation*. Oxford University Press.; Moloney, Niamh, Eilís Ferran, Jennifer Payne, and Colin Mayer. 2015.

Because of these structural vulnerabilities, as well as the systemic importance of banks, states have become increasingly intertwined in the banking system, constraining it in some ways while also enabling its operations and expansions. As discussed above, governments today rely on banks to perform a number of critical social functions, including the distribution of credit and the operation of the payments system. As part of the management of the credit system, banks also provide households with deposit money, i.e. a more liquid form of money in which to hold their savings.⁵³ To prevent their banks from failing, which would risk disrupting these wider systemic functions, governments therefore typically provide their banks with two kinds of public backstops. The first is an insolvency backstop, which is provided through state deposit guarantee schemes. These schemes guarantee depositors access to their savings even when a bank becomes insolvent, thereby minimising the potential for panics and resulting bank runs. Liquidity backstops, on the other hand, rely on central banks to provide emergency liquidity support, so that banks can continue to meet their liability obligations regardless of the nature of their asset holdings.⁵⁴

The consequence of these different forms of state protection is the well-known problem of moral hazard, whereby banks, in the knowledge that the state will step in if the system at large is threatened, engage in riskier activities which themselves precipitate the possibility of systemic crises. The counter response has been to find alternative ways to constrain excessive risk taking, and this is where capital requirements come in. As discussed in the introduction of the thesis, up until the 2008 crisis, and even to a large extent today, the most important regulatory interventions in banking take the form of capital adequacy requirements.⁵⁵ The latter require banks to set aside a sufficient amount of 'own equity' to ensure that whenever losses are incurred, these losses are first absorbed from banks' own funds. By compelling banks to put their capital at risk, the purpose is to establish a disincentive for banks' shareholders and managers from taking on excessive risk. In doing so, these frameworks were

"Economic Development, Financial Systems, and the Law." In *The Oxford Handbook of Financial Regulation*, Oxford University Press.

⁵³ Mehrling 1996.

⁵⁴ Armour et al. 2016; Moloney et al. 2015.

⁵⁵ Tarullo argues that 'capital requirements have become the most important type of regulation designed to protect bank safety and soundness' and that 'Basel I both reflected and accelerated this growing emphasis on capital adequacy.' Tarullo, Daniel K. 2008. *Banking on Basel: The Future of International Financial Regulation*. Peterson Institute. Chapter Two.

designed to protect banks' creditors, including both depositors as well as the taxpayers who are implicated via the state's public backstops.⁵⁶

The most important, and contested, issue in this context revolves around the principles based on which banks' capital requirements are set, as they determine how expensive banks' investments will be and thus how much of their investments will be directed towards riskier assets. These principles depend on the rationale for the use of capital requirements, and therefore also on the conception of the risks which underlie them. As stated above, because capital requirements were historically imposed to protect the banks' creditors, national regulators understood that these frameworks could not just be concerned with the particular losses of individual banks, but must further ensure that the banking system is resilient enough not to externalise its losses.⁵⁷ Towards this end, banks' risks of loss were conceived in such a way as to capture the problem of moral hazard as well as banks' vulnerability to contagion. As Tarullo explains, because of the closely interconnected nature of the banking system, one bank failure can rapidly spread to another due to the credit extensions in the interbank lending market, or because a bank is expecting payments from a distressed bank for the accounts of its customers.⁵⁸

These are all systemic questions, meaning that the principles for calculating capital requirements were historically concerned with the systemic sources and pathways of banking crises. In balancing the costs (reduced financial intermediation) against the benefits (reduced risk of bank failures) of higher capital requirements, the calculation of these costs thus included macro-level examinations of the sources and accumulation of banking risks. The fact that states' capital adequacy frameworks were historically conceived in systemic terms, both with respect to their rationales as well as the levels at which they should be set, is of critical importance. As will be considered in the rest of the thesis, over time, banks have found ways to minimise their capital charges, and they have done so partly by intervening in the construction of core risk concepts in such a way as to diminish their systemic focus. This has

⁵⁶ Ibid. See also Armour et al. 2016 and Alexander 2015.

⁵⁷ Tarullo 2008, Chapter Two.

⁵⁸ As Tarullo argues, '[s]ince the social costs of widespread financial instability would be substantial and would not be borne solely by the shareholders and creditors of the bank whose failure triggered the crisis, the government might justify requiring higher levels of capital as an effort to align the social benefits and costs of the bank's operations more closely.' Ibid.

resulted in a re-alignment of governments' regulatory objectives with banks' own commercial interests, with particular outcomes for the stability and equity of the banking system and real economy.

II. Contemporary shifts in banking globally

Recent decades have witnessed a transformation of the banking business from the processes of deposit financing and loan investments described above, to a more complex system involving wholesale funding through the money markets and securitisation-based lending.⁵⁹ In other words, banks have changed their practices on both sides of their businesses, issuing novel forms of short-term debt in their liabilities while acquiring new and tradable kinds of instruments on the assets side of their balance sheets. Most theories explaining these transformations focus on the wider historical shifts in the conditions of competition in banking and finance, which they say have reduced banks' traditional sources of income and profitability, leading them to expand into market-based forms of banking intermediation. Interestingly, there is broad agreement in the literature - within heterodox accounts of finance, neoclassical economists as well as the legal literature on banking regulation - that the main causal factors behind these shifts are found in the changing competitive environment in which the banks must operate.⁶⁰

The following sections provide an overview of the main chronological developments that are typically highlighted within this recent history. However, section ii then goes onto complement these descriptions with arguments from a more recent set of literatures, which emphasise the major global banks' active participation in driving the development of market-based banking. Indeed, these banks were never opposed to the expansion of capital markets, what they wanted was to be able to enter these markets in order to offer their own intermediation services. Once this was achieved, they actually became important forces in facilitating the further growth of the capital markets and the financial sector. Highlighting the agency of the banks in this way offers a more accurate representation of the transformations

⁵⁹ Pozsar, Zoltan, Tobias Adrian, Adam Ashcraft, and Hayley Boesky. 2013. "Shadow Banking." *Economic Policy Review* 19(2): p13.

⁶⁰ See for example Armour et al. 2016 and Sweeney, Robert. 2019. "Transformation of Banking Reconsidered: How Feasible Is 'de-Financialisation'?" *Cambridge Journal of Economics* 43(4): 1053–71.

in banking. In addition, it is important for the purposes of this thesis in order to contextualise its later analyses of banks' interventions in the construction of regulatory market risk frameworks, which also became critical in supporting the shift of the banking industry towards a system of market-based banking.

i. The disintermediation of banking

The story of the unravelling of traditional banking begins in the 1960s when, as the financial markets expanded, banks started facing increasingly competitive market pressures on both the assets and liabilities sides of their businesses. On the assets side, companies which had been important purchasers of bank credit found that they could access capital in the financial markets by selling commercial paper.⁶¹ The latter are unsecured, short-term debt instruments whose rates are set in the money markets. Selling commercial paper was often cheaper than taking out bank loans, and therefore the market for commercial paper became an important alternative source of short-term operating capital.⁶² At the same time, the rapid growth of institutional investors like pension funds and life insurers greatly expanded the available pool of liquidity, creating a vast source of capital for more and more companies. These new actors benefited from a number of advantages, mainly because they did not have to provide banks' costly maturity or credit transformation services. The growth of institutional actors further drove the development of the commercial paper markets, as these instruments were both safer, due to their short maturities, and offered better yields.⁶³

Increasingly, banks' largest corporate customers also began to bypass the credit markets altogether, and instead financed themselves from their own retained earnings.⁶⁴ In the European context, it has been shown that the UK, France, Germany, Italy and Spain all saw a distinct rise in the use of internally generated funds by firms.⁶⁵ Part of the reason for this is

⁶¹ According to Sweeney, '[i]n not only the UK but also Germany and France, Schmidt et al. present data that the increasing share of securities on the liability side of NFCs' balance sheets began at least in the early 1980s. Corporate bond issuance did take off in the mid-to-late 1990s in the major European countries. But with the exception of France and the UK... debt has not been a major component of liabilities. The declining share of loans relative to securities in all five countries is overwhelmingly attributable to greater recourse to equity issuance.' Sweeney 2019, p1056.

⁶² Mehrling 1996; Armour et al. 2016.

⁶³ Armour et al. 2016, chapter 20.

⁶⁴ Lapavistas, Costas. 2013. "The Financialization of Capitalism: 'Profiting without Producing.'" *City* 17(6): 792–805.

⁶⁵ Sweeney 2019.

attributed to the generally diminishing levels of investment occurring in all these countries since the 1970s. Additionally, not only did non-financial companies stop seeking bank funding, but many subsequently turned into competitors of the banks in their own right, building new financial departments through which they began to offer loans, and to trade in equities and fixed income instruments. The financial arm of General Motors, to take a well-known example, now offers loans to the automotive industry, constituting one major sector that has moved away from bank loans.

On the liabilities side, traditional (including corporate) depositors also found more profitable alternatives to bank accounts in which to hold their savings, including most importantly, money market mutual funds, pension funds and insurance funds. Demographic changes and the privatisation of welfare further exacerbated the transfer of funds from bank deposits to this group of emerging investment vehicles.⁶⁶ With respect to money market mutual funds, these were often organised by large asset management companies, and offered liquid assets resembling bank deposits but with better yields. As mentioned above, these funds were able to rapidly expand as a result of the increasing supply of commercial paper, so that the competition from banks' buy and sell sides were further mutually reinforcing. In the US, between 1976 and 1982, US mutual funds' assets expanded from less than three billion dollars to around 230 billion dollars.⁶⁷ Today's top asset management firms which are the main providers of mutual funds – with BlackRock and The Vanguard Group leading the table – are significantly larger than the biggest 'Too Big To Fail' banks.⁶⁸

As for the pension funds, starting from the post-World War II period, the increased privatisation of retirement provision, supported by both US and UK tax incentives, redirected an enormous amount of funding from bank deposits into the hands of these institutional investors. In addition to the mutually supporting flow of funds arising out of the development of commercial paper markets, which pension funds also invested in, a further boost to the growth of pension funds came from the move in pension provisioning from defined benefit

⁶⁶ Ibid.; Helgadóttir, Oddný. 2016. "Banking Upside down: The Implicit Politics of Shadow Banking Expertise." *Review of International Political Economy* 23(6): 915–40.

⁶⁷ Armour et al. 2016.

⁶⁸ See the following table containing the top 400 asset managers: <https://www.ipe.com/Uploads/m/m/t/IPE-Top-400-Asset-Managers-2017.pdf>

plans towards defined contribution plans.⁶⁹ These plans do not guarantee specific benefits to members or beneficiaries, but rather, they transfer much of the price risk to their beneficiaries in that their liabilities are allowed to vary in accordance with the fluctuations in the value of their assets. This gave pension funds much more flexibility in their investment strategies, and thus further supported the aggressive expansion of these institutions.⁷⁰

Part of the reasons for the competitive constraints banks faced were the result of particular prudential rules, ironically designed with the purpose of insulating commercial banks. In the US, the Federal Reserve's regulation Q capped the interest rates on banks' deposits, thus limiting banks' ability to respond to the kinds of price competition discussed above.⁷¹ Other important measures include the US' regulations prohibiting interstate branching, which were originally designed to protect banks from being outcompeted by large out of state banks. However, these laws eventually produced the unintended effect of supporting the development of investment banks, as the latter could offer big public companies cheaper access to larger pools of capital. To provide the same services, commercial banks were forced to incur high transaction costs by creating a syndicate of many different banks, whereas a small group of investment banks could easily tap into countrywide bond markets.⁷² Finally, there was the Glass Steagall Act, which set up legal barriers between the commercial and investment banks. Again, counter to the intentions of the regulators, because investment banks could not access deposit funding, they consistently developed mechanisms for market-based intermediation to satisfy their corporate clients' needs and feed their own profit base.⁷³

⁶⁹ Armour et al. 2016, Chapter 20.

⁷⁰ Ibid.

⁷¹ According to Konings, '[o]f particular importance were the interest rate ceilings designed to limit competition among banks. Until the mid-1950s, banks only benefited from these rules, as it meant that the costs for deposits remained low. However, during the 1950s, as the Fed was gradually abandoning support for the Treasury's debt funding efforts, market interest rates started to rise. Whereas in the past large depositors, especially corporations, had had little reason not to park their temporary surpluses with banks, now other options opened up. Using surplus liquidity to buy short-term securities became more attractive than holding it with banks, and non-bank financial institutions suddenly found themselves in a much better position to attract funds than banks. Banks became strapped for funds and found themselves forced to cut down on corporate lending. As a result, corporations now also turned to the money market for their borrowing requirements. This meant that banks were being bypassed in two ways, on both the liability side and the asset side. The funding squeeze, in other words, had set in train an entire vicious cycle. Reversing this dynamic by broadening their deposit base was therefore of vital importance to the banks. But the two most obvious ways for banks to broaden their deposit base – paying for deposits and establishing branches – were forbidden by law.' Konings, Martijn. 2007. "The Institutional Foundations of US Structural Power in International Finance: From the Re-Emergence of Global Finance to the Monetarist Turn." *Review of International Political Economy* 15(1): 45.

⁷² Westerhuis, Gerarda. 2016. "Commercial Banking." *The Oxford Handbook of Banking and Financial History*: 110.

⁷³ Armour et al. 2016, Chapter 20.

In conclusion, at the same time as the banks were losing their depositor base, they also had to offer cheaper loans to their business clients to prevent them from turning towards a growing realm of institutional investors. To safeguard their profitability, banks therefore sought to re-orient their activities towards investment banking and the financial markets, a large part of which was now made up of household lending and bank mortgages. As a result, banks started demanding a series of deregulatory measures that would enable them to compete in these new lines of business. Domestic regulatory agencies in large financial centres, particularly the US, were receptive to many of these demands because they feared a weakening of their banking systems. As already mentioned, banking crises have serious implications not only for the payments system, but also for the wider economy because of banks' central role in the credit system, and their access to central banks' solvency and liquidity backstops. It was thus that a 20 year period began, in which many long-standing regulatory frameworks in banking were eroded or all together eliminated.⁷⁴

ii. Banks as agents of financial innovation

While there has been significant external pressure on the banking business, as discussed in section I, banks have historically occupied a uniquely privileged social position which rarely placed them at the mercy of prevailing market forces. By framing the transformations of banking only in terms of changing competitive conditions, we perpetuate banks' own narratives about the most relevant causal factors in their history, among which they themselves are notably absent. In contrast, another set of explanations, often drawing on Minsky's theories of banking, have become more popular since the 2008 crisis. These perspectives often begin with a focus on banks as the primary agents of financial innovation. As Minsky wrote in the mid-1980s, 'a banker is always trying to find new ways to lend, new customers, and new ways of acquiring funds, that is to borrow; in other words, he is under pressure to innovate.'⁷⁵ In this account, banks are thus dynamic agents, actively seeking to expand and increase their profits through techniques of debt-financing and speculation.⁷⁶

⁷⁴ Armour et al. 2016.

⁷⁵ Minsky, Hyman P. 1986. *Stabilizing an Unstable Economy*. New Haven and London: Yale University Press. p237.

⁷⁶ Ibid. p177. See also Konings 2007, p45 and Ewald Engelen, Ismail Ertürk, Julie Froud, Sukhdev Johal, Adam Leaver, Mick Moran, Adriana Nilsson, and Karel Williams. 2011. *After the Great Complacency Financial Crisis and the Politics of Reform*. Oxford University Press.

Although financial markets experienced a rapid growth in the advanced economies since the mid-C20th - for reasons including the marketisation of social security systems, increasing inequality & the corresponding search for yield among asset holding classes, the financialisation of housing and so on - the banks rarely lobbied their governments to suppress these changes. Instead, they continuously found ways to break into these markets, and even spearheaded the growth of these markets from within. To do so, banks relied on techniques of financial innovation, lobbied for regulatory reform, and engaged in corporate restructuring & consolidation. New instruments and practices were developed for both their financing and investment activities, creating cheaper sources of financing as well as new investment opportunities and more efficient ways to generate returns. Moreover, as some of these innovations came up against regulatory constraints, the banks lobbied their governments to ensure they would receive adequate regulatory support. The result, as discussed below, was not only an evolution in banks' business practices, but also a restructuring of their ownership structures leading to ever larger, and more complex, banking conglomerates.⁷⁷

Innovations in banks' financing mechanisms have involved more aggressive reliance on central banks' lending facilities as well as the development of new deposit-like instruments such as certificate of deposits (CDs) and other forms of short-term debt instruments, including repurchase agreements and commercial paper. On the assets side of the banks' balance sheets, the banks found new markets in emerging economies, lower income households as well as other investment opportunities resulting from the overall financialisation of the economy.⁷⁸ Moreover, banks succeeded in gradually shifting towards market-based forms of intermediation, meaning that they could now generate new streams of profits by trading for their clients' as well as their own accounts. These trading activities both depended on and further supported the creation of new tradable assets, including securitised loans and a multiplying range of derivatives. All of these opened up vast opportunities for speculation and short-term investment gains. Particularly with respect to the rise of derivatives trading, these

⁷⁷ Armour et al. 2016; Engelen et al. 2011; Sweeney 2019; Konings, Martijn. 2011. *The Development of American Finance*. Cambridge: Cambridge University Press; Nicole Cerpa Vielma, Hasan Cömert, Carmela D'Avino, Gary Dymski, Annina Kaltenbrunner, Eirini Petratou, Mimoza Shabani. 2019. "Too Big to Manage: US Megabanks' Competition by Innovation and the Microfoundations of Financialization." *Cambridge Journal of Economics* 43(4): 1103–21. 2019. "Too Big to Manage: US Megabanks' Competition by Innovation and the Microfoundations of Financialization." *Cambridge Journal of Economics* 43(4): 1103–21.

⁷⁸ See Cerpa Vielma 2019.

contracts have enabled the banks to greatly increase their leverage, because unlike loans, derivatives require very little funding for banks to enter into extremely large investment positions.

a. Liability-side innovations

Looking back at the story of banking disintermediation, while the banks were indeed losing their traditional sources of income and profitability, they also actively participated in the transformation of their sector. Although the banks historically adopted a passive approach to the accumulation of funding (deposit funding was mostly determined based on the economy's banking needs), they gradually turned towards active strategies of 'liability management'.⁷⁹ In the 1960s, US commercial banks began to aggressively use the fed funds market to expand their credit services for large corporations. When they reached the limits of the fed funds market, banks began to rely on new debt instruments such as Certificates of Deposit (CD) and repurchase agreements (repos).⁸⁰ Although, like bank deposits, CDs were limited by interest rate ceilings, the banks were nevertheless allowed to offer higher rates on them because of the limited time periods associated with CDs. And to overcome the lack of liquidity resulting from these limitations, the banks created secondary markets for CDs to ensure their desirability as a store of funds.⁸¹ As for repurchase agreements, while these had only been in sporadic use in the early C20th, they re-emerged as a more prevalent form of cheap financing in the 1950s.⁸²

The Federal Reserve could have shut down the market for CDs by extending Regulation Q's interest rate ceiling, but instead it allowed the rates on CDs to keep rising. Konings explains this on the basis of banks' successful attempts to present the widespread reliance of CDs as a 'fait accompli', such that 'by the time the Fed had fully clued in to the implications of these developments it could not have killed off the market without causing a serious financial crisis.'⁸³ Throughout the 1960s, the same struggle unfolded with other forms of short-term

⁷⁹ Konings 2007, p45.

⁸⁰ Cerpa Vielma et al. 2019, p1111.

⁸¹ Konings 2007, p47.

⁸² Garbade, Kenneth. 2006. "The evolution of repo contracting conventions in the 1980s." *Economic Policy Review* 12(1): 27-42.

⁸³ Konings 2007, p47.

debt, including the issuance of commercial paper and the use of repurchase agreements. Any attempts to limit these sources of funding were met by the exploitation of new loopholes so as to replace, and expand, banks' access to cheap debt.⁸⁴ Gradually these gains were consolidated so that in 1980 Congress passed legislation removing any restrictions on the rate of interest, the same year that an administrative ruling was passed allowing banks to start selling commercial paper. And in 1982, these victories were extended by the Garn-St Germain Act, which allowed banks to establish the equivalent of money market deposit accounts.⁸⁵ All of these liabilities-based innovations served to bolster banks' counter-intrusion in other financial firms' sources of funding, thus challenging the idea that banks were being outcompeted.

b. Asset-side innovations

While the CDs supported banks' continued growth, they also supported banks' competitors, especially the money market mutual funds. According to Cerpa Vielma et al., the banks responded by fighting back with a series of 'innovations driven jointly by adversity and opportunity considerations.'⁸⁶ Most of these innovations related to banks' investment, or assets-side, activities. First, the banks started lending in enormous quantities to resource rich areas such as the southern 'oil patch' states and Latin American countries. Second, they began to develop loan participation schemes, allowing multiple banks to jointly service larger loans. Most importantly, however, the banks redirected significant proportions of their investments towards households' consumption needs, in large part thanks to the establishment of government agencies which created secondary markets in loans, especially in mortgages. These agencies allowed many borrowers previously excluded from the credit system to gain access to mortgage funding, a shift which was also highly profitable for the banks. As Konings' writes '[b]y buying, pooling and standardising mortgage loans they enhanced the liquidity of

⁸⁴ Ibid. What is meant here by the exploitation of loopholes is that the banks resorted to new financial techniques to circumvent the Fed's interest rate ceilings so that they could attract more funding. The most important one was the large scale issuance of CDs, which securitised huge swathes of credit relations which had traditionally not been a part of the financial markets. Other forms of financial innovation include the issuance of commercial debt and repurchase agreements. And most importantly, many of these techniques were eventually applied abroad in the Euromarkets.

⁸⁵ Armour et al. 2016.

⁸⁶ Cerpa Vielma et al. 2019, p1107.

banks' asset portfolios, in this way increasing not only their ability to extend new mortgages but their credit-creating capacities at large.⁸⁷

A significant novelty of these securitised forms of mortgage lending is that they allow banks to create many more new loans, but also to immediately sell off the loans which they originate. As a result, banks' earnings are derived from the sale of the loan rather than from their interest payments. As described in greater detail in part III below, securitisation entails the bundling of loans which are subsequently separated into 'tranches' and sold off to counterparties who take on varying levels of risk depending on the characteristics of the securitised assets. Throughout the 1980s and 1990s, the resulting expansion of the commercial banks and their involvement in the capital markets led to the erosion of the Glass-Steagall Act. As Cerpa Vielma et al. argue, '[s]omething had to give: either financial markets' incursions onto banks' turf or banks' inability to operate freely in the markets. The path-dependent policy bias towards ensuring the viability of money-centre [commercial] banks predetermined the answer.'⁸⁸ Step by step, the Federal Reserve allowed increasing affiliations between the commercial and investment banks, until Glass-Steagall was officially repealed through the Financial Services Modernisation Act of 1999.⁸⁹

A major impact of the Modernisation Act was its facilitation of ongoing mergers between different financial companies, leading to the consolidation of large financial conglomerates. In fact, these trends had already started earlier in the decade, with regulations such as the Riegle-Neal Act of 1994 that repealed restrictions on banks from operating in more than one state, thereby enabling banks from different states to join forces under one ownership structure. J.P. Morgan and Chase merged first, bringing together the former's investment banking business with Chase's retail bank. Citibank, which had an international business

⁸⁷ Konings, Martijn. 2009. "Rethinking Neoliberalism and the Subprime Crisis: Beyond the Re-Regulation Agenda." *Competition & Change* 13(2): 114. In the same article, he further writes '[T]he Clinton administration did little to reverse the Republican cutbacks on public schemes for income-provision and instead promoted wider access to financial products and services, giving intermediaries incentives to increase their lending to lower-income Americans. Maximum rates were abolished, so households not seen as creditworthy in the past now became very attractive as customers because they could be charged high rates and fees.' Konings 2009, p121.

⁸⁸ Cerpa Vielma et al. 2019, p1109.

⁸⁹ Tarullo 2018, chapter 2. Cerpa Vielma et al. write that over time, 'private-sector underwriters emerged to facilitate the securitisation of housing not qualifying for GSE underwriting. Hedge funds and other investment vehicles emerging in the deregulation era, all seeking above-market returns, provided ready market demand for these assets. Consequently, ever more classes of credit were securitised, and total securitisation climbed from \$400 billion in 1995 to \$2.7 trillion in 2008.' Cerpa Vielma et al. 2019, p1109.

spanning consumer banking worldwide, also brought investment banking within its remit by merging with Travelers. This deregulation of commercial banking took place well beyond the US, most prominently in Japan, the European countries and Canada. Indeed, banking institutions within these jurisdictions increasingly focused on mergers & acquisitions, product diversification and the globalisation of their operations.⁹⁰

In Japan, for example, the Big Bang reforms were introduced to modernise the banking system. As a result of the loosening of pre-existing universal banking restrictions, a series of mergers enabled the creation of large Japanese financial conglomerates. In Europe, the most significant driver for financial deregulation was brought about by the establishment of the single market, enabling the free movement of capital and the right of financial institutions to provide their services, and set up new establishments, in all EU member states. In countries like France, Germany and the UK, where commercial banks could already underwrite securities, these activities took up a larger proportion of their businesses. Commercial banks increasingly diversified into investment banking so that they could help their corporate clients better access European and international money and capital markets. European regulation explicitly sought to support the diversification of commercial banks, the Second Banking Directive of 1989, for example, enabled the development of bancassurance. This facilitated the integration of insurance services within banks, either through mergers and acquisitions with insurance companies or through the creation of insurance subsidiaries.

In her summary of the evolution of banking after World War II, Westerhuis argues that it was during this time that 'a new type of universal bank with a large international presence and a broad range of activities developed.'⁹¹ These conglomerates were not only 'extremely large' but also dominated 'an important part of the economy, as is shown by their large share of gross domestic product.'⁹² Based on their steady concentration and growth, we can therefore assume that the banks were key players in shaping these developments. Indeed, in Christophers' analysis of the financial markets for equities, fixed income, foreign exchange and commodities, he demonstrates that 'as financial systems become more market-based

⁹⁰ Westerhuis 2016.

⁹¹ Ibid. p15

⁹² Ibid.

they often also become more bank-based... financial markets are, in large part, banks and their interaction.⁹³ Thus, to conclude this section on the reasons why the traditional banking business evolved so significantly, this account provides a complementary narrative to the mainstream story of competition and financial innovation, and exposes the many ways in which the banks have actively shaped their ownership structures and business models. In doing so, it also offers an important backdrop against which the thesis will consider the interventions of Basel's market risk device.

III. Market-based banking

As a result of these transformations, the banking system is no longer limited to processes of deposit financing and loan-making, but further comprises a series of institutions which lend directly through the capital markets. According to Gabor, the best way to comprehend contemporary forms of banking, often referred to as 'shadow banking' or 'market-based banking', is in terms of a set of intermediation processes organised around the production and trading of financial securities.⁹⁴ Traditional forms of credit-based banking are still important, but they are connected to, or sit on top of, a much larger and globalised form of banking which operates through wholesale money market funding and capital markets lending. An important feature of contemporary market-based banking is thus its highly integrated nature with financial markets. Pozsar et al. define its essence as follows:⁹⁵

[t]he shadow banking system decomposes the simple process of retail-deposit-funded, hold-to-maturity lending conducted by banks into a more complex, wholesale-funded, securitization based lending process. Through this intermediation process, the shadow banking system transforms risky, long-term loans (subprime mortgages, for example) into seemingly credit-risk free, short-term, money-like

⁹³ Christophers, Brett. 2015. "Against (the Idea of) Financial Markets." *Geoforum* 66: p92. See also Cetorelli et al. who argue that the 'banks have shown a remarkable capacity to adapt to the evolving system of intermediation, continuing to provide... those services needed to facilitate the matching of fund supply and demand', further, 'when nonbank intermediation has come into play, banks have actually supported its growth.' Cetorelli, Nicola, Benjamin H Mandel, and Lindsay Mollineaux. 2012. "The Evolution of Banks and Financial Intermediation: Framing the Analysis." Federal Reserve Bank of New York Economic Policy Review 18(2): p3.

⁹⁴ Gabor, Daniela. 2018. "From Shadow Banking to Market Based Finance: Old Wine in New Bottles?" <https://www.youtube.com/watch?v=IUhF0qft53c>.

⁹⁵ Pozsar et al. 2013, p7.

instruments, ending in wholesale funding through stable net asset value shares issued by MMMFs that require daily liquidity.

In other words, the chains of financial intermediation have been lengthened and in various respects re-organised, with banks re-surfacing at different points alongside, and often incorporating, a new set of financial institutions.

A central feature of market-based banking has been the development of the securitisation industry, in which banks, often through their subsidiaries, originate loans on their balance sheets which they then sell off to a range of special purpose vehicles (SPVs). In the years leading to the global financial crisis, the banks often set up these satellite entities as legally independent institutions – so that the loans sold to them could be taken off banks' balance sheets – but maintained credit lines with the SPVs in the event of the latter's insolvency. The SPVs' role is to pool the loans and restructure them into a variety of asset-backed securities, notably in the form of collateral debt obligations (CDOs). This is the 'magic of securitisation', whereby a large pool of loans of varying credit ratings are pooled together and tranced into different asset classes, with the highest tranches entitled to repayment first so that each junior tranche acts as a form of credit enhancement for the more senior tranches. These CDOs are then sold to a range of investors, including hedge funds who purchase the riskiest assets in search of higher yields, and institutional investors who seek safe AAA assets; a portion of the securities are also retained by the sponsoring dealers.⁹⁶

i. Money market borrowing & capital markets lending

In the shadow banking system, it is the institutional investors making up the wholesale money markets who provide the ultimate source of funding for the system's credit operations.⁹⁷ As

⁹⁶ Shadow banking is made up of two main channels of intermediation, the second being the market for repurchase agreements. As Murau writes, 'the three shadow money forms are produced via two main channels of shadow banking: that of security intermediation (repo channel) and that of securitization via structured assets (ABCP channel). MMMFs connect both these channels with the ultimate savers, i.e. institutional investors and, to a much lesser extent, households. Taken together, this market-based credit system conducts 'money market funding of capital market lending.' Murau, Steffen. 2017. "Shadow Money and the Public Money Supply: The Impact of the 2007–2009 Financial Crisis on the Monetary System." *Review of International Political Economy* 24(5): p807.

⁹⁷ These shifts have been discussed at length in textbooks, such as in Armour et al. 2016, as well as in critical macro-finance literatures, see for example: Nesvetailova, Anastasia. 2017. *Shadow Banking: Scope, Origins and Theories*. Routledge and Ban, Cornel, and Daniela Gabor. 2016. "The Political Economy of Shadow Banking." *Review of International Political Economy* 23(6): 901–14. They have also been discussed by economists

discussed in part I, in traditional commercial banking, the banks financed themselves through deposits, and their business strategies were mainly directed at the competition for new deposit accounts from other banks.⁹⁸ Collectively, they also sought to expand their loan making activities. In that context, resorting to the money markets made little sense as they were populated by savvy professional investors, who were highly adept at extracting large yields from their customers. The banks therefore only relied on money market funding when they suffered from short-term funding gaps.⁹⁹ However, as institutional investors became the recipients of the wealth traditionally stored in bank deposits, the banks found ways to create money-like instruments such as Certificates of Deposits, while also pioneering what some have described as new forms of money to borrow more cheaply from the growing number and size of institutional investors.¹⁰⁰

These new instruments constitute a significant development in today's market-based banking system, and have been characterised as new kinds of 'shadow' money.¹⁰¹ In transacting with the institutional investors, banks were driven to develop alternative forms of short-term liabilities, as traditional deposit money could no longer serve as an adequate store of wealth for these investors (banks' new liability holders).¹⁰² This is because the safety of bank deposits is guaranteed by state deposit insurance schemes, which are capped at sums far below the funds at the disposal of any single institutional investor.¹⁰³ Banks' new short-term liabilities

working in central banks, including in Pozsar, Zoltan. 2015. "A Macro View of Shadow Banking: Levered Betas and Wholesale Funding in the Context of Secular Stagnation." And Pozsar, Zoltan, Tobias Adrian, Adam Ashcraft, and Hayley Boesky. 2013. "Shadow Banking." *Economic Policy Review* 19(2): 1–16.

⁹⁸ Mareike Beck, Samuel Knafo. 2020. "Financialization and the Uses of History". In *The Routledge International Handbook of Financialization*, ed. Philip Mader, Daniel Mertens, Natascha van der Zwan. Routledge, 136-146.

⁹⁹ Ibid.

¹⁰⁰ Many scholars today speak explicitly in terms of shadow money, see for example: Gabor, Daniela, and Jakob Vestergaard. 2016. "Towards a Theory of Shadow Money." *Institute for New Economic Thinking, INET Working Paper* and Murau, Steffen. 2017. "Shadow Money and the Public Money Supply: The Impact of the 2007–2009 Financial Crisis on the Monetary System." *Review of International Political Economy* 24(5): 802–38.

¹⁰¹ As Sgambati writes '[a]lthough scholars might disagree as to whether cash equivalents are truly money or not, central bankers, managers of foreign exchange reserves, corporate treasurers, and institutional investors unequivocally refer to them as simply cash.' For them, "money begins where M2 ends". And indeed, according to Ricks "calling the holders of these instruments 'investors' is somewhat misleading. Holders of cash equivalents usually think of these instruments, together with currency and checkable deposits, as precisely the resources they are not investing.' Sgambati, Stefano. 2019. "The Art of Leverage: A Study of Bank Power, Money-Making and Debt Finance." *Review of International Political Economy* 26(2): 299.

¹⁰² Gabor, 2018a

¹⁰³ Ibid.

include instruments like repurchase agreements (repos)¹⁰⁴ and commercial paper (CP), both of which rely on their own internal mechanisms, rather than public backstops, to guarantee their promises. With respect to commercial paper, these are short-term instruments that are renewed on a rolling basis, whereas repos involve the posting of collateral so that the credibility of these short-term promises are supported by the value of the collateral.¹⁰⁵

While these new forms of money are more suitable for institutional investors' demand for safety, they also better serve banks' needs by allowing them to borrow in greater quantities and more cheaply. Banks benefit from producing new forms of money because it allows them to delay settlement in state backed money, which allows them to expand their credit operations. As numerous monetary historians have shown, new types of money appear in the process of financial innovation in order to delay settlement in state money or state backed money, as it enables more spending without diminishing the money spending power of someone else.¹⁰⁶ In other words, through the production of additional layers of money (which contain the credible promise to convert at par), the banks are able to expand their borrowing power and thus their ability to generate greater amounts of credit.¹⁰⁷ For example, using asset-backed commercial paper, SPVs and bank subsidiaries funded their parent banks' securitisation business, while broker-dealers like Lehman Brothers used the securities thereby produced as collateral to create repo money and fund their other investment activities.

¹⁰⁴ A repurchase agreement is in essence a collateralised loan for a short time period, typically a business day, legally constructed as a sale and subsequent repurchase. In the first leg of a repo transaction, money flows from the lender to the borrower, who sells collateral assets to the lender. The funds can then be used to pay the borrower's liabilities, or purchase other financial assets. In the second leg, the borrower is obligated to repurchase equivalent collateral, at a price higher than the initial sale.

¹⁰⁵ To understand shadow money it is helpful to think in terms of 'moneyness', i.e. the ability to convert any kind of liability including bank money into state money, i.e. cash or central bank reserves, at par and on demand. Banks are responsible for maintaining the value of deposits, in other words maintaining convertibility at par and on demand by ensuring that they are always able to meet their short-term liabilities. States support the moneyness of bank deposits through state deposit insurance schemes, as these guarantee a one to one conversion rate up to a capped sum per deposit account. With respect to shadow money, if we understand bank money as the debt of banks brought into being through loans to business and households, we can similarly understand shadow money as the debt of securities traders brought into being as they seek to finance their trading in securities. Just like with the historical development of bank money, the impetus to monetise new kinds of debt as shadow money is to create a set of safe instruments through which shadow banks can make credible promises to store value while also expanding their ability to provide liquidity and credit. Gabor, Daniela. 2014. "Rethinking Economics: Money and Banking" <https://www.youtube.com/watch?v=BfxlhN1yb30>

¹⁰⁶ Ibid.

¹⁰⁷ Interestingly, in the traditional banking system, the pace of expansion depended on investor confidence, central bank interest rates and reserve requirements if the system had any. Under shadow banking, it depends on how many securities are available, especially safe assets, if there are constraints on re-use, and the volumes of government debt as banks prefer collateralising government bonds.

Armed with these novel mechanisms to generate vast amounts of additional short-term debt, the banks also innovated on the assets side of their balance sheets, finding new activities and instruments through which to re-invest their debts. Most importantly, as the financial system evolved through the expansion of securities and derivatives markets, banks started trading as a primary source of income. As discussed in part II above, from the 1980s onwards, banks around the world merged with securities and insurance companies, and started focusing on growing their trading, as opposed to their banking, books. The mainstream justification for these activities is not just that governments were compelled to save their banks in the face of emerging competitive pressures, but that banks play a productive role in the economy as market-makers. By standing ready to buy and sell a range of financial products, the banks use their expansive networks to connect different actors and create a market for these products, including by ensuring the ongoing production of prices. These market-making activities are thus justified in liquidity terms, through which more investments are said to flow towards the real economy.¹⁰⁸

In performing their market-making roles, the banks distinguish themselves from speculators, or proprietary traders, in that they claim to operate on a neutral or ‘matched book’ basis. This means that for any position a bank enters into, it will seek to hedge the resulting exposure by entering into an off-setting trade, either by transacting with another client, or with other banks. Theoretically, banks thus make their profits by charging a fee derived from their bid-ask spread, i.e. the margin banks maintain for acting as market makers, rather than by taking a speculative position on the future direction of the market.¹⁰⁹ In practice, however, their books are rarely neutral because banks profit from taking positions and knowing where to find the securities they need (rather than maintaining inventories of countervailing securities).¹¹⁰ The real money in the business thus comes from obtaining better market information than anyone else, and from their privileged access to the money markets.¹¹¹ As Mehrling argues, banks ‘take positions... they speculate on how prices will change in the future’,¹¹² and are thus vulnerable to market risk. Banks speculate by going long in securities

¹⁰⁸ Mehrling 1996, p68

¹⁰⁹ Armour et al. 2016, p468

¹¹⁰ Mehrling 1996, p71

¹¹¹ Mehrling 1996, p72

¹¹² Mehrling 1996, p 72

if they believe prices will go up, but mostly they bet on prices fluctuating in both directions and will attempt to be net long in some securities, and net short on others.¹¹³

The reason why the banks are able to claim that they do not engage in speculative trading - and that their trading activities are only undertaken for the purposes of market-making, trading for clients' account or hedging - is because it is practically impossible to discern whether a trade has been entered into for their stated reasons, or if instead it should be classed as proprietary trading.¹¹⁴ In fact, many transactions may be carried out for multiple reasons, '[a] classic proprietary trade might, for instance, provide market liquidity and/or diversify the bank's other risk positions as well as providing a profit opportunity.'¹¹⁵ Although market-making implies an intermediary role, banks 'almost always' perform these activities whilst 'acting as a principal.'¹¹⁶ Moreover, for certain kinds of illiquid assets, the banks cannot rely on their market knowledge to access these securities on customer demand, and therefore do maintain an (un-matched) inventory of these assets in the expectation of future sales. Some banks also help their clients' trading activities by providing financing or assisting them in the issuance of financial instruments, and all of these services require banks to take a position as a principal.

Ultimately, the question as to whether speculative trading constitutes a significant portion of banks' revenue depends on their willingness to declare particular transactions as speculative, hence their widespread invisibility. The problem lies in the lack of any standard accounting rules that would enable regulators, as well as the public, to adequately identify and classify investment banking activities.¹¹⁷ This resulting confusion has contributed to extensive risk-taking, as Gillian Tett writes:¹¹⁸

¹¹³ Pozsar hypothesises that 20% of global bank activities occur on a 'speculative books' basis. Pozsar, Zoltan. 2015. "A Macro View of Shadow Banking: Levered Betas and Wholesale Funding in the Context of Secular Stagnation."

¹¹⁴ Proprietary trading is defined in many ways, some definitions include market-making or hedging, and others do not. This is where much of the disagreements lie.

¹¹⁵ Murphy, David. 2020. *Proprietary Trading Review*. Bank of England, p14.

¹¹⁶ *Ibid.*

¹¹⁷ Engelen et al. 2011, chapter four; Crotty, James, Gerald Epstein, and Iren Levina. 2010. "Proprietary Trading Is a Bigger Deal than Many Bankers and Pundits Claim." *SAFER Policy Brief* 20(2): 18.

¹¹⁸ Tett, Gillian. 2008. "Battered banks face regulators' harder line on trading books." *Financial Times*. See also Crotty et al.: '[t]he analysis in the Wall Street Journal on January 21, 2010 was typical: Proprietary trading makes up about 10% of Goldman Sachs revenue, 5% of Citi's, less than 5% of Morgan Stanley's, and less than 1% for Bank of America and J.P Morgan.' However, '[d]ata from secondary literature makes it immediately obvious the oft quoted percentages are too low. For example, Morrison and Wilhelm report that in 2007, Goldman made \$31 billion dollars in revenue from "Trading and Principle

[prior to the crisis] UBS had quietly stockpiled tens of billions of dollars of so-called super-senior CDO tranches on its trading book, supposedly because it planned to sell these to investors (although it is unclear whether the bank expected such sales to occur.) The bank made little provision against the chance of these instruments turning sour, because the models implied a negligible risk of losses. When the price of these super-senior tranches collapsed by up to 30 per cent late last year, this created more than \$10bn (£5.1bn, €6.4bn) worth of trading book losses for which the bank had set nothing aside.

By 2008, the major trading banks had lost an estimate of \$230 billion on their super-senior CDO proprietary holdings, disguised as a variety of transactions in different parts of their balance sheets. Since the 2008 crisis, evidence of proprietary trading has become even harder to find, as public criticism has sharpened and the threat of re-regulation increased. However, as Engelen et al. argue, '[i]ts continuing importance is indicated by the effort invested in new ways of finding funds for levered trades.'¹¹⁹

The large global banks today trade in all the major financial markets, including the money markets, foreign exchange markets, the markets for derivatives, commodities markets and the capital markets (equities and bonds). They are involved in intermediating the bonds and equities companies issue to finance themselves, and as households have entered into larger amounts of debts, the banks have similarly placed themselves at the heart of these transactions, creating and trading securitised mortgages and other loans. Not only have they expanded their trading operations in all of these markets, but the banks' increasing involvement in the capital markets has in fact driven the rapid growth of these markets. Indeed, unlike what is often argued, and what this chapter has sought to highlight: bank-intermediation *does not compete* with, but rather *expands* the financial markets. Banks continuously create new forms of debt (including financial assets for them to invest in as well as money assets through which they fund themselves) while simultaneously pushing finance's reach into new areas, like household consumption or infrastructure investment, so that private finance & banking increasingly intermediates all spheres of economic activity.

Investments" which amounted to 68% of their net revenue in that years (2007, p. 302). So, the 10% figure cited by Goldman and repeated in the press is rather puzzling.'

¹¹⁹ Engelen et al. 2011, Chapter Four

ii. Criticisms of market-based banking

This final section provides an overview of some of the wider problems associated with the shifts to a market-based system that is organised around the production and trading of financial securities. In discussing the underlying mechanics and influence of banking, as well as its transformation into a system of ‘whole-sale funding and capital markets-based lending’, this chapter has already shown how contemporary banks perform far greater amounts of credit intermediation compared to traditional banking. On the one hand, the shadow banking system today issues vastly larger amounts of short-term debt, allowing it to lever up in excessive ways. On the other hand, as a result of the development of the markets for securitisations and repos, as well as the markets for derivatives, the banks are further able to pursue much more aggressive investment strategies. Following an examination of the arguments in favour of market-based banking, this section ends with a set of responses illustrating banks’ excessive risk-taking, the costs of which we know are largely externalised.

According to the advocates of market-based banking, its various innovations are generally described as more efficient mechanisms for allocating risk, and are thus further credited for producing liquidity enhancing effects.¹²⁰ Prior to the 2008 crisis, the general narrative in the finance community was that the combination of these different innovations had successfully reduced the system’s overall risk levels.¹²¹ First, as discussed above, the developments in securitisation were seen as having generated a sophisticated framework that could fairly and effectively cater to a spectrum of investor risk profiles, creating low risk low return safe assets as well as high risk high return senior CDOs. More significantly, a central claim of modern finance theory was that the shadow banking system had successfully created its own credit and liquidity backstops, through the production of a range of derivative instruments like interest rate swaps and credit default swaps. Derivatives are financial assets whose value or expected performance is determined by reference to an underlying asset, rate or index.¹²² They entitle their owners to buy or to dispose of an asset, depending on the materialisation

¹²⁰ Shiller, for example, argues that the consolidation of a shadow-bank-augmented system of market-driven finance will permit more efficient, less disruptive risk-sharing. Shiller, Robert. 2012. *The subprime solution, how today’s Global Financial Crisis happened, and what to do about it*. Princeton University Press.

¹²¹ Armour et al. (2016), Chapter 13

¹²² The most common derivatives are interest rate swaps, currency futures and credit default swaps, which give buyers the option to buy protection against fluctuating interest rates, currencies and defaults.

of a set of future circumstances in relation to the ‘underlying’. In this way, they are justified as hedging instruments, to the point of being characterised as private contractual mechanisms capable of stripping out, and re-allocating, the risks of any financial asset.

Prior to the Global Financial Crisis, both the advent of securitisation and the rise of derivatives trading were staunchly defended for supporting the creation of more liquid securities markets. Not only were they credited for increasing the supply of investments to the real economy, but the process of securitisation in particular was touted as a set of progressive techniques capable of directing massive private financial flows towards poorer households who had thus far been excluded from the mortgage market, and the ability to own their own homes. These kinds of arguments were persistently defended by a wide array of private financial actors, as well as many high-profile regulators. In the words of Ben Bernanke, Chair of the Federal Reserve from 2006 to 2014, for example:¹²³

We should also always keep in view the enormous economic benefits that flow from a healthy and innovative financial sector. The increasing sophistication and depth of financial markets promote economic growth by allocating capital where it is most productive. And the dispersion of risk more broadly across the financial system has, thus far, increased the resilience of the system and the economy to shocks. When proposing or implementing regulation, we must seek to preserve the benefits of financial innovation even as we address the risks that may accompany that innovation.

Since 2008, however, the problems of shadow banking are better understood and more widely known. To begin with, the first stages of securitisation were rife with irresponsible and fraudulent lending, as banks and other loan-making firms were incentivised to maximise loan creation to earn more fees. Moreover, since the banks had begun trading again, they were able to shift many of the loans they originated off their balance sheets, freeing up capital that would otherwise have had to be kept under Basel’s capital rules. This continued even though many of the securitised loans were bought by the SPVs which, as already mentioned, maintained legally binding credit lines with their parent banks. The major banks thus made

¹²³ Bernanke, Ben. Regulation and Financial Innovation. *Federal Reserve Bank of Atlanta’s 2007 Financial Markets Conference*. Sea Island, 15 May.

large capital savings despite burying their risks in complex ownership structures and accounting manoeuvres, a situation exacerbated by the fact that even the assets *on* banks' trading books required fewer capital charges since the adoption of Basel's Market Risk Amendment of 1996.¹²⁴

As for the magic of securitisation that was supposed to produce triple A assets out of a pool of varying levels of risky instruments, it has since become evident that these credit enhancing techniques are seriously flawed.¹²⁵ Not only were the investors who purchased these loans indifferent to their credit quality (as they only considered the statistical probabilities of defaults across large pools of loans), but the risk models they used were based on inadequate historical data, most notably on housing prices and assumptions about endless price appreciations. Part of the problem lay in the shifting techniques of risk management, from 'soft', 'relational' methods towards 'hard', statistically-driven techniques.¹²⁶ Whereas qualitative forms of data collection, from regular contact with borrowers, personal relations and on-site visits might have allowed the banks to perceive and account for their risks, 'arms-length' calculations of information like age, income and assets enabled the persistence of embedded blind spots. As Lapavitsas argues, 'at no point in the process was there genuine due diligence done on the original loans and subsequent securitisations,'¹²⁷ as a result, even the safest assets failed to absorb the quantity of bad credit in the riskier tranches below them.

In the years preceding the crisis, the major trading banks pursued aggressive growth models through securitisation. As long as the economy was growing, more loans were made, and more CDOs produced with high-risk investors like hedge funds purchasing many of the riskier CDOs. All of these markets, or chains of intermediation, expanded the global credit system. Banks issued commercial paper (through their SPVs) to increase loan pooling & re-structuring. And subsequently, the CDOs and triple A assets thereby created were used to increase banks'

¹²⁴ As MacKenzie argues, '[i]n the 1880s, US banks had average levels of equity of just below 25 per cent, and UK banks of around 15 per cent. By the time the crisis began in 2007, equity levels had fallen to small fractions of those numbers, and remain well below them today. The consequence is that the banking system has become inherently more fragile.' MacKenzie 'The Magic Lever'. MacKenzie, Donald. 2013. "The Magic Lever: How the Banks Do it." *London Review of Books*

¹²⁵ To summarise the view in defence of market-based banking, this was supposed to happen through 'credit screening in the origination of loans, diversification to minimize concentrated borrower, industry, and, to the extent possible, geographic risks, and then follow-on monitoring of loan performance, including intervention to minimize losses on any particular loan,' Armour et al. 2016, Chapter 21

¹²⁶ Lapavitsas, Costas. 2009. "Financialised Capitalism: Crisis and Financial Expropriation." *Historical Materialism* 17(2): 138.

¹²⁷ Ibid. p140

repo borrowing, as these 'safe assets' were redeployed as repo collateral. However, the inadequacy of the risk mechanisms in the earlier processes of securitisation meant that the money market instruments they helped to produce were also dangerously under-priced. In a study of the repo rates and collateral haircuts during the crisis, Gorton and Metrick demonstrate how their prices soared due to fears about the value of the collateral traded.¹²⁸ The study also reveals that at the time when haircuts sharply increased, it was not equal across all collateral assets. Many of the actors involved in shadow banking were aware of the problematic quality of subprime loans, as the average haircuts on these products were around five times higher than those of other assets. The higher haircuts on subprime assets continued until they reached 100 per cent, effectively [signalling] the complete breakdown of repo markets using these particular assets as collateral.'¹²⁹

Finally, in addition to the failures of securitisation, the derivatives instruments which had been defended for their ability to strip out the risks from the assets banks traded, also failed. Instead, they produced the contrary effect by massively increasing liquidity and systemic risk. 'Instead of perfecting markets and distributing risk to those most willing and able to bear it, derivatives concentrated risk amongst a few large institutions and fed a collective risk appetite that bore little relation to the 'real' economy.'¹³⁰ Indeed, derivatives constitute asset-side innovations which allow banks to greatly expand their leverage, because they allow their purchasers to enter into very large positions with relatively little funding. This is why derivatives have been described by critics as instruments for speculation, or gambling, rather than instruments for hedging. 'Worse still, the abstract nature of the securities and thick layering of contracts meant nobody knew who held the risk.'¹³¹ This created widespread mistrust and ultimately translated into a complete liquidity and credit freeze, as no one was willing to purchase new assets or extend more credit. The failing of these private risk management instruments meant that, in the wake of the 2008 crisis, the state was again required to step in, this time absorbing unprecedented levels of financial loss.

¹²⁸ Gorton, Gary, and Andrew Metrick. 2012. "Securitized Banking and the Run on Repo." *Journal of Financial Economics* 104(3): 425–51.

¹²⁹ Armour et al. 2016, Chapter 21

¹³⁰ Wigan, Duncan. 2010. "Credit Risk Transfer and Crunches: Global Finance Victorious or Vanquished?" *New Political Economy* 15(1): 110.

¹³¹ *Ibid.*

Chapter Two, The historical origins of market risk

Introduction

Chapter Two begins to examine the scenography of the construction of Basel's market risk framework. The purpose is to investigate the contingent and strategic foundations of this framework, by investigating the ideas and practices from which it emerged. In doing so, Chapter Two shows that the construction of market risk involves choices which cannot be made entirely objectively. Instead, like any risk category, its substantive definition and metrics are necessarily constructed from the perspective of a group of actors, or more broadly, through the resolution of different unfolding struggles that involve a specific set of logics and interests. In examining the historical origins of market risk, this chapter offers a narrative in which market risk was constructed out of the projects of a deeply practice-oriented group of academic finance theorists. As a result, it further shows that market risk was shaped based on a set of quantitative and statistical logics (consolidating market risk as an objective and quantitative object); practice-oriented and profit maximising logics (directing the focus of market risk onto the threat of market volatility, and aligning its interests with the goal of asset appreciation); as well as based on the logics of market efficiency (embedding the assumption of market superiority as the best mode of social organisation).¹³²

The first part of Chapter Two examines the conceptual origins and developments of market risk in modern finance theory as well as in the practice of securities traders and investment banks. Part I starts by investigating the origins of market risk in the mean-variance framework and in Markowitz's modern portfolio theory, before examining its further refinements as part of the rise of derivatives trading and enterprise risk management models. The second half of Part I then highlights the set of interests and logics that these theoretical frameworks instilled into the modern conceptions and practices of market risk management. Part II of Chapter Two takes this analysis further, considering the way in which this body of ideas and practices

¹³² Importantly, although the emphasis of Chapter Two is on the ways in which securities traders and academic finance theorists shaped the notion of market risk, pre-existing risk concepts and frameworks will also have shaped the ways in which securities traders and finance theorists understand and pursue their projects. Thus, this is very much a story of mutual constitution. The issue is that whenever an analysis hones into one particular moment in time, it will tend to see one group of actors or objects influencing another group of actors or objects, even though they actually co-evolve in relation to one another.

was adopted into securities regulation. This is important because the Basel Committee's market risk negotiations were informed by both industry practices as well as the securities frameworks of the International Organisation of Securities Commissions (IOSCO) and the major financial jurisdictions. As discussed below, these securities regulations maintained significant aspects of modern finance theory's framing of market risk, while also incorporating an additional set of regulatory logics. Section i of Part II describes the securities rules in the US, the EU and in Japan until the 1990s. Section ii then teases out the implications of this 'regulatory repurposing' of market risk.

I. Origins of market risk in modern finance theory and private risk management

i. History

a. The mean-variance framework and modern portfolio theory

In certain historical accounts of financial risk, market risk, as well as the different frameworks developed to measure it, have existed for centuries. Barbara Kavanagh, for example, talks about the price volatility of small currency tokens relative to larger coins as an example of market risk that goes as far back as 400 BC.¹³³ Another common historical example is commodity price risk, a concept traceable at least to the 12th Century when merchants used forward contracts to pre-empt fluctuating commodity prices, comparable to the grain futures contracts that trade today on Chicago's future exchanges.¹³⁴ Contemporary literatures in financial risk management, however, tend to locate the genesis of investment, or market, risk in the framework provided by modern portfolio theory (MPT).¹³⁵ Although most accounts of MPT identify its foundations in Harry Markowitz's portfolio selection model of 1952, according to Brine and Poovey, MPT should be seen as a 'logical extension' of the mean

¹³³ Kavanagh, Barbara. 2003. "A Retrospective Look at Market Risk." In *Modern Risk Management: A History*, ed. Peter Field. Risk Books, p251

¹³⁴ Ibid; See also Dionne, Georges. 2013. "Risk Management: History, Definition, and Critique." *Risk Management and Insurance Review* 16(2): 147–66; Cochrane, John, and Christopher Culp. 2003. "Equilibrium Asset Pricing and Discount Factors: Overview and Implications for Derivatives Valuation and Risk Management." In *Modern Risk Management: A History*, ed. Peter Field. Risk Books, 57–93.

¹³⁵ Coombs, Nathan, and Arjen Van der Heide. 2020. "Financialization as Mathematization: The Calculative and Regulatory Consequences of Risk Management." In *International Handbook of Financialization*, Routledge. See for example: Crouhy, Michel, Dan Galai, and Mark Robert. 2014. *The Essentials of Risk Management*. Second ed. McGraw Hill; Hull, John. 2015. *Risk Management and Financial Institutions*. Wiley

variance revolution that started in 1935 with J.R. Hicks, and that was later extended by James Tobin, Helen Makower and Jacob Marschak in the 1930s and 1940s.¹³⁶ Markowitz himself traces the development of portfolio theory to Tobin, albeit more tenuously to Hicks and Marschak.¹³⁷

Broadly speaking, the mean variance framework, including MPT, represents a body of theoretical prescriptions focused on developing the most rational rules by which to select an optimum portfolio of investment assets. In refining these rules, the theorist is specifically concerned with developing the variables of 'risk' and 'return'. As Thompson writes, '[t]he mean-variance, or risk-return, approach to portfolio analysis is based upon the premise that the investor in allocating his wealth between different assets takes into account, not only the returns expected from alternative portfolio combinations, but also the risk attached to each such holding.'¹³⁸ What we see in such formulations of the mean-variance framework is that the discipline of finance, as opposed to the discipline of economics from which it originated, is much more deeply entwined with the practice of its field.¹³⁹ And the manner in which the mean-variance framework approached its 'practical problems' was based on an articulation of risk as a natural product of various economic activities, and as an inherently calculable object.¹⁴⁰ Indeed, these theories adopted the quantitative techniques of statistics, using them

¹³⁶ Brine, Kevin R, and Mary Poovey. 2017. *Finance in America: An Unfinished Story*. University of Chicago Press. p299.

¹³⁷ In 'The early history of portfolio theory:1600-1960' Markowitz argues, '[t]his article traces the development of portfolio theory in the 1950s (including the contributions of A.D. Roy, James Tobin, and me) and compares it with theory prior to 1950 (including the contributions of J.R. Hicks, J. Marschak, J.B. Williams, and D.H. Leavens).' Markowitz, Harry M. 1999. "The Early History of Portfolio Theory: 1600–1960." *Financial Analysts Journal* 55(4): 5

¹³⁸ Thompson, Neil. 1993. "The Mean-Variance Approach." In *Portfolio Theory and the Demand for Money*, London: Palgrave Macmillan UK, p9.

¹³⁹ Brine and Poovey argue, '[i]n one sense, modern finance originated within the discipline of economics. In another sense, the roots of finance lay outside every university discipline: traces of finance can be found in business practices as old as exchange itself, in apprenticeships and guilds, in futures markets for agricultural crops, and in schools of commerce and accounting, where business skills were passed along to younger generations.' Brine and Poovey 2017, p294

¹⁴⁰ De Goede's historical writes that during the 18th and 19th centuries, the very articulation of risk as a natural product of economic activities, and as inherently calculable, served as enduring justifications for the commercialisation of uncertain futures. 'Risks' were characterised as entities that naturally emerge in the process of conducting any kind of business, which were at the same time foreseeable through probabilistic calculations that distinguished 'risk' from other conceptions of 'chance' and 'uncertainty'. By representing economic and financial realities in this way, proponents of financial trading such as Henry C. Emery, a 19th century US economist, could argue that 'both [gambling and speculation] depend on uncertainties, but, whereas gambling consists in placing money on artificially created risks of some fortuitous event, speculation consists in assuming the inevitable economic risks of changes in value.'¹⁴⁰ As a result, not only are risks depicted as objective and external threats, but their management can be characterised as a beneficial activity for business. Emery further claimed that speculators were a professional risk bearing class who were 'prepared to relieve [the trader] of the speculative element of his business... [I]nstead of all traders speculating a little, a special class speculates much.'¹⁴⁰ Emery in De Goede, Marieke. 2004. "Repoliticizing Financial Risk." *Economy and society* 33(2), p202-03.

to produce complex probability calculations and presenting these calculations as legitimate predictions of the future.

Starting with Hicks' work in 1935, he argued that investors invest a proportion of their portfolios in safe assets, like cash, rather than interest-yielding assets, because of their motivation to seek low risk and high returns.¹⁴¹ In his theoretical framework, Hicks represented the future as a 'band of possibilities', each of which has a more or less probable chance of materialising. And to better understand these probabilities, he used the statistical concepts of mean (average historical returns) as well as 'some appropriate measure of dispersion.'¹⁴² By examining the average historical returns of various combinations of assets, as well as the historical dispersion of these numbers, Hicks argued that maintaining a proportion of safe assets lowers a portfolio's overall risk levels, which beyond a certain threshold would otherwise translate into more losses than gains. As restated by Markowitz, Hicks sought to show that 'as we go out along the frontier in the direction of increasing risk and return, securities leave the efficient portfolio and do not return.'¹⁴³ In his early work however, Hicks never provided a clear input for 'risk'; he only made open-ended statements such as 'where risk is present, the particular expectation of a riskless situation is replaced by a band of possibilities' and that it is useful to use 'some measure of dispersion' to assess these probabilities.¹⁴⁴ According to Markowitz, in failing to propose any specific measures for 'dispersion' or 'variance', Hicks could not provide a theorem distinguishing efficient and inefficient portfolios, or demonstrating the effect of including or removing particular assets from a portfolio.¹⁴⁵

In 1952, Markowitz formalised the mean variance framework into his portfolio selection model, which has since become widely accepted as a demonstration of how rational economic agents should select a portfolio of assets to maximise their returns.¹⁴⁶ Following Tobin and Marschak, Markowitz used the measure of standard deviation as the input for

¹⁴¹ Hicks, J. R. 1935. "A Suggestion for Simplifying the Theory of Money." *Economica* 2(5): 7-23.

¹⁴² *Ibid.* p8

¹⁴³ Markowitz 1999, p11

¹⁴⁴ Hicks 1935, p8

¹⁴⁵ Markowitz 1999, p12

¹⁴⁶ Markowitz, Harry. 1952. "Portfolio Selection." *The Journal of Finance* 7(1): 77.

‘variance’.¹⁴⁷ His major contribution, however, was to provide a theory of diversification that today represents mainstream wisdom in financial decision making. Departing from previous theory, Markowitz argued that the risk or standard deviation of a portfolio should not be calculated as the sum of the volatility of each of its single assets, because non-correlated assets rise and fall in different patterns.¹⁴⁸ As explained in Brine and Poovey, ‘[i]f some securities prices are going up while others are going down, the combined volatility of the portfolio is less than the weighted average of the sum of volatilities of all securities.’¹⁴⁹ This is because, insofar as ‘individual security movements are independent of each other – potentially because they are influenced by different external factors – the fluctuations in price, and therefore the returns, form a protective shield of diversification.’¹⁵⁰ The gist of the model is that in selecting his or her assets, an investor should account for the risk-reward characteristics of an entire portfolio, rather than those of an individual asset. The benefits would then materialise over time thanks to the effects of compounding: if two portfolios have the same expected return but one is less volatile, the latter should generate wealth more rapidly than the more volatile portfolio.

Thus, Markowitz developed the concept of market risk not only by associating it with standard deviation, but through his theory of diversification he added a new and ‘relative’ dimension to market risk. As discussed above, Markowitz showed that the risk of individual assets cannot be added up in the same way that the expected return of each asset can. Although the assumption remains that investors desire a mix of high-risk assets (for their high returns) and safe assets (for their lower volatility/ likelihood of loss), Markowitz’s theory says that true market risk can only be found by calculating all the different correlations in a portfolio. Particular groups of assets are positively correlated if their historical prices indicate that they move in the same direction, negatively correlated where they move in opposite directions, or independent where no correlations are found to exist. The aim of the investor is to select a weighted collection of assets that together exhibit lower risk factors. By making it possible to measure relative risk, Markowitz’s work gave further specificity to Frank Knight’s distinction

¹⁴⁷ Standard deviation is the statistical term for volatility, which measures the difference between the actual and average values and thus shows the dispersion of returns for a given security or market index.

¹⁴⁸ This is different to the calculation of expected returns, for which the overall return *can* be derived from the addition of each asset weighted proportionally to its representation in the portfolio.

¹⁴⁹ Brine and Poovey 2017, p300

¹⁵⁰ *Ibid.*

between statistically measurable (and thus insurable) risk, and the concept of uncertainty. Indeed, investment risk was no longer simply conceived in terms of the volatility of particular assets, but it now entailed a multitude of correlation analyses between the historical price volatilities of a portfolio of assets.

Building on Markowitz's portfolio selection theory, related asset pricing theories took it further by introducing the Capital Asset Pricing Model (CAPM) based on overall capital market equilibrium. In the mid-1960s, William Sharpe and John Litner first showed that the risk of an individual asset could be decomposed into two components, systematic risk and specific risk.¹⁵¹ The former arises out of general economic conditions like inflation, employment levels, interest rates and so on, whereas specific risk comes from the particular characteristics of a borrower or industry. While systematic risks affect all assets and therefore cannot be diversified away, specific risk only attaches to the particular security at hand and therefore can be reduced through diversification.¹⁵² In refining previous conceptions of market risk, CAPM further provided a rational basis for how the expected rate of return, and thus the price, of a financial asset is determined. CAPM starts with the presupposition that because systematic risk cannot be diversified, investors will demand a market premium for this risk. Investors can therefore work out the value on an individual asset by adding the interest of a risk-free asset with the risk premium charged for the additional volatility of the given asset (the volatility over and above the general volatility of the market).¹⁵³

b. Developments in options theory and enterprise risk management

Since the work of Sharpe and Litner, there have been various expansions of CAPM.¹⁵⁴ But the next important development in financial risk management was the publication of the Black-

¹⁵¹ Sharpe, William F. 1964. "Capital asset prices: a theory of market equilibrium under conditions of risk." *The Journal of Finance* 19(3): 425–42; Litner, John. 1965. "Security prices, risk, and maximal gains from diversification." *The Journal of Finance* 20(4): 587–615.

¹⁵² Mangram, Myles E. 2013. "A Simplified Perspective of the Markowitz Portfolio Theory." *Global journal of business research* 7(1): p62.

¹⁵³ An underlying assumption of CAPM is therefore that the market is in equilibrium, as only if this is true can the price of each asset be seen as reflecting the relative contribution of that asset to the total risk of the market portfolio.

¹⁵⁴ The most important expansion of CAPM was probably arbitrage pricing theory. As Crouhy et al. argue, the latter 'is an extension of the logic behind the CAPM, explaining the expected rate of return on an asset as a linear function of several market factors. The [arbitrage pricing theory] suggests adding more factors that can contribute to the explanation of the expected rate of return, though it does not say which factors to add. It only suggests that there may be factors, such as macroeconomic factors - such as inflation rates, unexpected trends in GNP, changes in the default premium of bonds and

Scholes and Merton's options pricing formula (BSM) in 1973, which further extended and operationalised the notion of a risk-return trade-off in investment risk.¹⁵⁵ Options are a type of derivative, which give the owner the choice to purchase (a call option) or sell (a put option) another asset before or on a specific day at a specific price. According to MacKenzie & Millo 'the BSM model greatly facilitated the proliferation of derivatives by providing a scientific exemplar for pricing derivatives that distinguished the practice from reckless gambling.'¹⁵⁶ Indeed, despite the focus of mainstream discussions on derivatives as hedging instruments, derivatives trading has always straddled an ambiguous line between insurance and gambling (or hedging and speculation). The function of derivatives has been contested for much of their existence because, on the one hand, derivatives like commodity futures have historically enabled farmers to insure their crops, but on the other, they were extensively criticised for facilitating large scale gambling operations. The explosive growth of derivatives can be attributed to both their hedging and gambling capabilities. In any event, since derivatives allow traders to enter into large speculative positions, it is undeniable that these instruments have created a huge amount of risk. If some firms want to buy insurance through purchasing options, others necessarily have to take on more risk to provide them: as one firm reduces risk, another takes it on in an attempt to make financial gains.¹⁵⁷

The proliferation of derivatives has facilitated a number of practical changes in the techniques of market risk management. In the past, the risks associated with large and complex financial contracts were much more difficult to manage, and thus much costlier to undertake. This is because these large contracts were treated as a composition of discrete but inseparable risks,

drifts in the slopes of yield curves - or some stock, bond, or commodity indices, that add to the explanatory power of the relationship [whereas in CPAM, the market index is the only variable used to explain the expected return of any security]. The model is referred to as a multifactor or multi-index pricing model.' Crouhy et al. 2014, p192

¹⁵⁵ As Coombs and Van der Heide explain, 'at the model's heart is the idea of a 'replicating portfolio'. It was possible, BSM suggested, to construct a continuously adjusted portfolio containing the underlying asset and 'risk-free' assets such as a cash deposit or treasury bonds that would replicate the pay-offs of the option contract itself. On the basis of the 'no-arbitrage' principle, which builds on the efficient market hypothesis – no opportunity for riskless profit should exist since it would immediately be exploited and disappear – it follows that the price of the option must be equal to the cost of the replicating portfolio. The model therefore put the relative pricing of risk central in the valuation of financial assets.' Coombs and Van der Heide 2020, p8

¹⁵⁶ MacKenzie, Donald, and Yuval Millo. 2003. "Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange." *American journal of sociology* 109(1): p113.

¹⁵⁷ According to Dionne, speculation quickly arose in various markets, creating other risks that are increasingly difficult to control or manage. In addition, the proliferation of derivatives made it very difficult to assess companies' global risks (specifically aggregating and identifying functional forms of distribution of prices or returns). Dionne 2013. See also Brine and Poovey and the emergence of systemic liquidity risk, Brine and Poovey 2011, p322.

whose risk profiles were difficult to transform.¹⁵⁸ Derivatives contracts, however, offer a set of tools allowing investors to do precisely that: breaking up complex contracts into distinct risks and managing these risks separately. For example, Mengle shows that that 'dealers do not manage dollar-yen cross-currency swaps in a separate book, but instead break the risks down into dollar interest rate risk, yen interest rate risk, and yen-dollar currency risk.'¹⁵⁹ Thus, as a result of the innovations in options pricing, the financial sector was able to rapidly develop, responding to market conditions and client demands regardless of their complexity or idiosyncrasy. Furthermore, Kavanagh argues that, like securitisation, 'the evolution of OTC derivative products' has 'brought an explosion of new mechanisms for firms to manage market risk ex post, or after being taken on by a firm.'¹⁶⁰ This meant that investors could henceforth take on all kinds of positions, and dynamically adjust their risk exposures as relevant circumstances change.

While the introduction of options theory greatly altered the techniques of risk management, the conceptual framework of market risk did not significantly change. Market risk is still understood as the risk of loss from adverse price fluctuations, and continues to be calculated on the basis of historical price movements and correlations. However, the difference is that the correlations which are deemed to contain or manifest market risk have been rendered much more complicated by derivatives modelling. As Crouhy et al. explain, the Black and Scholes model can be used to:¹⁶¹

compute the hedge ratio of an option position, also known as the delta. This ratio describes the change in value of an option resulting from a small change in the price of the underlying asset. The hedge ratio indicates how the risk of a financial asset can be hedged with options. The price of both the underlying asset and the option changes over time, so the hedge ratio is in fact dynamic, requiring that adjustments to the portfolio be made in order to maintain a target level of hedging.'

As options theory developed, new types of volatility thus came to be analysed within the frame of market risk. First, as described in the above example, 'delta' measures the volatility

¹⁵⁸ Mengle, David. 2003. "Risk Management as a Process." In *Modern Risk Management: A History*, ed. Peter Field. Risk Books, p7.

¹⁵⁹ Ibid.

¹⁶⁰ Kavanagh 2003, p255.

¹⁶¹ Crouhy et al. 2014, p198.

of the option in relation to fluctuations in the value of the underlying asset. In addition to delta, other greeks such as the 'vega' measures the sensitivity of the option value in relation to the underlying, or the 'theta' measures the time decay of an option.¹⁶² Despite these additional forms of volatility, however, the core notion of market risk continues to be defined by historical price movements and correlations. To the extent that options theory altered the conceptual boundaries of market risk, it was by enabling the creation of novel types of assets and thus the introduction of more complex correlations analyses.

Following the proliferation of options trading, as the major banks entrenched themselves into the business of securities trading in the 1980s and 1990s, these banks also began to spearhead further innovations in risk management. Among the largest financial institutions, 'new metrics emerged that sought to turn risk into a manageable object, such as 'risk-adjusted return-on-capital (RAROC).'¹⁶³ As Crouhy et al. write, the basic concept of RAROC was to clarify:¹⁶⁴

the trade-off between risk and reward for a unit of capital and therefore [offer] a uniform comparable measure of risk adjusted performance across all business activities. If a business unit's RAROC is higher than the cost of the bank's equity... then the business unit is deemed to be adding value to shareholders.

According to these authors, the approach was initially developed by Bankers Trust in the late 1970s, and used by senior managers to make capital budgeting decisions as well as decisions regarding the performance of particular departments or employees.¹⁶⁵ The most popular application of RAROC was value-at-risk (VaR), developed by J.P. Morgan which, like all major global banks, ran large trading rooms with significant multi-currency positions across entire term structures. These banks were therefore highly sensitive to both currency and interest rate fluctuations.¹⁶⁶

¹⁶² Hull 2015, Chapter Eight.

¹⁶³ Coombs and Van der Heide 2000

¹⁶⁴ Crouhy et al. 2014, p588

¹⁶⁵ Ibid.

¹⁶⁶ Lockwood, Erin. 2015. "Predicting the Unpredictable: Value-at-Risk, Performativity, and the Politics of Financial Uncertainty." *Review of International Political Economy* 22(4): 719–56.

VaR created a single metric that could be used to evaluate portfolios of assets denominated in different currencies and subject to different interest rates, thus enabling the measurement of the total capital at risk across a banks' different business lines. Essentially, VaR is composed of three parts: 'position data (associated with the different components of a portfolio of assets); the risk factors attached to these different positions (interest rates, exchange rates, equity and commodity prices); and the model's measurement parameters (for example, the holding period over which the value of the investments could change, the historical period over which risk factors are measured, and the confidence interval).'¹⁶⁷ Based on these different parts, VaR creates a statistical distribution of the probable future losses and gains of a portfolio (or entire institution), and produces a single number representing the maximum possible loss likely to occur on this portfolio at a given confidence level. In this way, VaR allowed the management of risk *ex ante*, in that it helped firms decide how to allocate capital prior to making their investments. Senior managers acquired a quantitative mechanism through which they could direct funds towards the most productive investments, as well as impose limits or off-sets, and justify these decisions within a simple and coherent framework, and thus in seemingly 'rational' terms.¹⁶⁸

As with options pricing, VaR (and other RAROC frameworks more broadly) also represents an extension of MPT. In its simplest form, VaR provides a distribution of the expected returns of a portfolio and can therefore be seen as 'a natural progression from the mean-variance method of modern portfolio theory.'¹⁶⁹ As a result, the underlying market risk concept in MPT, just like in the Black & Scholes model, remains essentially unchanged in the RAROC framework, including specifically in the VaR context. Market risk is still found in the historical correlations between different asset prices as set out in modern finance theory, and continues to rely on the latter's distinctions such as between specific and systematic risk. However, VaR did change market risk in one, and very significant, respect. It simplified the calculation of market risk so that banks' risk calculations could be reduced to a single dollar number. The significance of these numbers of course depends on the risk factors a model accounts for, as well as the parameters it selects. But VaR allowed these different choices to

¹⁶⁷ Lockwood 2015, p722.

¹⁶⁸ Kavanagh 2003, p254. Kavanagh explains that 'risk-adjusted return on capital' is what provided a systematic framework for allocating capital *ex ante*.

¹⁶⁹ Coombs and Van der Heide 2020, p9.

be coalesced within one framework, thereby enabling the condensation of highly complex risk calculations while producing singular results which could thus be treated as legitimate aggregates of a bank's overall risks.

ii. The underlying logics, and embedded interests, in market risk

This scenography of the origins of market risk shows how it was brought into being as a result of the projects of a deeply practice-oriented group of finance academics. These theorists increasingly conducted their disciplinary research through a set of quantitative methods, which were further shaped through the wider developments in information and computer technologies. The following section attempts to draw out the different logics folded within the conceptual developments of market risk, looking at how the risk concept was grounded, first, in a set of statistical techniques focused on probability analysis; second, in the practice of investing, and thus coloured by logics of profit maximisation and investors' RAROC frameworks; and third, in the principles of the efficient market hypothesis. In each respect, these logics, which further shaped the interests that market risk was deployed to pursue, consolidated the risk concept around a specific set of conceptual boundaries. Market risk came to be defined as an objective phenomenon, expressed in a quantitative form and concerned with the threat of market volatility in relation to investors' interests in asset appreciation. Market risk further came to embed the assumption of market efficiency, which, as explained below, sidelined questions regarding the causes of risk, as well as the problems of uncertainty. All of these features were later inherited by the Basel Committee, the importance of which will be explored in greater detail in the following chapters.

First, market risk was formulated in the rise of modern finance theory, at a time when the wider discipline had become dominated by the techniques of statistics and econometric modelling. Following the mathematisation of economics and finance in the 1930s, and the popularisation of probability theory in economics after World War II, by the time Markowitz developed his portfolio selection model, the study of finance was steeped in the techniques of quantitative statistics and probability analyses.¹⁷⁰ Indeed, Markowitz's theory of

¹⁷⁰ Poovey and Brine 2014, Chapters Seven and Eight

diversification relies heavily on statistics, using the statistical variables of mean, variance and covariance to calculate the positive, negative or the absence of correlations within a portfolio. And the most important visualisation associated with his portfolio selection model is the 'efficiency frontier', which allows investors to plot their investments as data points on a graph and compare them with a curve representing the optimal portfolio accounting for the two variables of risk and return. From the 1950s to the 1980s, as modern finance theory continued to evolve with the variety of asset and options pricing models discussed above, the latter were developed based on the same quantitative and statistical modelling instruments that produced the first mean-variance frameworks.¹⁷¹

The result was that market risks came to be understood as scientific and objective things, existing independently of any attempts to identify and measure it. Moreover, because market risks were only ever conceived through a set of risk metrics, they were further consolidated as quantitative objects. That the concept of market risk was crystallised as both 'objective' and 'quantitative' represents an important and contingent series of developments. As Bernstein argues, the history of risk has been marked by 'a persistent tension between those who assert that the best decisions are based on quantification and numbers, determined by the patterns of the past, and those who base their decisions on more subjective degrees of belief about the uncertain future.'¹⁷² The model-based approaches discussed in part I above largely replaced pre-existing methods based on substantive and qualitative forms of expertise and judgement. Moreover, by defining the threats in investors' trading activities based on the laws of statistical probabilities, market risk displaced any engagement with, or awareness of, 'uncertainty'. As Lockwood writes, '[u]ncertainty characterizes outcomes in non-deterministic open systems, in which prediction is impossible not because of epistemological limitations on the part of the observer but because the structure of the system is such that its behaviour is not amenable to prediction.'¹⁷³ The concept of market risk thus sidelined the reality and problems of uncertainty in financial decision-making.

¹⁷¹ Crouhy et al. 2014; Hull 2015

¹⁷² Bernstein, Peter. 1996. *Against the Gods: The Remarkable Story of Risk*. Wiley. P6.

¹⁷³ Lockwood 2015, p727.

Second, from the earliest developments of the mean variance framework to the popularisation of RAROC models like VaR, these theories are all concerned with the practice of investing, meaning that their risk concepts are also shaped by the logics of profit maximisation. While the models claim to also describe the actual behaviours and regularities exhibited in financial markets, these explanations were always developed with a view of providing advice or prescriptions to investors on how to maximise the efficiency of their portfolios i.e. to maximise returns and minimise losses. In the 1930s, Hicks used the mean variance framework to analyse investment choices and explain why investors purchase safe assets, but also warned investors against taking on too much risk to ‘avoid [leaving] the efficient portfolio.’¹⁷⁴ Markowitz later provided a positivist account of price relations and investor choices, but his work explicitly sought to demonstrate how investors should behave to construct maximally efficient portfolios. As Pearson writes, Markowitz’s portfolio selection model has become ‘the standard framework for thinking about risk and return’ and ‘it is directly implemented by some investors who use “mean-variance optimisation” to select their portfolios’ including in ‘asset allocation and equity portfolio optimisation.’¹⁷⁵

The same is true for CAPM, by the mid-1970s, Brine and Poovey claim that ‘Wall Street investment firms had adopted these models and routinely used them to make investment decisions.’¹⁷⁶ Even today, textbooks on risk management argue that ‘the beta of a stock is important to the managers of any company concerned about share price and the creation of shareholder value.’¹⁷⁷ As for the Black Scholes & Merton model, part I above shows how it was developed to provide a basis for the calculation of options, a set of instruments whose sole purpose is to enable investors to better hedge their investments or take on new speculative positions. And finally, RAROC frameworks like VaR were not even produced in the academy, but rather, they were formulated by the banks to simplify their risk management activities, and more specifically to enable senior managers to make better strategic decisions at the firm level. In light of the context and objectives of these practice-oriented theories, it is unsurprising to find that the risk concept they produced is primarily targeted at the same kinds of threats that private investors are concerned with. Indeed, market risk emerges as a

¹⁷⁴ Hicks 1935

¹⁷⁵ Pearson 2003, p52.

¹⁷⁶ Brine and Poovey 2017, p314.

¹⁷⁷ Crouhy et al. 2014, p191.

concept which only perceives an activity or event as a threat if the latter arises from an external source, as opposed to from within the practices of investors' own commercial activities. Moreover, market risk is only concerned with losses to banks' balance sheets.

Both of these emphases lie in tension with other conceptualisations of risk like 'systemic risk', which will be considered in more detail in the next three chapters of this thesis. The point here, however, is to illustrate the biases or contingency of market risk regarding the types of threats it is targeted at and the specific interests it is focused on protecting. While these conceptual choices may well suit the purposes for which the risk concept was developed, it is important to highlight them, particularly as the risk concept is later adopted in both securities and banking regulation. On the question of the 'threats' embedded in market risk, the entire progression of the mean variance framework in finance theory is focused on the problem of market volatility. And although financial institutions, and in particular the banks, make up most of the financial markets (and its various sources of risk), the fact that 'the markets' as an abstract idea is kept conceptually distinct in market risk means that the problems or threats of market volatility are successfully externalised. Thus, 'market risk' helps to direct attention away from investors' own activities or the structure of financial markets.¹⁷⁸ As for the question of the interests that market risk seeks to protect, because it was shaped by a set of theories focused on investing and private risk management, 'market risk' is primarily concerned with a notion of loss that focuses on asset devaluations. Indeed, the specific contribution of Markowitz' portfolio selection model was to redefine risk as a relative value in relation to the risk-*return* characteristics of an investor's overall portfolio. These priorities are also reflected in how market risk was later refined in options theory and the RAROC models, both of which represent extensions of MPT's core idea of a risk-return-trade off. The aim continues to be to maximise expected returns by investing scarce economic capital in the most productive business lines, generating the greatest risk-adjusted returns.

¹⁷⁸ Brett Christophers argues financial markets should not be seen as 'sites where competitive and chiefly anonymous economic transactions occur', but rather as the 'institutionally concentrated and hierarchical' interactions between the large global banks. Christophers 2015, p86-87.

Third and finally, modern finance theory explicitly relies on the efficient market hypothesis, which means that its risk concepts are similarly coloured by the logics of market efficiency. As Mangram writes,¹⁷⁹

Markowitz built his portfolio selection contributions to MPT on the following key assumptions (Bofah, n.d.; Wecker, n.d.; Markowitz, 1952): 1.) Investors are rational (they seek to maximize returns while minimizing risk), 2.) Investors are only willing to accept higher amounts of risk if they are compensated by higher expected returns, 3.) Investors timely receive all pertinent information related to their investment decision, 4.) Investors can borrow or lend an unlimited amount of capital at a risk free rate of interest, 5.) Markets are perfectly efficient, 6.) Markets do not include transaction costs or taxes, 7.) It is possible to select securities whose individual performance is independent of other portfolio investments.

Later expansions of Markowitz's model also inherited the efficient market hypothesis. Commenting on Sharpe and Litner's Capital Asset Pricing Model, Poovey and Brine argue:¹⁸⁰

Sharpe assumed that the market portfolio contained all available securities, weighted by their relative capitalisation and priced 'efficiently'- or according to the risk of each security. He also assumed that all investors have the same information and that the market is perfect, that is, without transaction costs or taxes, which no trader can influence prices, and assets can be traded in infinitely divisible amounts without penalty. And that all traders are rational in wanting to maximise their utility.

Essentially, the efficient market hypothesis states that asset prices in mature capital markets fully reflect all relevant market information. Although the hypothesis was formally theorised by Fama in 1965,¹⁸¹ almost fifteen years after the publication of Markowitz's model, its basic tenets were already widely accepted as conventional wisdom in the early years of modern finance theory. The core insight of the efficient market hypothesis is that markets are

¹⁷⁹ Mangram 2013, p61.

¹⁸⁰ Poovey and Brine 2011, p308.

¹⁸¹ Eugene F. Fama, Efficient Capital Markets: A Review of Theory and Empirical Work, 25 J. FIN. 383. Paul Samuelson was developing a similar theory at the same time as Fama. See Paul A. Samuelson, Proof That Properly Anticipated Prices Fluctuate Randomly, INDUS. MGMT. REV., Spring 1965, at 41. Further, Maurice Kendall is also often credited with popularising the random walk ideas among economists in the 1950s.

populated by large numbers of rational and profit-maximising actors, all of whom are competing with each other and trying to predict the future market values of individual securities.¹⁸² As Bechert writes, 'an equilibrium price is [considered] efficient when it reflects the discounted future income generated by an asset',¹⁸³ and this value is deemed to be calculable 'based on information from the past.'¹⁸⁴ As long as market participants operate in mature financial markets 'where important current information is almost freely available to all participants', prices will tend towards the 'fundamental value' of the securities.¹⁸⁵ If a market price deviates from this fundamental value, rational and profit-maximising investors will rapidly detect and exploit it as a profit opportunity by buying or selling the asset, which in turn will push the price towards its fundamental value.

The fact that modern portfolio theory is based on the efficient market hypothesis is significant, because the latter embeds a number of assumptions and implications that therefore also come to shape modern portfolio theory's concept of market risk. First, the efficient market hypothesis assumes that the market's price and information mechanisms are superior to the judgement of any individual or group of people. As mentioned above, its thesis is that prices can only arrive at their fundamental value if market actors compete to find the profit opportunities arising from the mispricing of any assets. This process is critical to the convergence of market prices with fundamental values, and must therefore not be interfered with by any external sources, including notably state actors. Indeed, the implication for investors is that it is impossible to consistently outperform the market because as soon as a price deviates from its fundamental value, investors will arbitrage the difference and eliminate it.¹⁸⁶ And the implication for regulation is that political interference can only

¹⁸² According to Fama, a "market in which prices always 'fully reflect' available information is called 'efficient.'" Fama, E. F. , 1970. Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), pp.383-417. More specifically, he claims that "[a]n 'efficient' market is defined as a market where there are large numbers of rational, profit-maximizers actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants." Fama, E. F. , 1995. Random walks in stock market prices. *Financial analysts journal*, 51(1), p76

¹⁸³ Bechert, Jens. 2016. *Imagined Futures: Fictional Expectations and Capitalist Dynamics*. Harvard University Press. p40.

¹⁸⁴ *Ibid.* p41.

¹⁸⁵ Fama 1965. According to Fama, this means that each price change is independent of the previous price change, and at any given time, the actual price of a security will be a good approximation of its fundamental value. Rather than evidencing market irrationality, random changes in stock prices are therefore the manifestation of intelligent market actors competing to discover the best information on whether to buy or sell assets before other investors discover this information.

¹⁸⁶ From this perspective, investors can only gain higher returns by taking speculative positions that carry corresponding levels of risk.

generate suboptimal social outcomes.¹⁸⁷ These same assumptions are inherited in modern portfolio theory, which depends on the validity of 'efficient prices' to produce a further set of risk outputs. As a derivative market product, MPT's risk outputs are thus also posited as the best available information with respect to the risk of future market volatility.

Second, and relatedly, both MPT and the efficient market hypothesis assume that all relevant, including potentially negative, information about an asset is assimilated into its price. Thus, when a risk model produces a numerical output, according to the efficient market hypothesis, the model does not need to say anything further about the source or causes of this risk, since they have already been accounted for. The implications are hugely significant: just as investors cannot outperform the market, neither do they need to, nor can they, investigate the sources of market risk. Their best avenue is to rely on the tools of modern finance, and create a well-diversified and adequately hedged portfolio. More seriously, when the concept of market risk is used in regulation, regulators are effectively compelled to abandon any attempt to investigate the sources of market volatility. Third, and finally, by relying on the efficient market hypothesis, MPT assumes away the uncertainty of the future. As already argued above, the statistical foundations of market risk defined it based on a set of probabilistic logics, to the exclusion of any concern with uncertainty. MPT's efficient market hypothesis foundations create a further bias against uncertainty, as the hypothesis itself is incapable of dealing with it. As Buchanan and Vanberg argue, by assuming that financial assets have a fundamental value, based on their expected future earning which can be ascertained from historical data, efficient market hypothesis is committed to 'a world view that treats the future as implied in the present.'¹⁸⁸ Or, from the reverse perspective, 'fundamental uncertainty rules out the notion of intrinsic value since it precludes the possibility of knowing an asset's future earnings and the risks it faces.'¹⁸⁹

Ultimately, the efficient market hypothesis also supports the profit logics embedded in market risk, because historically it has served as a theoretical framework justifying the investment practices and innovations of the financial sector. As Macchiarola argues, criticisms

¹⁸⁷ Beckert 2016, p145.

¹⁸⁸ Buchanan, James M., and Viktor J. Vanberg. 1991. "The Market as a Creative Process." *Economics and Philosophy* 7(2): p170.

¹⁸⁹ Beckert 2016, p148.

of the theory 'have been largely ignored by a financial services apparatus heavily invested in the efficient market hypothesis and its progeny.'¹⁹⁰ Thus aside from supporting a non-interventionist approach to market-regulation, as discussed above, it also supports the biases of market risk in relation to its focus on external price threats and its concern with a conception of 'loss' that is focused on investors' commercial interests, i.e. asset devaluations. Indeed, according to the efficient market hypothesis, all threats capable of generating a market shock have already been priced-in, as a result, it is legitimate to limit one's focus to historical prices when thinking about the problems of future market volatility. However, aside from the many other criticisms of efficient market hypothesis,¹⁹¹ it ignores the many ways in which investors, particularly in the form of large financial conglomerates, are themselves responsible for creating instability in the financial system. The hypothesis thus helps to redirect the focus away from questions of the structure of the financial markets, limiting us to mathematical calculations of historical price correlations.

I. Market risk in securities regulation

Once the concept of market risk had been shaped among the networks of academic finance theorists and financial investors, it continued to evolve as part of the legal developments that emerged to regulate some of these investment practices. These were predominantly legal frameworks formulated by securities regulators in the national jurisdictions which contained the most developed capital markets, and were therefore also significant players at IOSCO. As will be considered in Chapter Three below, these *regulatory* reformulations of market risk are also important for the story of this thesis, because the Basel Committee negotiated its Market Risk Amendment in relation to the IOSCO's thinking on market risk regulation. And while the adoption of market risk as a regulatory instrument evidently retained many of its features

¹⁹⁰ Macchiarola, Michael C. 2009. "Beware of Risk Everywhere: An Important Lesson from the Current Credit Crisis." *Hastings Bus. LJ* 5: p267.

¹⁹¹ The efficient markets hypothesis has been extensively criticised on a number of grounds, to mention but a few, these include: that either individually or collectively, market actors do not always behave in utility maximising ways; investors use trading strategies like short selling which distort information; ignores power hierarchies and market leverage; including the unequal distribution of knowledge; it ignores negative externalities; and empirically it does not hold up against historical levels of asset price volatility, especially in relation to company profits. The efficient markets hypothesis ends up assuming normal distributions, which is particularly problematic in financial markets where crises are nonlinear and vary with time. Insofar as the efficient markets hypothesis underlies MPT, the problem is therefore that MPT not only uses misleading information, but that this information can be strategically manipulated, and all the while, the efficient markets hypothesis supports the conclusion that external, political, forms of intervention should be limited or prohibited.

from its prior life as a market instrument, importantly, its legalisation further imbued the concept with a novel set of regulatory logics. In this sense, we should not see regulators' formulations of these risk instruments as 'lagging' behind market developments, but as formulations that have been specifically repurposed based on a separate and distinct set of logics and interests.

i. Securities regulation in the US, EU and Japan

In the EU, the Capital Adequacy Directive of 1993 (CAD) provided a common capital adequacy framework for all investment firms, including the securities arms of European banks.¹⁹² Because there exist different models of banking within the union - with some countries, like Germany, adhering to a universal banking model whereas others, such as the UK, have independent securities firms - the CAD's solution was to devise a set of rules based on a functional separation between trading and traditional banking activities. All financial institutions operating in the EU were required to hold those securities intended for short-term trading purposes in a 'trading book' separate from the rest of their business.¹⁹³ The particular risks associated with the trading book thus amounted to a firm's market risks. The CAD does not set out a formal definition of market risk, but it is organised based on a substantive subdivision of market risk, including position risk on debt and equity securities, foreign exchange risk and settlement risk. Additional limits and charges were also imposed for large exposures to a single client, or group of connected clients.¹⁹⁴ For each of these subcategories, the CAD sets out the rules for how to calculate their riskiness, which had to be aggregated to produce an overall market risk capital charge.

For debt securities, position risk was further subdivided into specific risk and general risk (also referred to as systematic risk), in line with the risk management practices of securities traders – as described in section I.i above in the context of the development of the CAPM. The capital required for specific risk was determined based on an assessment of the probability of default, time to maturity and liquidity, whereas for systematic risk, it was measured based on

¹⁹² Subsequently superseded by a series of Capital Requirements Directives.

¹⁹³ Dale, Richard. 1996. *Risk and Regulation in Global Securities Markets*. John Wiley & Sons. p21.

¹⁹⁴ *Ibid.* p33.

the historical volatility of interest rates. Off-setting rules were also included to permit reductions in capital charges where the risks associated with specific long and short positions cancelled each other out. For equities instruments, position risk was also divided into specific and general risk, with specific risk being determined based on considerations of liquidity and concentration. Interestingly, no diversification reductions were allowed for specific risk, thus explicitly disregarding the prescriptions of modern finance theory. General risk was determined based on historical volatility, with the intention of covering 95% of the losses of most institutions in the preceding five years, over a ten day rolling period. Similar off-setting rules were implemented for equities as for debt securities. Finally, foreign exchange risk also depended on historical volatility, but did recognise correlations between different forex positions. Uniquely, the CAD also included settlement risk in its category of market risk, which refers to the risk that a security will not be delivered according to the terms of the contract.

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Unlike the EU, at least until the 1980s, the US maintained separate commercial and investment banking regimes. After the 1929 financial crash, the Glass-Steagall Act of 1933 prohibited commercial banks from underwriting or dealing in debt and equity securities, as well as from establishing securities affiliates.¹⁹⁶ The following year, in 1934, the Securities and Exchange Commission (SEC) was set up to oversee all matters falling under federal securities law. Under the Uniform Net Capital Rule, the SEC established its capital requirements for securities firms, setting out a methodology on how to measure market risk, as well as additional rules on liquidity and leverage ratios. Substantively, the SEC divided market risk into position risk on debt securities and positions risk on equity securities. Regarding the former, their riskiness was determined depending on the time to maturity and the type of borrower behind the security (in creating a classification of borrowers, the volatility of their debt is also accounted for). Equity securities, in contrast, had a standard minimum charge, and were subject to greater charges based on calculations of historical volatility.¹⁹⁷ According to the SEC, its rationale was to ensure that, in the event of insolvency, all firms could be wound-down in an orderly manner within a one month period.¹⁹⁸ The Uniform Net Capital Rule also

¹⁹⁵ Ibid. p35-47

¹⁹⁶ Ibid. p61.

¹⁹⁷ Ibid. p73-86.

¹⁹⁸ Ibid. p78.

permitted some capital discounts where particular debt and equities securities were adequately hedged, although these discounts were relatively conservative. Unlike the CAD, however, the SEC's rules did not distinguish between specific and general risks, which attracted criticisms that they were insufficiently tailored to the precise risks of different broker-dealers.¹⁹⁹

Dale argues that the SEC did not provide an extensive explanation for its methodology for calculating market risk, but that historical volatility must have been an important factor.²⁰⁰ However, internal notes from the SEC show that the Committee was concerned not to rely too heavily on historical price data in finding a firm's market risks, particularly when measuring the position risk of equity securities. The Committee argued that focusing too much on volatilities 'could lead to a rigid system driven by purely statistical and mathematical formulae that do not make allowance for periods of sharp or erratic movements.'²⁰¹ The SEC therefore believed that historical volatility should only constitute one set of considerations when identifying market risk, claiming that 'a more predictable and identifiable objective standard is necessary as the basis upon which to build capital requirements.'²⁰² Moreover, to the extent that the SEC did rely on historical price data, it established a 95% confidence level and a longer one month holding period despite industry complaints that this was too long for most securities.²⁰³ In a further challenge to modern finance theory, the SEC rejected a portfolio approach for calculating equity price risk, even though it did choose to impose additional charges where equity positions were too concentrated.²⁰⁴ Generally, the SEC also demonstrated a strong preference for simplicity over precision, justifying this on the basis that its rules should be simple enough to be reviewable by regulators, and understandable by the public and their creditors.

¹⁹⁹ Ibid. p93.

²⁰⁰ Ibid. p79.

²⁰¹ "Equity securities", memorandum submitted to IOSCO's Technical Committee, SEC, July 1991, p.20.

²⁰² Ibid.

²⁰³ Dale 2007, p80.

²⁰⁴ According to the SEC, a portfolio approach does not capture all of the risks to which a portfolio of securities is exposed; there is no agreement as to the best model of portfolio diversification, a capital rule based on portfolio diversification would be difficult and costly to administer; and the portfolio approach doesn't work in highly volatile markets (moreover, it stressed that capital requirements should provide a cushion in the most extreme market conditions). Ibid. p81.

Finally, Japan's securities and banking industry had also become a global force in the 1970s. Although initially, Japanese laws made no separation between banking and securities trading, after World War II, the US exported its Glass-Steagall restrictions into Japan. These restrictions were encoded in Article 65 of Japan's Securities and Exchange Law of 1948, but were gradually eroded along with liberalising trends around the world.²⁰⁵ In 1990, Japan introduced new capital rules for its securities sector, which set out rules on liquidity management as well as its own methodology for calculating market risk.²⁰⁶ Unlike in the EU and the US, the revised Securities and Exchange Law was based on the distinct objective to maintain Japan's securities firms as going concerns, rather than aiming for any kind of orderly liquidation.²⁰⁷ This means that Japan had more stringent capital rules, as it did not want its broker-dealers to enter into insolvency. With respect to the substantive categories of market risk, the Securities and Exchange Law also distinguished between position risk on debt securities and equities, foreign exchange risk and settlement/counterparty risk. Position risks on debt securities were determined based on maturity and the type of borrower (again, the volatility of different borrowers' debt is considered in creating their classification), while also incorporating a bias against foreign denominated debt. Equities risks were also measured based on historical volatility, while similarly including a bias against foreign securities.

Overall, as in the EU and US' securities frameworks, Japan's capital rules also largely measure market risk by reference to a portfolio's historical price volatilities. The Securities and Exchange Law further included off-setting rules for matching long and short positions, and recognised correlations between securities to permit discounts where securities are negatively correlated. Based on the same logic, penalties were imposed on firms which had accumulated too much exposure to a single issuer or particular kind of security. Foreign exchange risk, however, was given a standard 6% risk weight across all securities exposed to foreign currency fluctuations. As mentioned above, an interesting distinction in Japan's capital adequacy framework is that it contained an explicit objective to prevent the collapse of its securities firms, seeking to maintain them as going concerns. Indeed, the government backstop approach which was generally reserved for banks (explicitly so under Japan's

²⁰⁵ Ibid. p104-05.

²⁰⁶ Ibid. p108.

²⁰⁷ Ibid. p113.

Ministry of Finance's policy of "no bank failures") was officially extended to the securities industry. As a result, Japan's capital adequacy framework tended to identify more risk than its EU and US counterparts because the underlying notion of the threat they were designed to target involves protecting the ongoing solvency of the securities sector.²⁰⁸

ii. Regulatory repurposing of investment risk

All of these regulatory frameworks inherited the same market risk concept which had been developed in modern finance theory to support the investment practices of the securities sector. Indeed, as securities regulation expanded to monitor the riskiness of the sector's trading activities, it adopted the same risk instruments through which financial investors made sense of their commercial activities and through which they ensured the profitability of their investments. The capital adequacy frameworks examined above all treat market risks as objective threats, which can be broken down into substantive parts and expressed numerically based on the market values of the securities traded. These risk indicators are subsequently converted into a capital charge which are also represented in terms of price values. More importantly, although there has been some disagreement on the extent to which market risks can be found in, or associated with, a security's historical volatility, this rationale appears to be the only consistent basis on which market risks are deemed to be measurable. And in the absence of any alternative bases for grounding the measurement of market risk, the growing, and ever more complex, risk models focusing on historical correlations have become the primary frameworks through which market risk is understood.

As a result, these regulatory frameworks also inherited the underlying market logics of market risk, which assume that markets are better at processing information than any group of expert 'planners'. The implications, as discussed above, are that markets should be left to their own devices to produce accurate price outputs, i.e. reflecting the market's underlying needs and based on which a social equilibrium can be attained. This further provides the justification as to why regulators should never try to 'reach behind' historical price data, such as by relating them to underlying socio-political trends, as doing so would be to fall back into unreliable

²⁰⁸ Ibid. p 120-131.

individual cognition, as opposed to the perfected social cognition of the markets. Moreover, in relying on historical prices to identify market risk, the above capital frameworks further inherited the efficient market hypothesis' omission of uncertainty, adopting the position that 'the future is already implied in the present'. And yet, having taken up these notions of market risk, securities regulators also created a space from their underlying mechanisms by explicitly questioning their ability to produce accurate predictions of future price movements. The different capital frameworks all included a relatively high confidence level, and the US further insisted on a one month time horizon. Moreover, US regulators explicitly challenged the 'rigidity' of relying too heavily on historical volatility, and both the EU and US frameworks stopped short of recognising the diversification benefits for equities securities.

These deviations in the *repurposing* of market risk demonstrate that its regulatory frameworks actually harbour a level of scepticism towards the models of modern finance theory, and in some sense manifest a regulatory disposition in favour of precaution. Even more significantly, these frameworks did not just blindly import investors' notions of market risk, but adopted them based on an explicitly regulatory justification of the threats they were incorporated to address. Thus, although regulatory notions of market risk aligned with investors' commercial interests by focusing on market prices – which, as discussed above, limits one's attention to 'external' prices and the portfolio interests of securities traders – they were also transformed according to regulatory objectives, as regulators found ways to re-interpret particular sets of price data based on the aims they sought to pursue. Indeed, in contrast to later developments in banking regulation, the securities frameworks were based more on a projection of the outcomes the regulators aimed to prevent or facilitate, which in turn were elaborated from structural analyses of the securities sector and the business models of securities firms. As discussed above, the US rationale for the measurement of position risk on debt securities and equities was 'to ensure securities firms would be able to wind down their affairs in an orderly manner within a one month period'. Further, in *all* the capital adequacy frameworks, regulators selected parameters such as the holding period and the percentage of losses they aspired to cover.

To better explain the way in which the regulatory market risk concept supported both market as well as regulatory aims, it is helpful to first describe the securities business in comparison

to the banking industry. Most definitions of securities firms (also referred to as investment firms or security houses) broadly describe them as firms acting for their own accounts, or on behalf of their clients' account, dealing in securities and derivative products. This includes underwriting and taking positions in securities and derivatives, either in a market-making capacity or for speculative purposes. Some definitions also include broking, i.e. when a firm connects sellers and buyers without themselves taking a position in the instruments traded. What is important here is, because of the types of activities securities firms engage in, securities firms' asset and liability structures are very different from those of traditional banking firms. While (prior to the disintermediation of the banking industry) banks mainly invest in long-term loans that are kept on their balance sheets until maturity, and fund these loans with subsidised deposits, securities firms, on the other hand, invest in tradable assets with a rapid turnover, and tend to fund their investments with secured funding. This is also why the assets of securities firms are 'marked to market' whereas banks' accounting rules rely on book values.

These differences are important because whereas banks are particularly vulnerable to cash flow and resulting insolvency problems, securities firms operate in more liquid markets and can therefore rapidly transform their assets back into cash. Furthermore, this means that banks' assets are generally worth significantly less in liquidation than on a going concern basis, while securities firms' assets tend to maintain their market value.²⁰⁹ These differences are all the more consequential because of the systemic importance of banking institutions. As discussed in Chapter I, banks perform a number of critical social functions, including the allocation of credit, the provision of liquidity and the management of the payments system. Moreover, because of their systemic importance, governments provide them with a range of formal and informal backstops, which encourages more risk-taking and a greater likelihood of ensuing credit crises. Securities firms, in contrast, are not systemically important (at least not until relatively recently), and when they do go bankrupt, their assets do not tend to plunge in value as with banking assets. Even where securities firms become distressed, they both have more time to deal with troubled assets because of their funding structure, and they can more easily sell off their assets and contract their way out of trouble. Thus, unlike banks who

²⁰⁹Ibid. p6.

are highly contagious, relying on a closed inter-bank lending market to balance their books, securities firms do not relate to each other in the same way, and therefore any problems are more easily addressed within individual institutions.

In recognition and support of these differences, securities regulators have adapted their frameworks to the distinctiveness of the industry. Indeed, because securities firms are considered more liquid, less contagious and of little systemic importance, regulators have only deemed it necessary to focus on matters of investor protection, such as in relation to principal agent issues or questions of fraud. Thus, unlike with banks, securities regulation does not seek to maintain securities firms as going concerns, instead, in the event of any financial distress, the position is that a securities company should be allowed to go bankrupt.²¹⁰ This is why securities regulators' concept of market risk corresponds so closely to investors' own conceptualisations of risk. Not only do securities firms' internal accounting rules correspond to the market's pricing of their assets, but the repercussions of a bankruptcy are also relatively self-contained. The only regulatory intervention was to insert some precautionary margins and broadly aim for an 'orderly wind-down' – all of which could be achieved by rounding up the riskiness of particular subcategories of market risk, as well as by selecting more conservative model parameters such as by increasing the time horizon or the confidence level of a risk model.

²¹⁰ Even in Japan's capital rules, which were designed to prevent securities firms from failing, the rationale was not based on any macro questions in relation to systemic risk.

Chapter Three, The early years of the BCBS' market risk negotiations

Introduction

Chapter Three turns to the early years of the BCBS' negotiations of the Market Risk Amendment, between the start of the negotiations in the mid 1980s until the publication of the Consultative Proposal in 1993. This Proposal was the BCBS' first attempt at producing a comprehensive market risk framework, and was published to gather external feedback on the 'Building Block Approach' it proposed. According to the Consultative Proposal, 'market risk is the risk of losses in on and off-balance-sheet positions arising from movements in market prices, including interest rates, exchange rates and equity values.'²¹¹ Although the Proposal was framed as if it was primarily concerned with capturing the objective threat of market risk, Chapter Three shows that its risk measurement approach was actually largely inherited from the contingent and strategic formulations of market risk developed in modern finance theory. As discussed in Chapter Two, these 'investment' risk frameworks were developed based on a set of quantitative, practice-oriented and efficient market logics. Moreover, although Basel was also influenced by securities regulators' repurposing of market risk, Chapter Two further showed that the latter did not significantly diverge from modern finance theory's risk framings. Indeed, unlike in prudential regulation, securities regulators were not as concerned about the systemic repercussions of the failure of an individual firm.

The purpose of Chapter Three is therefore to demonstrate that the idea that the BCBS was attempting to produce a set of scientific or neutral instruments to objectively measure banks' market risks is inherently problematic. Accepting that this is what Basel's market risk framework does, or even that it is what the framework should do, only helps to obscure and thus reinforce the logics and interests embedded within the framework. This is not to say that Basel's measurement approaches are simply passive tools, developed by powerful background actors for the purposes of carrying out their hidden interests. As discussed below, the Consultative Proposal also embedded a set of regulatory logics and priorities. Moreover, like any risk metric, Basel's Building Block Approach is a mechanism, or device, which acquires

²¹¹ BCBS. 1993. "Supervisory Treatment of Market Risks." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements. p1.

a certain level of independence once it has been consolidated. As such, it can be leveraged by a variety of actors, leading it to reflexively reshape its environment as well as introducing opportunities for contestation. However, it matters that Basel's early framings of market risk were constructed based on a contingent body of ideas and practices that were closely aligned with the interests of the banks. As discussed below, not only do these risk framings mark a sharp turn away from historically systemic approaches to banking regulation, but Basel's investment-oriented conception of market risk also produces important market shaping effects.

Part I of Chapter Three provides a historical overview of the period covered by this chapter. It introduces the main actors and events that defined the early years of the BCBS' market risk negotiations. Part II then investigates the contingent choices in the Consultative Proposal's framing of market risk, as well as the implications of these choices. The BCBS' archives reveal that Basel's negotiators initially oscillated between two conceptions of market risk, the first focusing on the banks' credit operations and the second on their trading activities. In the early 1990s, Basel's negotiators adopted this second 'investment' notion of market risk, and moreover, they gradually elaborated it based on the theoretical frameworks of modern finance theory, discussed in Chapter Two. As a result, the BCBS consolidated a market risk framework which, first, legitimised the transition to market-based banking, and second, adopted the banks' internal understanding of market risk. This meant that the BCBS ignored historical and systemic forms of banking regulation and prioritised banks' individual commercial interests instead. The final section of Part II considers the additional regulatory logics that the Basel Committee incorporated into its early framings of market risk. Significantly, Basel's negotiators also introduced a number of regulatory concerns into the Building Block Approach, thus repurposing its market risk framework to reflect priorities *in tension* with modern finance theory's treatment of market risk. However, because the deeper roots of Basel's risk framework lie in modern finance theory, the following chapter shows that the banks still had sufficient leverage to resolve these tensions in their favour.

I. Historical overview: the early years of the Basel Committee's negotiations

The Basel Committee began discussing market risk and its potential repercussions several years before it adopted the first 1988 Basel Accord on credit risk. Although, during the 1980s, the priority of the Committee and its members, particularly the US and the UK, was to reach an international agreement for credit risk, research on market risk had already begun at the turn of the decade. Basel's first public report on market risk was disseminated in 1980, and focused on the foreign exchange dimension of market risk. In the report, the Committee considers banks' market-making functions in foreign exchange markets by buying and selling foreign currency. It highlights the dangers involved in these activities for 'the solvency and liquidity of individual banks' as well as 'the health and stability of the banking system as a whole.'²¹² The concern was therefore not about exchange control from a monetary perspective, nor was it about the issues arising in the context of banks hedging their international lending activities. Rather, the Committee was specifically worried about balancing banks' role in making foreign exchange markets, versus the threats this posed to banking instability because of banks' new trading activities in foreign currencies, especially as these markets were becoming more volatile.

The next research paper on market risk looked at 'The Management of Banks' Off-Balance-Sheet Exposures', which are exposures arising from assets or liabilities that do not appear on a bank's balance sheet.²¹³ Here again, Basel was concerned that banks were 'becoming more deeply involved in an array of novel instruments and techniques'²¹⁴ as a result of their move towards market-based banking. The report focuses on the repercussions of banks entering into an increasing number of 'unconventional' transactions - acquiring instruments such as forwards, swaps, options and futures - which expose them to similar levels of risk as in conventional loan assets, even if they now manifest in the form of market risk. Although these new positions contained little or no credit risk, i.e. the risk of one or more counterparties

²¹² BCBS. 1980. "Supervision of banks' foreign exchange positions." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements. p1.

²¹³ BCBS. 1986. "The management of banks' off-balance-sheet exposures." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

Note that although they not recorded on the balance sheet, off-balance sheet items are still assets and liabilities of the bank and therefore expose them to risks of loss. They are usually items that the bank does not directly own, such as when loans are securitised and sold off as investments, the secured debt is often kept off the bank's books.

²¹⁴ BCBS 1986, p1.

failing to perform their contractual obligations, they did incur high levels of market risk, which did not yet require regulatory capital reserves.²¹⁵ Under the 'liquidity and market/position risks' heading of the report, Basel provides a detailed analysis of the various ways in which interest rate and foreign exchange rate volatility translate into bank losses, while arising outside of banks' conventional loan activities. The report further emphasised the added riskiness of banks' off-balance-sheet activities, because of their deliberate use in regulatory arbitrage, the lack of knowledge in their liquidity structures, and their higher exposures to concentration risk.²¹⁶

According to the Committee's own reasons for developing a new market risk framework, the text of Basel I simply says that 'other risks, notably interest rate risk and the investment risk on securities, need to be taken into account... in assessing capital adequacy.'²¹⁷ Later in the 1993 Consultative Proposal for the Market Risk Amendment, Basel elaborated on this statement, highlighting the problems arising from banks' rapid accumulation of investment risk as they increased their trading activities and moved into the business of market-based intermediation. The Proposal claims that '[i]n the intervening period [since Basel I], changes in technology, in market practices, and in the nature of many "banking" activities have made it even more important that the 1988 Accord be broadened to take into account market risk.'²¹⁸ It also commented on the '[d]eregulation of interest rates and capital controls, the liberalisation of banks' permitted range of activities and the rapid development of financial markets', all of which accelerated financial innovations that in some ways reduced, while in others greatly increased, overall market volatility. Significantly, while the Basel Committee was concerned with the rise of market risk, it never challenged the wider shifts in the banking industry which it recognised as having driven the build-up of market risk. The Committee's focus was to ensure that as the industry transformed, the banks kept enough capital reserves to absorb any potential losses, including as a result of the increased volatility of market-based banking.

²¹⁵ Ibid. p6.

²¹⁶ Ibid. p1-3.

²¹⁷ BCBS. 1988. "International convergence of capital measurement and capital standards." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements. p1.

²¹⁸ Ibid.

Thus, from the mid-1980s onwards, Basel began an extensive research programme on market risk, starting with the subcategory of interest rate risk. These efforts initiated its negotiations towards formally including market risk within the remit of its capital requirements framework.²¹⁹ In 1985, a Dutch and Belgian representative submitted two research notes to the Committee focusing entirely on interest rate risk. A year later, for the 37th meeting of the Basel Committee, a separate discussion on interest rate risk was scheduled, which led to the establishment of an interest rate subgroup headed by John Beverly from the Bank of England.²²⁰ The main concern of the subgroup was to ensure that banks would put in place adequate systems for measuring and managing interest rate risk.²²¹ As part of its research, the Beverly subgroup oscillated between two definitions of interest rate risk, eventually settling on the second: in the first definition, interest rate risk concerns the risk of loss where banks' own borrowing rates increase before they are able to adjust their lending rates; and in the second, it refers to the risk of loss when an increase in interest rates reduces the current value of a marketable security. While the first definition is of greater relevance to banks' traditional loan-making activities, because it concerns the risk of loss arising from diminishing *yield* incomes, the second is more relevant to banks' trading activities, since it is connected to the problem of market volatility.²²²

Following Basel's initial focus on interest rate risk, further subgroups examining other dimensions of market risk soon emerged. The Danielsson foreign exchange subgroup looked at exchange rate risk, and after the 1987 New York Stock Exchange crash, the Mackenzie subgroup was set up to examine the risk of loss from equity price volatilities.²²³ These three risk factors eventually came to represent the core elements of the Consultative Proposal's definition of market risk, which described it as 'the risk of losses in on and off-balance-sheet

²¹⁹ The preface of the BCBS' 1993 Consultative Proposal states that '[t]he work by the Basle Committee on market risks has been in progress for several years, having started in earnest when the Basle Capital Accord was finalised in July 1988. It was clear at the time that banks' trading activities were expanding rapidly, particularly in the derivatives and markets, and that the Accord's focus on credit risk would need to be widened, in due course, to encompass market risks.' BCBS. 1993a

²²⁰ Goodhart, Charles. 2011. *The Basel Committee on Banking Supervision A History of the Early Years 1974–1997*. Cambridge: Cambridge University Press. Chapter Seven.

²²¹ A separate Consultative Proposal focused exclusively on interest rate risk was completed at the same time as the wider Consultative Proposal on market risk. See BCBS. 1993c. "Measurement of Banks' Exposure to Interest Rate Risk." Basel Committee on Banking Supervision. Basel: Bank for International Settlements.

²²² As discussed in the following section, the fact that the BCBS settled on the second definition illustrates that market risk was shaped in relation to the wider shifts in banking towards market-based banking.

²²³ Anonymous interviewee number three, 2018, first interview, 25th of October. This interviewee was involved in two of the three subgroups, and claimed that each of these subgroups had been created to develop their own metrics separately from each other.

positions arising from adverse market movements in interest rates, exchange rates and equity values.’ Interestingly, although the Basel Committee also had a subgroup on liquidity risk, the interrelation between banks’ liquidity and market risk problems would not be integrated into Basel’s framework until after the 2008 crisis.²²⁴ At this point in Basel’s negotiations, market risk only referred to the risk of loss arising from fluctuating asset values as a result of the volatility in equities, interest rates and foreign exchange rates. When the Market Risk Amendment was adopted, Basel added a commodities risk factor to its definition of market risk, and in the Basel 2.5 Agreement, it further included a set of risk factors relating to losses from fluctuating credit spreads. Most importantly, throughout these developments, the measurement frameworks of market risk also transformed significantly.

Despite Basel’s own explanations as to why it initiated negotiations on a market risk amendment - which, it is worth emphasising, implied the need for *more* regulation and thus one would assume *greater* capital reserves - the impetus to establish a formal Amendment began at the behest of the major global trading banks. In the 1980s, less than a dozen banks in the world engaged in any serious trading activities, and these were the institutions preoccupied with the Basel Committee’s regulatory developments on market risk (as well as concurrent developments in national jurisdictions and at the EU). According to a senior member of the Committee, the specific banks lobbying for the inclusion of market risk were the major US banks operating out of London, all of whom were represented by the International Swaps and Derivatives Association (ISDA) – a trade association which continues to lobby for the largest global banks today.²²⁵ Although their trading activities were regulated by the SEC in the US, these banks wanted to ensure that in the UK and the EU they would not be subject to Basel I’s credit risk charges, but to a separate market risk framework. Towards

²²⁴ See BCBS. 2009. “Revisions to the Basel II market risk framework.” *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements. And subsequently BCBS. 2015. “Fundamental review of the trading book - interim impact analysis.” *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

²²⁵ Anonymous interviewee number four, 2019, first interview, 25th of February; Anonymous interviewee number six, 2019, first interview, 21st of March.

According to Flanagan, the initial members of ISDA included Shearson Lehman, Citibank, Bankers Trust, Morgan Guaranty, Salomon Brothers, Kleinworth Benson Cross Finance, Morgan Stanley, Merrill Lynch, First Boston and Goldman Sachs. But by the time ISA held its first formal meeting in 1985, the membership had grown to 27, and by the end of the 1980s, it ‘had grown to approximately eighty Primary Members, about 20 Associate Members, and about half a dozen Subscribers drawn from all parts of the world.’ Flanagan, Sean. 2001. “The rise of a trade association: group interactions within the International Swaps and Derivatives Association.” *Harvard Negotiation Law Review*: p239.

the conclusion of the first Basel Accord, they therefore consistently approached the Bank of England to demand that market risk be accounted for alongside Basel I's credit risk rules.²²⁶

All these lobbying efforts supposedly led certain senior negotiators to consider suspending the adoption of Basel I until a market risk framework could be integrated within its credit risk rules. Although such a rewrite of Basel I was ultimately rejected, this is only because the US and UK were eager to finalise this protracted agreement and ensure immediate compliance with at least some capital reserves on credit risk. Nevertheless, the critical point here is that it was the banks rather than any group of regulators who drove the expansion of Basel's capital requirements regime. This backstory is revealing with respect to the constellation of actors and interests grounding the novel regulatory infrastructure on market risk. New rules imposing additional capital charges are not in banks' commercial interest, and indeed banks typically resist any interventions increasing their costs of investment. According to different regulators, however, there are several explanations as to why the banks lobbied their governments to incorporate market risk. A first group of regulators claim that the banks did have an interest in supporting a market risk amendment, as it might promote greater trust among their investors. The same regulators also suggest that the banks had a collective interest in the broader stability of the financial system.²²⁷ Others, however, argue that the banks lobbied for a Market Risk Amendment in order to reduce their overall capital charges.²²⁸

Ultimately, the 1996 Amendment did lower banks' capital requirements by counteracting the supposedly more 'blunt', conservative and thus costlier, rules of Basel I. Instruments that would have attracted higher capital charges in the banking book could henceforth be moved to the trading book and subject to market risk charges only. As Crouhy et al. argue, 'on-balance-sheet assets in the trading portfolio [were] subject to the market risk capital charge only – a feature that helped offset the aggregate effect of the new rules on the amount of

²²⁶ Anonymous interviewee number four, 2019, first interview, 25th of February; Anonymous interviewee number eight, 2019, first interview, 4th of November.

²²⁷ Anonymous interviewee number one, 2018, first interview, 19th of November; Anonymous interviewee number nine, 2019, first interview, 29th of November; Anonymous interviewee number seven, 2019, first interview, 22nd of November; Anonymous interviewee number four, 2019, first interview, 25th of February; Anonymous interviewee number five, 2018, first interview, 14th of November;

²²⁸ Anonymous interviewee number four, 2019, first interview, 25th of February; Anonymous interviewee number four, 2019, second interview, 4th of November; Anonymous interviewee number eight, 2019, first interview, 4th of November.

capital banks had to set aside.’ More specifically, ‘banks adopting the internal models approach [under the Market Risk Amendment] tended to realise substantial capital savings, on the order of 20 to 50 percent, depending on the size of their trading operations and the type of instruments they traded.’²²⁹ By framing market risk as the output of a set of precise calculative processes, and simultaneously enabling the finding of much less risk, Basel’s market risk frameworks allowed the largest trading banks to get away with far fewer capital reserves. What this section demonstrates is that regulatory definitions of market risk, including its metrics, represent a politically important and contested space. Although Basel posited its regulations as constraints to ensure banks’ new trading practices were backed by adequate capital reserves, the banks actually actively lobbied their governments to incorporate (a particular conceptualisation of) market risk, in the knowledge that it would support the expansion of their trading activities.

II. The Consultative Proposal’s framing of market risk

- i. Inheriting the principles of investment risk
 - a. Price volatility versus net income risk

This historical overview illustrates that when the Basel Committee began its research on market risk, although the Committee acted like it was ‘uncovering’ the truth or reality of banks’ new market risk exposures, to a large extent, it simply inherited a preconstituted and value-laden framework from the securities sector. Moreover, it was not self-evident that Basel’s market risk framework would take the form that it eventually did in the Consultative Proposal. Although the Committee had begun investigating market risk in 1980, as described above, there was not yet a solid definition of the risk concept at this time. The Beverly subgroup’s deliberations on the core principles of interest rate risk demonstrate that the conceptual boundaries of market risk remained relatively unstable and open-ended until at least the end of the decade.²³⁰ Indeed, historically, in the context of banking regulation, two of the core risk factors of market risk, i.e. interest rate risk and exchange rate risk, both

²²⁹ Crouhy, Michel, Dan Galai, and Mark Robert. 2014. *The Essentials of Risk Management*. Second ed. McGraw Hill. p128.

²³⁰ Goodhart 2011, p224-233.

referred to different phenomena compared to their later definitions in the Consultative Proposal, as well as in the final Market Risk Amendment. In the era of traditional banking, interest rate risk predominantly referred to the risk of loss from diminishing yields in banks' loan portfolios when rising interest rates forced banks to pay higher interest to continue funding their loan investments.²³¹ As for exchange rate risk, although regulators were already concerned with banks' open positions in foreign currencies, exchange rate risk mainly referred to the risk of loss from devaluations in the currencies in which loan interests were repaid, or revaluations in the currencies in which banks themselves had borrowed funds.²³²

It was only as the major global banks expanded their trading book operations that market risk came to be equated with particular forms of price volatility. As the banking industry turned towards securities trading as a primary source of revenue, market risk assimilated the principles of investment risk, focusing on the fluctuations of banks' asset values. Since banks' trading operations are recorded in their trading (as opposed to their banking) books, which rely on mark to market accounting techniques,²³³ price volatility - especially in interest rates, exchange rates and equity values - directly affect the value of their portfolios. This can rapidly reduce the capital position of a bank. If a bank owns a portfolio of debt securities, and the interest rate on similar, but newly issued, securities rise, the yield on the securities it already owns will be comparatively lower, and so their *market value* will decrease.²³⁴ Similarly, if a UK bank owns dollars, or dollar denominated loans, a drop in the value of the dollar would translate into immediate trading book losses, either because of its open exposure to dollars or, again, because the market value of its dollar denominated debt securities would decrease. This shift in the conception of market risk in banking regulation makes sense in light of the contemporary changes in the industry – as the banking industry expanded into new lines of

²³¹ Banks lend for longer periods than they borrow, so if the interest rate rises such that the cost for banks to borrow increases before their own loan investments mature, their net income will decrease. There are different ways banks can minimise this loss, they can ensure that their claims and liabilities have rollover dates or that the rates on their liabilities are also variable. The point is that this is different to conceiving of interest rate risk in terms of the marketable value of a security, which requires managing one's portfolio, and hedging against interest rate fluctuations, as the primary form of market risk management.

²³² As discussed above, the Basel Committee was well aware of banks' exposure to foreign exchange risk in the context of their trading activities (i.e. banks having open positions in foreign currencies). However, at the start of Basel's negotiations on market risk, this is not the way in which they discussed foreign exchange rate risk.

²³³ This became a legal requirement under the 1996 Amendment.

²³⁴ As Goodhart writes, '[w]hereas initially the focus of [Basel's] work had been on net interest income risk, [by the time of the Consultative Proposal] this was now a rather secondary concern... Instead the focus of concern had shifted to market (position/investment) risk in banks' trading books.' Goodhart 2011, p246.

business, the problems perceived as the primary threats within the sector evolved alongside these wider transformations.

These ambiguities explain why at the start of Basel's market risk negotiations, some of its officials believed they were creating an entirely new framework, and as part of this process, that they still had to discover what banks' objective market risk exposures were. A leading member of the Basel Committee's Liquidity subgroup and the Models Task Force said that 'market risk simply did not exist' in the mid 1980s, because trading was a novel phenomenon in banking. As a result, he explained that the Committee's understanding of the risks associated with these new trading activities were also 'still being worked out'.²³⁵ Ironically, it was the vacillations between the different meanings of market risk that led the regulators to frame their research efforts as a process of truth finding or fact discovery, even though it was precisely at these moments that they were drawing from the risk management practices and frameworks of securities regulators, traders and the closely-knit circle of academic finance theorists focused on the practice of investing. Looking at the Consultative Proposal, its substantive definition as well as its metrics of market risk were all lifted from the investment risk frameworks discussed in Chapter Two, which understand market risk specifically in terms of asset, or price, fluctuations.

The shifting meaning of market risk - from the risks of loss due to diminishing yields in banks' loan assets to the risks of loss arising out of fluctuating market prices - is important, because it indicated an acceptance of, and thus also legitimised, the changes in the role of banks from performing traditional 'credit' to new forms of 'market'-based intermediation. As Duncan Wigan has argued, inherent in the notion of market risk, and its constituent risk factors, is the idea that the strength and productivity of a bank should depend on its capacity to withstand all possible market fluctuations.²³⁶ The focus is thus redirected to the buying and selling of securities, rather than the skills involved in selecting borrowers and maintaining strong credit relationships. While Wigan does not argue that the introduction of a market risk framework was any kind of driver behind the historical shifts in the nature of banking, he suggests that it

²³⁵ Anonymous interviewee number four, 2019, first interview, 25th of February; Anonymous interviewee number eight, 2019, first interview, 4th of November. Anonymous interviewee number six, 2019, first interview, 21st of March.

²³⁶ Wigan, Duncan. 2010. "Credit Risk Transfer and Crunches: Global Finance Victorious or Vanquished?" *New Political Economy* 15(1): 109–25.

legitimised and accelerated these trends.²³⁷ Moreover, a redirection in focus towards banks' ability to remain commercially profitable in the context of volatile markets implied a concession that banks may be rewarded for their speculative activities at the expense of performing their traditional credit functions. The former involves banks attempting to predict market trends, strategising around the reactions of other market actors, or even using their market power to shape and thereby profit from particular market movements. All these activities emphasise the short-term changes in market behaviours, rather than attending to the underlying projects of the loan investments that historically made up most of a bank's balance sheets.

b. A risk concept grounded in the logics and practice of modern finance

By inheriting an investment risk framework, the Consultative Proposal also inherited the statistical, market-based and profit-oriented logics considered in Chapter Two, as well as the conceptual boundaries based on these logics. This means that the Consultative Proposal did not just incorporate an 'investment' versus a 'net-income' risk conception of market risk, but it further recreated a risk concept understood in objective and quantitative terms, specifically as statistical analyses of historical price relationships. Like in securities regulation, this framework led banking regulators to side-step questions of causation while largely bracketing the problem of uncertainty. This ultimately supported banks' profit objectives by legitimising a focus on market prices rather than on the structure of the banking industry. Yet, in light of the differences between a securities trader's perspective and that of the Basel Committee, we might ask why the primary standard-setter in international banking adopted these investor-oriented conceptions of market risk as it sought to capture the threats in the changing nature of banking? As discussed in the introduction of the thesis, in mainstream accounts of financial risk management, Basel's market risk frameworks are framed as logical responses to the contemporary shifts in market-based banking, as market risk is unreflexively presented as the natural risk category that emerges from the business of securities trading. However, questions of risk are at core questions of opportunity and danger, which are inherently value-based decisions and depend on the situation of the observer.

²³⁷ Ibid.

Importantly, banking regulation was historically based on qualitative and systemic analyses of the banking industry. Although the term ‘macroprudential regulation’ is mostly associated with post 2008 developments, it has a much longer history as a regulatory approach which addresses the problems of banking stability.²³⁸ A macroprudential approach implies a focus on market structures, as well as the dynamic co-evolution of financial markets with the macroeconomic system.²³⁹ For example, it examines phenomena such as bank runs, moral hazard, contagion, credit cycles, common exposures and Too Big To Fail (TBTF). In addition, the separation of commercial from investment banking following the 1929 financial crash, i.e. the legal barriers against banks’ trading activities, was also explained in terms of systemic risk.²⁴⁰ Overall, instead of focusing on the losses of individual banks, macroprudential regulation considers the ‘systemic’ sources of banking instability.²⁴¹ With respect to capital requirements specifically, as discussed in Chapter One, the rationale for capital requirements was historically also explained in systemic terms. Capital requirements were created to put banks’ own capital at risk, and to reassure the depositors that the banks have sufficient capital to absorb a comfortable margin of losses, so that these losses do not trigger wider panics. Towards these ends, it was understood that banking regulation could not just be concerned with the particular losses of individual banks, because the banking system is closely interconnected and one bank failure can rapidly spread to another (due to the credit extensions in the interbank lending market, or because a bank is expecting payments from a distressed bank for the accounts of its customers).²⁴² In balancing the costs against the benefits of higher capital requirements, the calculation of these costs thus included systemic examinations of the sources and accumulation of different types of banking risks.

²³⁸ Clement, Piet. 2010. “The Term ‘macroprudential’: Origins and Evolution.” *BIS Quarterly Review*, March.

²³⁹ The macroprudential paradigm will be considered in greater detail in Chapter Six.

²⁴⁰ That a shift to investment conceptions of market risk occurred as the banks began to trade again is important, since the ideas and practices of regulating systemic risk were to a large extent shaped by the 1929 crash, a crisis of market-based financial intermediation. Moreover, the transitions to market-based banking in the present period have taken a far more globalised form, with increasingly interdependent mechanisms that amplify the consequences of any disruptions in the system.

²⁴¹ In the US and Europe in the late 1800s, governments even used macroprudential policies to control the pace and quality of credit growth in their financial systems. Keç, Turalay. 2016. “Macroprudential Regulation: History, Theory and Policy.” *BIS Paper*.

²⁴² As Tarullo argues, ‘[s]ince the social costs of widespread financial instability would be substantial and would not be borne solely by the shareholders and creditors of the bank whose failure triggered the crisis, the government might justify requiring higher levels of capital as an effort to align the social benefits and costs of the bank’s operations more closely.’ Tarullo, Daniel K. 2008. *Banking on Basel: The Future of International Financial Regulation*. Peterson Institute. p122.

Against this background, the Consultative Proposal's investor-based framework represents a significant turn in the specific ideas and practices of banking regulation, and therefore it is argued here that this required a level of 'active' work to implement. The remainder of this section considers how and why this shift took place, and describes the specific ways in which it affected the Proposal's framing of market risk. The Basel Committee has often been described as belonging to the post-Bretton Woods transition towards transnational and privatised forms of governance, which explains its gradual shift towards market-based conceptual frameworks.²⁴³ However, this depiction of the origins and evolution of the Committee is insufficient to explain why banking regulators abandoned their macro and systemic approaches, in favour of a risk framework internal to banks' own perspectives on the threats in banking. The argument that Basel is ideologically aligned with the interests of private finance sits well with the story that it was the major banks who lobbied their governments for a new market risk framework, and thus the argument that its risk framings can also be explained as a matter of lobbying. While this is all true, regulators have never been purely dominant nor submissive in relation to private market actors. Indeed, just as many governments deliberately supported a transition towards market-based banking (Chapter One), the banks were also responding to broader financial market developments which various state actors had actively facilitated.²⁴⁴ Moreover, both at this stage of the Consultative Proposal (discussed in section iii below) as well as after its publication and during the negotiations leading to the final Market Risk Amendment (discussed in Chapter Four), Basel's regulators went against or resisted a number of the banks' demands.

Rather, as the banking system - supported by the central banks of the major financial centres - became more closely integrated with the capital markets, banking regulators had to readjust the system's regulatory underpinnings based on the understanding that these markets now constituted the contemporary channels of credit allocation. As one regulator said, structural questions like too-big-to-fail, procyclicality and endogenous risk were only discussed 'in the monetary policy environment of the central banks, ... [but] among bank supervisors

²⁴³ See for example: Major, Aaron. 2012. "Neoliberalism and the New International Financial Architecture." *Review of International Political Economy* 19(4): 536–61; Underhill, Geoffrey. 1991. "Markets beyond Politics? The State and the Internationalisation of Financial Markets." *European Journal of Political Research* 19(2–3): 197–225.

²⁴⁴ Konings, Martijn. 2011. *The Development of American Finance*. Cambridge: Cambridge University Press.

concerned with rules and regulations, [these issues were] not discussed.’²⁴⁵ Further, as another regulator added, from the late 1980s onwards ‘the markets were going up, and things were getting better and better... everyone was enthusiastic.’²⁴⁶ Thus, as the banks entered the business of securities trading, both they and the regulators inherited its underlying risk frameworks. Once it was accepted that banks engage in the forms of trading that they do (and that regulators would not constrain any of these activities, nor shape the markets they were invested in), they naturally inherited investors’ risk frameworks because these frameworks constitute the basis on which the business of trading is organised. Although regulators are responsible for the stability of the banking system rather than the financial strength of an individual firm, it was not too far a leap to transform the notion of investment risk into a regulatory category. First, as mentioned above, Basel is based in a microprudential and market-based paradigm, in which the stability of the system amounts to the cumulative stability of every bank. And second, as an international organisation without the legislative authority of national governments, the Committee operates on consensus rules. It therefore bracketed the most difficult questions on the substantive rationales for banking regulation, and instead focused on questions of ‘competitive equality’ – between the different banking institutions that exist within its member states, and therefore also the different types of activities (loan-making as well as trading) that make up those institutions.

For these reasons, when the Basel Committee began researching and negotiating the Market Risk Amendment, it worked with industry representatives as well as the International Organisation of Securities Commissions (IOSCO) to reproduce a risk framework based on the ideas and risk practices from the securities sector.²⁴⁷ As discussed in part I’s historical overview above, the Basel Committee started its discussions by setting up three subgroups on interest rate risk, exchange rate risk and equities. Initially, each subgroup was tasked with creating its own metric for the risk factor it focused on. However, when the Bank of England developed a common ‘building block’ approach in 1992, the Basel Committee followed suit and its subgroups merged into one ‘market risk group’ under the leadership of Giovanni Carosio from the Banca d’Italia.²⁴⁸ It is this market risk group which produced the Consultative

²⁴⁵ Anonymous interviewee number four, 2019, first interview, 25th of February.

²⁴⁶ Anonymous interviewee number six, 2019, second interview, 23rd of November.

²⁴⁷ Goodhart 2011, p234-247.

²⁴⁸ Ibid. p233.

Proposal, and defined market risk as ‘the risk of losses in on and off-balance-sheet positions arising from adverse market movements in interest rates, exchange rates and equity values.’ Evidently, the definition follows the substantive categorisation of market risk in securities regulation,²⁴⁹ and moreover, its Building Block Approach largely replicates the main tenets of modern portfolio theory. The basic steps of the Building Block approach were to take the Consultative Proposal’s three risk factors and, in a manner similar to Basel I, assign each a risk weight and aggregate the sum total into an overall market risk exposure. Following portfolio theory, interest rate risk and equities risk were further sub-divided into a specific and general risk component.²⁵⁰ And most importantly, Basel’s risk weights were decided based on analyses of historical price volatility, and permitted discounts for correlations within and across risk factors.²⁵¹

By adopting the core framework developed in the private risk practices of securities trading, the Basel Committee also inherited a particular set of logics, based on which strategic conceptual boundaries were formed. This shows that from its inception, Basel’s market risk framework was closely aligned with banks’ perspectives, and thus more amenable to being leveraged towards their interests. First, as argued in Chapter Two, the modern portfolio theory foundations of these private risk practices established ‘investment risk’ as an objective and quantitative object, i.e. based on statistical evaluations of historical numbers (of prices). Similarly, the Building Block approach uses historical prices to formulate risk weights which

²⁴⁹ As discussed in Chapter Two, securities dealers & experts already conceived of market risk as historical price volatility, and often focused on the volatility in equities, exchange rates and interest rates. The private risk solutions they developed, notably in the form of the expanding range of derivatives investors used, all sought to address investors’ exposures to these risk factors. In a chronological table documenting the first appearance of different derivative instruments, Dionne lists the dates of the first swaps, futures and options that were created, and they all focus on different ways of hedging fluctuations in equities, exchange rates and interest rates.

²⁵⁰ Recall, these refer respectively to adverse price movements arising from factors relating to the particular security examined and those arising from general market movements. For example, if a UK bank invested £100 into a corporate stock carrying a 4% specific risk weight and a 8% general risk weight, its total capital requirement would be the sum of £4 and £8, so £12. A single financial asset could be exposed to several risk factors. Thus, if the bank had instead purchased a stock in dollars for \$100 with the same equity risk weights, it would first convert the value into pounds, let us assume the equivalent of £78, and add another 8% (£6.24) for its foreign exchange risk weight, making the total capital requirement £18.24. In reality, the calculations were much less straightforward because the Building Block approach permitted several methodologies depending on a bank’s risk infrastructure, and more importantly, risk exposures were calculated across entire portfolios so that different exposures could be readjusted based on complex off-setting rules.

²⁵¹ The Consultative Proposal explicitly refers to historical volatility throughout the text. For interest and exchange rate risk, two methodologies were permitted, both of which relied on historical price trends. For equities risk, it was given a flat 8% weighting, on the basis of ‘collaboration with securities regulators’ concerning ‘the price volatility of the principal equity indices in the major markets.’ Correlations are also mentioned throughout the text, most significantly regarding the Proposal’s off-setting rules. These rules were both conceptually, and commercially, the most critical aspects of the Building Block approach, as they established how, and on what basis, market risk exposures and charges were to be determined.

are expressed as percentages, and which are adjusted up or downwards based on off-setting calculations that measure the historical relationship between different price strands. This displaces notions of risk that rely on subjective belief and various kinds of substantive expertise to formulate ideas about the future.²⁵² As with investor risk concepts, market risk's reliance on historical numbers displaces 'uncertainty', which, as elaborated in the following chapter, is particularly problematic for financial markets that are highly unpredictable. In the place of subjective judgment, by relying on historical numbers, market risk relies on the predictive value of the past, or alternatively, on further assumptions inside the numbers. As considered in Chapter Four, banks' risk models actually embed a variety of substantive assumptions, but because they take the form of 'model parameters', they are much more difficult to contest.

Second, by equating market risk with a set of risk weights based primarily on historical volatility, the Consultative Proposal's market risk framework also inherited the efficient market and profit-maximising (including specifically the RAROC) logics embedded in 'investment risk'. As considered in Chapter Two, because modern portfolio theory is based on the efficient market hypothesis, its risk framework adopted the hypothesis' assumption that the market's information mechanisms are superior to any kind of expert judgment. As a result, just as no investor can predict the market's movements (without access to superior information), the regulators are in no better position to provide deeper explanations of its behaviours either, and should not attempt to 're-interpret' prices as actually manifesting some alternative social dynamic. Moreover, the efficient market hypothesis' inability to account for uncertainty further reinforced modern finance theory's quantitative bias against calculating the unknowable. Yet, in the context of the Basel Committee, the expectation is not for regulators to anticipate price movements but to satisfy its mandate to protect the stability of the banking system. While it might not be possible to predict the market, that is not because market prices are always one step ahead but because they are not the cognitive mechanisms attributed to them in the efficient markets hypothesis.²⁵³ Similarly with respect

²⁵² See for example: Bernstein, Peter. 1996. *Against the Gods: The Remarkable Story of Risk*. Wiley; Thiemann, Matthias, Mohamed Aldegwy, and Edin Ibrocevic. 2018. "Understanding the Shift from Micro-to Macro-Prudential Thinking: A Discursive Network Analysis." *Cambridge Journal of Economics* 42(4): 935–62;

²⁵³ Both individually and collectively, market actors do not always behave in utility maximising ways; investors use trading strategies like short selling which distort information; the efficient market hypothesis ignores power hierarchies and market leverage; including the unequal distribution of knowledge; it ignores negative externalities; and empirically it does not hold

to uncertainty, the point of acknowledging it is to create systems that guarantee greater stability even if they cannot predict it.

The most damaging repercussions of the assumptions underlying investment risk are therefore its implicit crystallisation of the subordination of regulators to the markets, despite the latter's inability to create socially optimum outcomes. Instead, the assumption of efficient markets supports the profit-maximising logics of investment risk, which, as discussed in Chapter Two, channels the risk framework against the 'threat' of market volatility, and towards the protection of the 'interests' of asset appreciation. Indeed, the entire mean-variance framework - from Hicks' theories about why investors maintain a proportion of safe assets in their portfolios, to its application in the increasing numbers of asset pricing models - was primarily concerned with 'efficient investing'. Modern portfolio theory looks at financial markets from the internal viewpoint of an individual investor, understood as a rational agent selecting financial assets for the purposes of constructing the most efficient, profit-maximising, investment portfolios. From this perspective, the main phenomena seen as threats are the fluctuating price movements capable of rapidly undermining a portfolio's valuation and its returns. Decisions on how to identify and manage risk are thus essentially equated with decisions 'evaluated based on their effect on firm or portfolio value, rather than on how well they cover certain risks.'²⁵⁴

The result is that the Basel Committee created a regulatory risk object whose mechanisms could easily be redirected to meet banks' commercial interests. As Millo and MacKenzie argue 'risk management is not only a description of a given reality but includes a prediction and is operated upon as a blueprint for action, it includes a constitutive (or performative) element: the way organizations depict their risks has a significant effect on the way they will, eventually, react to events and to other actors.'²⁵⁵ Basel's market risk framework institutionalised a blueprint which elided the actual causes of market stability, and over time,

up against historical levels of asset price volatility, especially in relation to company profits. Fundamental uncertainty further rules out the notion of intrinsic value since it precludes the possibility of knowing an asset's future earnings and the risks it faces.

²⁵⁴ Dionne, Georges. 2013. "Risk Management: History, Definition, and Critique." *Risk Management and Insurance Review* 16(2): p152.

²⁵⁵ Millo, Yuval, and Donald MacKenzie. 2009. "The Usefulness of Inaccurate Models: Towards an Understanding of the Emergence of Financial Risk Management." *Accounting, organizations and society* 34(5): p639.

eroded the regulatory infrastructure and skills required to respond to them. As Chapter Five will demonstrate, this means that as a regulatory intervention, Basel's earliest framing of market risk grounded it within an analytical framework which prevented regulators from recognising the qualitative and systemic causes of market instability, thus fundamentally hindering its stability mandate. Moreover, as discussed above, despite the systemic rationales based on which many jurisdictions separated their banking and securities sector, the Basel Committee adopted the same risk concept used by securities regulators without adequately addressing their essential differences. Chapters One and Two showed that banks perform critical social functions, and that disruptions to the banking system are both more likely to occur while also producing far more devastating systemic consequences. Thus, while securities regulators are mostly concerned with ensuring the orderly wind-down of investment firms, banking regulators have traditionally maintained a systemic perspective, to prevent large scale instability spreading through the financial, payments and macro-economic systems.²⁵⁶

ii. Regulatory repurposing of market risk

Nevertheless, just as securities regulators adopted a risk object which they repurposed into a regulatory instrument, the Basel Committee also imbued its market risk framework with a set of regulatory logics and objectives. As discussed in the introduction of this Chapter, it is this multi-layered construction of the market risk framework (from a network of differently situated actors) which makes it interesting to re-examine as a device or technology of power. Not only does it demonstrate that market risk frameworks or models are not scientific models capable of better revealing the fact of market risk, but it also shows that, as a technology of power, they are constituted by and therefore perform a multiplicity of logics and objectives which may sometimes be in tension with each other, but can also align. This final section argues that by using a system of risk weighting, the Consultative Proposal adopted a mechanism flexible enough for the negotiators to include their own rationales about market risk within their definitions and rules on market risk. While some of the regulators' objectives, such as their concern for precaution, stood in tension against banks' interest, others, like the

²⁵⁶ Dale, Richard. 1996. Risk and Regulation in Global Securities Markets. John Wiley & Sons.

negotiators' focus on competitive equality, supported banks' trading interests. Overall, since the risk weights took the form of percentages, although they predominantly represented probability estimations based on historical data, the negotiators could adjust them (as well as the off-sets between them) to reflect specific regulatory concerns.²⁵⁷

Like in securities regulation, Basel's repurposing of market risk demonstrates that the differences between regulatory and private risk concepts do not represent a lag in regulators' ability to catch up with market innovations, but rather, they reflect a specific set of objectives that are deliberately inserted into these instruments. With respect to the Basel Committee's market risk proposal, the Committee integrated a set of precautionary concerns, as well as further objectives in relation to regulatory convergence, competitive equality and specific national interests on preferential rates for government loans.²⁵⁸ Although these deviations did not significantly diverge from banks' own risk practices – which explains why ultimately Basel's market risk framework was mostly in line with banks' commercial interests – in contrast to later developments in regulatory risk modelling (discussed in Chapter Four), these differences were significant enough to uphold a certain amount of tension between the MPT foundations of market risk and the regulatory logics and objectives inserted into Basel's reformulations of market risk.

First, with respect to Basel's precautionary concerns, the Consultative Proposal explicitly recognises that banks' market risk exposures are often unpredictable. Despite the statistical and mathematical underpinnings of market risk (following in the steps of the securities regulators' re-appropriation of investment risk), Basel's negotiators openly reflected on some of the limits and contradictions within the growing science of risk measurement. As a result of these scepticisms, the Basel Committee's reformulations of market risk refused to recognise as many correlations as private financial traders do in their risk calculations, and

²⁵⁷ This is what Basel's negotiators did, but the Consultative Proposal also included various sections where national regulators would have been given further discretion in adjusting their banks' risk weights. BCBS 1993b.

²⁵⁸ In the text I focus on how Basel integrates its objectives of precaution and competitive equality (and convergence) within its risk weights, because these are the more significant regulatory objectives underlying the overall market risk framework. But to further illustrate how Basel adjusted its market risk weights to reflect its negotiators' government priorities, despite differences in the market's opinions of the creditworthiness of different governments, all government debt attracts a 0.00% risk charge. The Member States have further demanded that 'at national discretion, local and regional governments [should also be] subject to a zero credit risk weight.' Interestingly, as discussed in Chapter Two, these measures were agreed in the context of countries like Japan who did not just demand preferential rates for its debt, but further institutionalised a bias against foreign debt.

the negotiators also rounded up the risk weights of the different sub-components of market risk to provide a 'precautionary margin' within them. The regulators thus found various ways to incorporate an acknowledgement of uncertainty proper, or 'Knightian' uncertainty, within a risk concept derived from the statistical techniques of modern portfolio theory. This was not, as suggested by much of the academic and other expert commentary, because the Committee was ignorant and fearful of the modelling developments taking place among market actors. The archives published in Goodhart's book, as well as my discussions with negotiators involved in the Consultative Proposal, confirm that members of the market risk subgroup knew about these models, but explicitly rejected them as *regulatory* tools.

For example, in one internal report from 1989, the foreign exchange subgroup states: 'we are well aware that the major banks use advanced statistical techniques to measure and control their own risk profiles, but several members are convinced that this is not a suitable basis for devising a supervisory instrument.' In the same report, the foreign exchange subgroup makes clear its position that: 'Much depends on the technical specifications referred to in paragraph 9 and 10 above [on historical observation periods and time horizons], particularly the number of years observed. An underlying assumption is that exchange rate volatility will maintain a similar pattern as it has done over the observed period. However, some members believe that this fails to take account of the nature of markets, where sudden changes of fashion can and often do occur.'²⁵⁹ Thus, as one US regulator argued, 'the Building Block approach was cleaner' and it further attempted to 'err on the side of caution, and recognise that relationships change overtime.'²⁶⁰ And finally, the text of the Consultative Proposal explicitly confirmed its position that 'there is no methodology that can fully anticipate price movements of assets or classes of assets based on historical experience.'²⁶¹

Not only were certain members of the Committee worried that the banks' statistical models could not capture all relevant variables, particularly those producing 'sudden changes' in the market, but they were also worried about the performative effects of the models themselves.

²⁵⁹ Goodhart 2011, p242.

²⁶⁰ Anonymous interviewee number three, 2018, first interview, 25th of October;

²⁶¹ BCBS 1993, p5.

Immediately following the above quote from the foreign exchange subgroup, it goes on to say that:

banks which have been encouraged by low capital weights to take large positions in closely-correlated currency pairs may then have a risk concentration problem if volatility increases significantly. Conversely, since the benchmark measure tends to discourage position-taking in volatile currency pairs, the market for these cross-rates might become thinner, tending to increase their volatility. The increased volatility, and the subsequent increase in capital requirements, might further discourage position-taking in these crosses, reinforcing the process.²⁶²

Building on these criticisms, the subgroup argues that the statistical approaches:

will give banks an incentive to take positions in those currency pairs which have historically been well-correlated and encourage them to regard such positions as riskless. This would be a dangerous message... Several members of the sub-group feel that the process would give the Committee too high a profile in risk management (since it would be interpreted as instructing the banks on how to manage their risk on a micro level) and would introduce excessive complexity at odds with most other elements of the present capital framework.²⁶³

Many negotiators confirmed these anxieties. As a result, Basel explicitly sought to create blunter or simpler, and more conservative, risk weights, to compensate for the lack of knowledge about how prices actually fluctuate. These risk weights, and their corresponding off-sets, were thus grounded in the 'judgement' and 'critical assumptions' of the regulators.²⁶⁴ In certain places, the Consultative Proposal even allows national authorities to further increase the risk weights if they deemed it necessary as a matter of precaution.²⁶⁵

In addition to incorporating a set of precautionary concerns, the Basel Committee also constructed its risk weights with a view to enforcing conditions of competitive equality between the banking and securities industries. This was seen as a particularly important objective because different jurisdictions allowed varying levels of integration between the

²⁶² Goodhart 2011, p242.

²⁶³ Goodhart 2011, p242-43.

²⁶⁴ Goodhart 2011, p240.

²⁶⁵ See for example, the Consultative Proposal's section on equities, 'diversification and liquid assets'. BCBS 1993.

two sectors. To prevent one set of firms benefiting from unequal capital charges, and more importantly, to prevent other firms from engaging in regulatory arbitrage, Basel's negotiators were very careful to ensure that the same types of activities across different industries and jurisdictions attracted the same level of risk charges.²⁶⁶ In a letter sent by the Basel Committee to the G10 governors in 1990, the Committee highlighted two priorities:²⁶⁷

1. The need for consistency with:
 - (a) the European Commission and its prospective directive on capital adequacy requirements for both banks and investment houses; and
 - (b) IOSCO, especially so that there should be a level playing field with investment houses; and
2. That applying capital weights for market risk in addition to the present weight for credit risk [should not] be an undue burden for some banks striving to meet the end – 1992 deadline.

The question of convergence with IOSCO was high on the agenda and resulted in ongoing disagreements between the two organisations, at times threatening a breakdown in communications between them. However, at a meeting at the Basel Committee in September 1990, all its Member States reiterated their commitment to a common system for market risk for the securities business of banks and non-bank securities companies. They further concluded 'that a building block approach was likely to be the most effective way of achieving convergence, given the need of the banking supervisors to be consistent with their existing capital requirements which are primarily based on credit risk and do not yet take account of market risk.'²⁶⁸ In the Consultative Proposal itself, the section on the specific and general risk of equities says that the market risk charge 'was reached on the basis of analysis in collaboration with securities regulators of the price volatility of the principal equity indices in the major markets.' Moreover, it claims to anticipate further collaboration in the

²⁶⁶ The Basel Committee was most concerned with harmonising the legal frameworks between its member states (the G-10), between the Market Risk Amendment and the first Basel Accord on credit risk, and between its own framework and the emerging regulatory frameworks of the EU and IOSCO.

²⁶⁷ Goodhart 2011, p256.

²⁶⁸ Goodhart 2011, p241.

development of a comprehensive approach combining specific and general risk calculations.²⁶⁹

Significantly, in contrast to the principle of precaution, Basel's objective to secure the conditions of competitive equality supported the interests of the major trading banks. By tailoring the market risk framework according to the interests of convergence and competitive equality, the Basel Committee ensured that the large international banks would be able to enter and entrench their position within the securities markets. It is thus unsurprising, as discussed in the historical overview above, that the banks lobbied the regulators for a market risk amendment to Basel I. The banks were not just concerned about lowering their capital requirements (which Basel I had increased), but lowering their requirements in relation to other financial institutions' operating in the same markets. However, the problem with respect to Basel focussing on competitive equality - and incorporating these objectives into market risk - is that it led Basel to focus on the question of 'convergence', which demanded that Basel's risk charges be constructed as *similarly* as possible to securities firms' risk charges. But as discussed above and in Chapter Two, this ignores the many differences between the banking and securities industries. Most importantly, banks are systemically important institutions, which, because of their significance, further receive various kinds of public backstops. These backstops moreover generate structural incentives for banks to take on even more risks. This is why banking regulation has historically regulated the banks from a top-down, macro-prudential perspective. Finally, not only does the objective to secure competitive equality run against such a macro-prudential approach, but it also aligns with the efficient market logics underlying investment risk, whereby the role of regulators is seen as best limited to the preservation of the market's price mechanisms.

In conclusion, although Basel's negotiators inserted a range of regulatory logics and objectives in its reformulation of market risk, they did not necessarily challenge the risk concept's mechanisms and their proximity with the interests of private finance. On the one hand, Basel's precautionary concerns did represent a significantly different logic compared to the

²⁶⁹ BCBS 1993, p28.

quantitative and efficient market underpinnings of investment risk, which in its most practical manifestation, produced higher capital charges for market risk. Moreover, the way in which the Consultative Proposal incorporated these precautionary concerns was to re-adjust its risk weightings to demand a higher or lower amount of capital reserves, a technique which could be used for anything the regulators deemed significant (e.g. to support or constrain particular financial activities, markets or counterparties). On the other hand, the fact that Basel's market risk concept also integrated a set of regulatory concerns does not mean that the latter necessarily challenged the concept's quantitative, profit-oriented and market-based logics and interests. Thus, with respect to the question of competitive equality, both the banks and the regulators understood that they had to shape Basel's market risk framework based on this objective so that the framework, or device, could serve as the necessary cognitive and organisational infrastructure to support banks' competitive position in the securities sector.

Thus, it is not because the Building Block approach's risk weights guaranteed some level of regulatory discretion that this discretion would necessarily be used to constrain the banks' aggressive expansion of their trading book activities. Nevertheless, a capital adequacy framework for market risk which relies on a system of risk weighting, as opposed to a system of risk modelling, does preserve a space for regulatory discretion and subjective decision making. The more fundamental problem in the Basel Committee's Consultative Proposal is that it relegated its 'regulatory' interventions to a legal form which prioritises numerical price information and, as argued in Chapter Four, was therefore readily hijacked by the quantitative revolution in risk modelling. Ultimately, with the institutionalisation of Basel's advanced modelling approach, the strategic ideas and practices embedded in market risk consolidated it as a device that would become much more supportive of the projects of the major trading banks.

Chapter Four, Introducing the Market Risk Amendment's Advanced Approach

Introduction

Chapter Four looks at the final three years of the BCBS' negotiations of the Market Risk Amendment, between the publication of the Consultative Proposal in 1993 to the adoption of the Amendment in 1996. As discussed in Chapter Three, the Consultative Proposal defined market risk as the risk of losses arising from market volatility, and was further elaborated based on securities traders' investment risk frameworks. At the same time, Basel's regulators designed the Building Block Approach to function through a set of risk weights, enabling them to incorporate a set of competing regulatory concerns. Following the publication of the Consultative Proposal, this chapter examines the next stage of the BCBS' negotiations on market risk, when the major trading banks came together against the Building Block Approach. They advocated for a two-tiered measurement approach, which would include an additional Advanced Approach, permitting the largest banks to use their internal models to measure their market risks. The purpose of this chapter is to highlight the two important ways in which the Advanced Approach continued to transform Basel's conceptualisation of market risk. First, it further quantified Basel's market risk category, replacing the Building Block Approach's margins for regulatory discretion with the Advanced Approach's model parameters. And second, the Advanced Approach transformed Basel's conceptualisation of market risk by reconfiguring the relationship between 'risk' and 'uncertainty' within it.

As in Chapter Three, part I of Chapter Four starts by providing a historical overview of the period covered by this chapter. This overview introduces the new actors and events involved in shaping the Market Risk Amendment's Advanced Approach, including the specific quantitative and qualitative criteria that make up the Advanced Approach. Part II then hones in on the ways in which the Advanced Approach refined the Consultative Proposal's market risk framework. Section i of part II looks at the way in which the Advanced Approach further quantified Basel's notion of market risk, first by entrenching the modern portfolio theory foundations of the Building Block Approach, and second, by replacing the Building Block Approach's risk weights with a set of quantitative parameters. Section ii then considers the way in which the Advanced Approach transformed Basel's conceptualisation of market risk

by bracketing the question of uncertainty, thus preventing any meaningful engagement with its problems and implications.

I. Historical Overview: introducing a two-tiered measurement approach

As soon the Basel Committee published its Consultative Proposal in 1993, the major investment banks responded with highly critical and detailed criticisms of its Building Block Approach. In early 1994, the Basel Committee received a wave of complaints, in which the banks argued that the Proposal's 'frameworks for measuring market risk... [were] at the same time complex and inaccurate.'²⁷⁰ They claimed that the Building Block approach entailed too many separate calculations for assessing large trading portfolios, while at the same time producing inaccurate results because its risk weights relied on regulators' subjective judgments.²⁷¹ Moreover, the banks criticised the Consultative Proposal for incorporating 'an outdated methodology which banks no longer [use]', thus failing to reward the development of more sophisticated control systems which produce more 'accurate risk measurements.'²⁷² This tied in with a final set of criticisms, that the Building Block Approach was too rigid because its risk weights were devised as pre-formulated percentages, and therefore incapable of accommodating the novel developments in the field of quantitative risk modelling.²⁷³

In response to the Consultative Proposal, the large trading banks demanded that the Basel Committee complement the Building Block Approach with an additional 'Advanced Approach'. The latter would allow specific banks, which qualified under the Advanced Approach's qualitative standards, to use their own in-house models to calculate their market risk exposures. Unlike the Consultative Proposal's risk weighting method, the proposal for an Advanced Approach's involved the deployment of statistical techniques capable of processing enormous amounts of data, and adhered more closely to the principles of Modern Portfolio theory. In the early 1990s, there were four main types of market risk models, and eventually

²⁷⁰ Goodhart 2011, p248. Th

²⁷¹ As one interviewee explained, the Building Block approach required separate assessments for each one of a bank's positions, which for large trading banks involved thousands of calculations. Anonymous interview nine, 2019, first interview, 29th November.

²⁷² Goodhart 2011, p248.

²⁷³ All these points were re-iterated by the regulators I spoke to.

J.P. Morgan's Value-at-Risk model (VaR) prevailed as the industry standard.²⁷⁴ Although these models had been developed to calculate banks' *economic* capital - the capital that the banks themselves deem necessary to remain solvent - they now wanted the same models to be institutionalised for calculating their *regulatory* capital, i.e. what they are obliged to set aside their regulator obligations. Unsurprisingly, in-house models tended to generate lower capital charges, but the banks nonetheless succeeded in defending them on the basis that they were mathematically more rigorous, and backed by the most advanced academic finance theory.

As discussed in Chapter Two, the core mechanism of VaR relies on three types of inputs. First, 'position data' i.e. information about the different types of assets contained in a portfolio. Second, the risk factors associated with each of these assets, such as their interest rate risk, foreign exchange rate risk, equities risk and commodities risk. And finally, choices about the parameters underpinning the VaR model, including the holding period over which the value of banks' investments fluctuate, the historical observation period, the confidence interval and so on.²⁷⁵ Based on these components, the model creates a statistical distribution of the probable future losses and gains of a portfolio, and marks out a single number representing its maximum possible loss at a given confidence level. VaR thus helps financial institutions make a statement in the following form: 'we are X percent certain that we will not lose more than V dollars in time T.'²⁷⁶ Armed with this new framework, the senior managers of the big international banks began to act as if they could control their firms' overall exposures through top down forms of supervision and decision-making. These managers used VaR to set a range of quantitative limits, thus assuming that their trading departments could withstand losses up to the maximum 'value-at-risk' figure.²⁷⁷

²⁷⁴ According to one interviewee: 'There were essentially four models at the time, from J.P Morgan, KPMG, a commercial investment bank in London whose name I forgot and Credit Suisse... They were either parametric or non-parametric, that was the main difference. The ones that were parametric were essentially modifications of the basic variance-covariance approach, which was the easiest. The others were more complicated.' Anonymous interviewee eight, 2019, first interview, 4th of November. Further, Lockwood writes that 'it was [VAR's] simplicity, the bank's transparency in relation to major risk accidents and its engagement with finance academics that made this happen... [Moreover] timing for the release of RiskMetrics was excellent, as it came during a period of publicized financial losses' which created 'a flurry of interest' in VaR.' Lockwood, Erin. 2015. "Predicting the Unpredictable: Value-at-Risk, Performativity, and the Politics of Financial Uncertainty." *Review of International Political Economy* 22(4): p726.

²⁷⁵ Ibid. p722.

²⁷⁶ The variable V is the VaR of the portfolio, which is a function of two parameters – the time horizon T and the confidence level X percent. Hull, John. 2015. *Risk Management and Financial Institutions*. Wiley p255. Note, there are actually three VaR methodologies for producing such a statistical distribution (discussed in Part II below), the parametric, the historical and Monte Carlo methodology.

²⁷⁷ By imposing limits, trading desks were not directly limited in the number of trades they entered into, but the traders would have to find countervailing hedges.

Ironically, although the proponents of VaR defended these models by appealing to arguments about the ‘accuracy’ and ‘sophistication’ of their methodology, VaR was actually created for the purposes of facilitating communication within large trading banks about their market risks to and among senior managers. In other words, VaR was designed to *simplify* and *synthesise* the risk landscape within large financial institutions, which are made up of multiple trading departments invested in large portfolios, each of which may contain up to thousands of assets. J.P. Morgan, like other major investment banks, owns large quantities of financial products denominated in different currencies and subject to different interest rates. VaR produces a single, and thus simple, monetary figure representing, or acting as a placeholder for, the total risk exposure of a bank. This allows banks’ managers to ignore most of the information exchanged within their firms about the various kinds of risks they are taking on, and just focus on a few, supposedly, big picture numbers. At the same time, as mentioned earlier, these methodologies also always end up producing fewer risk ‘findings’ than those identified by Basel’s Building Block approach.

After J.P. Morgan made its VaR methodology public in 1992, it was gradually taken up by all the other major investment banks. As such, it became a priority for these banks to ensure that their new risk practices would not be undermined by any emerging regulatory frameworks. Therefore, in addition to submitting their comments to the Basel Committee on the Consultative Proposal, as discussed in Chapter Three, the banks also lobbied their central banks to put pressure on the BCBS from within. According to one US regulator, not only had ‘there been a huge leap in quantitative metrics’, but ‘the banking industry wasn’t going to accept ever rising capital requirements.’ Thus, ‘to the extent that the market risk proposal was going to have credibility, this was going to have to reflect practices that banks themselves had developed.’²⁷⁸ Very soon after the publication of the Consultative Proposal, the Basel Committee therefore set up a new entity called the Models Task Force, whose mandate was ‘to work with the Secretariat in developing a proposal for the use of banks’ in-house-models

²⁷⁸ Anonymous interviewee three, 2018, first interview, 19th of November.

in the calculation of regulatory capital charges for market risks.²⁷⁹ This marked the beginning of Basel's efforts in creating a *regulatory* VaR framework.²⁸⁰

In most accounts of Basel's role during this time, the Committee is seen as having acted in symbiosis with the banks, eagerly accepting their demands for an advanced modelling approach.²⁸¹ What is true, is that the Model Task Force's mandate was explicitly framed to focus on 'the conditions under which an institution would be entitled to use its in-house models', rather than on the question as to whether these models would be suitable as regulatory instruments in the first place. Members of the Model Task Force reported that the Secretary General of the time, Tomaso Padosa, had been travelling around different central banks to 'generate consensus to relaunch the market risk initiative', as 'it was so unusual to have a Consultative Proposal not make it.'²⁸² This story of deference is also one that emerges from Goodhart's account, who claims that prior to the banks' response, the Committee was so 'boxed-in' by internal politics that it 'failed to take notice... of the considerable advances achieved by the major international banks.'²⁸³ He quotes one internal document as stating: 'we are impressed with the standards of presentations made to [the Committee] and with

²⁷⁹ Goodhart 2011, p249. And as one regulator also explains 'it was a task force set up to look into not an alternative, but an additional method, of measuring risk... The model task force was there to get us to understand what these models are, their strengths and weaknesses, as well as their underlying assumptions and whether these assumptions would hold in situations of crisis.' Moreover, the MTF had 'presentations first by the regulators themselves, the US, then also by the international banks. The banks made presentations 'to show and demonstrate their methodology, how it is integrated into their risk management processes, into the IT architecture of the banks, and also to answer questions about their weaknesses, and what they would do if they were on our side of the table.' Anonymous interviewee six, 2019, first interview, 21st of March.

²⁸⁰ In my interviews, I found two slightly different versions on the early days of the MTF. One account emphasises the haphazard and more exclusionary beginnings of the MTF. According to one regulator, '[t]he Model Task Force was set up urgently, and in the beginning only four or five countries were present. This was the reason why it was called a task force... It was only in the following months that more countries joined... And eventually it came up as a fully-fledged subgroup.' The countries who first joined 'were the US, UK, Japan, Germany and France, very soon after Italy also came in... Let's say about six months later it was a fully-fledged subgroup with all the countries.' In a second interview, the same regulatory explains: '[e]ventually everyone else was invited but by then the terms were set... I think the Committee thought it would be a quick review of the market risk modes, how they were being used, whether the results could be used for supervisory purposes.' Anonymous interviewee six, 2019, first and second interviews, 21st of March and 23rd of November.

On the other hand, according to one of the American regulators, '[t]he full range of countries was represented on the Model Task Force, including representatives from countries as small as Luxembourg, all the way to the UK etc. And the other huge benefit, something that had not always gone right in the Basel Committee, if you remember the first accord was cooked up between the US and the UK and we gradually brought in other countries, but this time we wanted to make sure that everyone was learning the same stuff. So it was meant to be 'we all take the journey together', and so we managed to reach consensus that way.' Further, '[w]ith any group, some ppl are going to be closer to the material, have different training and so on... but it's important that people feel there's not a huge gap between those contributing and those on the side-lines. It ended up being a great success.' Anonymous interviewee two, 2018, first interview, 19th of November.

²⁸¹ See for example: Goodhart 2011; Tarullo 2008; Lockwood 2015.

²⁸² Anonymous interviewee two, 2018, first interview, 19th of November.

²⁸³ Goodhart 2011, p247.

the obvious sincerity and expertise with which the banks... are addressing the issues' put to them.²⁸⁴

However, other officials involved from the start of the Model Task Force claimed that the Committee was actually in disagreement about the criticisms of the Consultative Proposal, and about the suitability of VaR as a regulatory instrument. More specifically, they claimed that most of the continental European Member States were actually satisfied with the Building Block approach. Instead, it was the Federal Reserve which had been persuaded by their banks that an in-house approach should be made available - while the UK 'more or less followed what the Americans said.'²⁸⁵ The German representative was particularly frustrated that they were so 'close to [reaching] an understanding when suddenly the Americans came out [saying] banks have *much* more sophisticated risk quantification methods, estimations and so on.'²⁸⁶ Both the Italian and Japanese regulators supported this position, their main concern being the fundamentally distinct role of *regulatory* capital which they believed was to prevent wider 'damage to the national and international economy.'²⁸⁷ Moreover, these regulators were concerned about the fact that the banks were using the models for 'short-term' purposes 'to close and open positions and so on' whereas 'the purpose of capital charges... is to provide an adequate cushion for unforeseen risk.' This meant there was 'a dilemma, or contradiction of aims, that the Model Task Force had to deal with.'²⁸⁸

²⁸⁴ In general, Goodhart presents the BCBS' response as 'slightly stunned', as well as 'humbled' and immediately submissive to the banks' own methods for assessing market risk. Goodhart 2011, p246-47 and p250.

Interestingly, some of the regulators said the same thing. One regulator recounts: '[i]t's unusual for Basel Committee to have a proposal that just falls flat. At the time the chairman was Tomaso Padosa, he was an Italian central banker. And he did a stop at most of the major central banks to talk about what to do next. He came to the New York fed, and I'm sure he went down to the board, to talk about this among other things. I sat in in a portion of that meeting, where the market risk approach was talked about. And he asked whether there was another way to go. And I remember us saying yes that it would be better to have a common framework for all three risks. And he had probably heard this from others at this point, and he was enthusiastic to re-launch, and wanted the support of the New York fed people, because we had people that were knowledgeable... Tomaso basically generated consensus that it was time to reboot and not to wait too long, because it was so unusual to have a consultative proposal not make it.' Anonymous interviewee two, 2018, first interview, 19th of November. In a similar vein, another regulator said 'because the regulators hadn't made their own investment in models, and recognising that the misallocation of capital through silly rules is not a good thing either... the regulators went along with the Advanced Approach for the sophisticated banks.' Anonymous interviewee one, 2018, first interview, 19th of November.

²⁸⁵ Anonymous interview six, 2019, first interview, 21st of March.

²⁸⁶ Ibid. The UK regulatory confirmed the former's statements claiming that 'Germany in particular was absolutely adamant that this was a dangerous approach, and shouldn't be allowed. And indeed, that banks shouldn't hold these kinds of positions that gave rise to these kinds of positions at all.' Anonymous interview five, 2019, second interview, 23rd of November.

²⁸⁷ He continues, 'I got some support from the Japanese, the Italians. The UK was in favour of the US, as well as France... The Canadian banks they didn't play a role, they were mostly connected with Americans, so the Canadian guy was also in favour of the US. Luxembourg was completely quiet, Belgium was quiet. The Netherlands... he was a sort of statistical guy, and didn't understand why I was so opposed. Switzerland was quiet too. It was me who was a pain in the neck for the Americans.' Anonymous interview six, 2019, first interview, 21st of March.

²⁸⁸ Ibid.

In any event, despite Goodhart's suggestions to the contrary, whatever deference had been shown to the banks was not simply a result of regulators' lack of awareness about banks' new modelling techniques. As discussed in Chapter Three, the BCBS' negotiators had explicitly rejected banks' internal VaR models because of the overly simplistic assumptions based on which they translated historical price data into market risk outputs. And as Goodhart himself recognised, the Basel Committee had always maintained close contacts with industry representatives. Thus, in contesting the introduction of the Advanced Approach, certain regulators did so explicitly because of their doubts about the capacity, and supposed 'accuracy', of banks' VaR models. Indeed, the Chair of the Model Task Force told me 'there wasn't a lack of knowledge', rather, they 'were looking at the weaknesses of VaR but history was pushing the strengths of VaR, and then the lobbying started.'²⁸⁹ The Italian regulator also commented on how 'there was a lot of disagreement' concerning the promises of VaR 'because we were not at all certain about the estimations coming out of the models, because we didn't believe too much in the results of the correlations and so on.'²⁹⁰

Ultimately, the US leveraged the Model Task Force to press ahead on an advanced modelling approach, arguing they had 'the most sophisticated banks, [that these banks] already used VaR', and that therefore the Committee should also 'look towards the US' banking practices.'²⁹¹ Those who opposed the US saw this as 'a reaction to the pressure of American banks on American regulators.' As the German regulator said, '[t]he 4:15 risk metrics framework of JP Morgan had just appeared, and I think it was pressure of American banks that said we want to see a market risk framework that allows us to be close to our risk assessment methodology', so 'they urged the New York Fed to produce this models' alternative.'²⁹² The Fed hosted the Task Force's first meeting, and set the agenda to focus on a three page document outlining a possible regulatory VaR framework, which turned out to be a rough replica of J.P. Morgan's RiskMetrics framework.²⁹³ Backed by the US and the major

²⁸⁹ Anonymous interview four, 2019, first interview, 25th of February.

²⁹⁰ Anonymous interviewee eight, 2019, first interview, 11th of October. Unsurprisingly, though, not all of the regulators were as well read about the models from the very beginning. Some of them had an idea about the basic assumptions of the models, but only learnt about the technicalities of the models during the Model Task Force's meetings. Another regulator recounts: '[i]t was the first time that we in Germany hired statisticians in the regulatory board, to get a clearer understanding and to even know what was going on.' Anonymous interviewee six, 2019, second interview, 23rd of November.

²⁹¹ Anonymous interviewee six, 2019, second interview, 23rd of November.

²⁹² Ibid.

²⁹³ Ibid.

investment banks, especially at a time when the markets were on the rise, VaR quickly established itself into Basel's regulatory risk framework. While the Building Block Approach was institutionalised as the Standardised Approach, the Advanced Approach was reserved for those banks who could satisfy the Amendment's qualitative standards, essentially limiting it to the major global investment banks.

Basel's adoption of the Advanced Approach meant that, for the biggest international banks, the most critical processes for calculating their market risk exposures had now been consolidated within their internal risk models. As discussed in greater detail in II.i.b below, all the substantive decisions regarding if and how much risk a bank is exposed to, were now contained within the methodological choices and model parameters of the banks' VaR models. As a result, the function of regulation shifted from a responsibility to identify banks' risks, to being responsible for establishing minimum quantitative and qualitative standards to support banks' own risk management processes. However, despite the successes of VaR's proponents in implementing this regulatory shift, disagreements between Basel's regulators persisted over the specific parameters that should be included within Basel's model alternative. The most contested criteria focused on the Advanced Approach's quantitative standards, including the historical observation period, the holding period the confidence level and the multiplication factor. While a number of the European regulators were adamant to maintain particular parameters, the Anglo-Americans complained that they did not sufficiently 'trust the results of the models' and 'were skittish' about how VaR was to be incorporated.²⁹⁴ As discussed in Part II below, overall, these developments illustrate the extent to which any challenges against banks' regulatory frameworks had become significantly constrained, not only in substance but also in the channels through which differing positions could be expressed.

II. Refining the Consultative Proposal's market risk framework

The primary shift between the publication of the 1993 Consultative Proposal and the adoption of the Market Risk Amendment, was thus the introduction of a two-tiered measurement

²⁹⁴ Anonymous interviewee one, 2018, second interview, 19th of November.

approach. The Building Block Approach became the Amendment's Standardised Approach, and a new Advanced Approach was constructed on the basis of banks' internal VaR models. The following sections consider two significant shifts in Basel's framing of market risk. First, part II examines the way in which the risk concept was further quantified, and second, it looks at how the rules of the Amendment bracketed important concerns about uncertainty. As part of these investigations, these sections will highlight the interactions between the main actors involved in reshaping the Consultative Proposal's market risk framework, including between the representatives of the Models Task Force, the major trading banks as well as senior members of the BCBS. There were thus multiple logics driving the integration of banks' internal models into the BCBS' regulatory frameworks. While the banks clearly wanted the Basel Committee to adopt their internal models with as few modifications as possible, the country representatives held conflicting positions on these demands. As for the Basel Committee, because it operates on the basis of consensus rule-making, many of the final adjustments in the Amendment were not necessarily born out of specific substantive positions, but out of the need to accommodate all member states.

i. Further quantifying market risk

On the question of the displacement of regulatory discretion, the introduction of the Advanced Approach's internal risk models meant that the flexibility which the Building Block Approach had afforded to the regulators was henceforth replaced by the models' methodological assumptions and quantitative parameters. Although market risk continued to be equated with the outcome of a particular set of measurement approaches, the significant differences between the Building Block and the Advanced Approach meant that the conceptual boundaries of Basel's market risk category were correspondingly re-adjusted. Market risk was now defined based on the rules and frameworks of the Advanced Approach, and therefore, in a broader sense, it had become further quantified. Despite the fact that the Building Block Approach also relied on historical volatility in formulating its risk weights, it did so in a more open and fluid manner, enabling the inclusion of a wider range of regulatory concerns. As described in Chapter Three, the Building Block Approach was flexible enough to incorporate a margin of precaution, concerns about convergence & competitive equality, as well as assumptions about the safety (or priority) of particular financial instruments.

With the introduction of Basel's Advanced Approach, the regulators could no longer manipulate these risk weights to reflect their rationales and objectives. Instead, as discussed in Part I above, VaR produces results based on the broader methodological framework a bank selects, the inputs in terms of banks' position data, VaR's list of risk factors as well as the Advanced Approach's qualitative and quantitative standards. In other words, the introduction of the Advanced Approach - which, importantly, was considered the more sophisticated metric and thus the truest expression of market risk - redefined market risk based on the core components of VaR. There are two primary ways in which these components altered Basel's conceptualisation of market risk. First, they entrenched the modern portfolio theory foundations of the Building Block Approach - and therefore also the efficient market and profit-maximising logics of its market risk framings. And second, despite making market risk more quantitative & model-based, both VaR's broader methodological commitments and its quantitative standards incorporated a novel set of *substantive* assumptions about the nature of market risk. The following sections consider each of these conceptual adjustments in turn.

a. Entrenching the modern portfolio theory foundations of market risk

VaR's focus on banks' position data (measured against the four risk factors set out in the Market Risk Amendment) further deepened Basel's understanding of market risk as defined by historical price relationships.²⁹⁵ In contrast to the Building Block Approach, the Advanced Approach only relies on price data as the variable inputs for its risk calculations. Moreover, the model-based approach is both more rigorous and transparent in its analysis of historical prices. Indeed, regardless of the VaR methodology adopted, all relevant price information is pre-determined and has to be included within the banks' modelling exercises. Further, despite the proprietary nature of banks' VaR models, they always leave behind a material record of their operations and are therefore at least theoretically observable by external actors. While the public is legally prevented from verifying this information, the banks are required to provide access to their data to the regulators. By focusing more rigorously on

²⁹⁵ The four risk factors are: interest rate risk, foreign exchange rate risk, equities risk and commodities risk. Note that in the Consultative Proposal, only the first three risk factors were included in the definition of market risk. The Market Risk Amendment added a fourth commodities risk factor because by the late 1990s, the big global banks had started taking large positions in commodities prices.

historical price movements, the Advanced Approach therefore further entrenched the Consultative Proposal's more open-ended commitments to modern finance theory.

As an extension of the core principles of modern finance theory, VaR models therefore also embed and legitimise its assumptions that markets represent the most advanced 'information processor' for the purposes of social organisation. Moreover, as considered in Chapters Two and Three, these assumptions entail further implications for the relationship between banks and their regulators, as well as the core objectives of banking regulation. By consolidating the efficient market hypothesis in Basel's regulatory instruments, Basel's Advanced Approach ensured that the focus of law and public policy was to provide the best conditions for the market to carry out its cognitive functions as efficiently as possible. Indeed, in the specific context of Basel's Advanced Approach, this meant directing attention away from decisions about what banks' market risks are and how to identify them, and towards questions about the kinds of information that are available, what to do when there is insufficient price data, the transparency of banks' modelling processes and so on. Banking regulation was therefore no longer focused on telling banks how to manage their risks, but on ensuring the availability, transparency and movement or speed of information, based on which the banks monitored their own risk management procedures.

By incorporating banks' VaR models in its Advanced Approach, the Basel Committee therefore not only significantly limited its own space for regulatory discretion and subjective decision-making, but it further accelerated the BCBS' assimilation of the efficient market hypothesis within its own regulatory logics. Practically, the result was that the Basel Committee further aligned its market risk device with the interests and perspectives of the major trading banks. As discussed in Chapters Two and Three – in which the thesis considered the modern portfolio theory underpinnings of securities traders' conception of market risk, and the way in which the Building Block Approach inherited this same risk concept - by dedicating greater attention to the collection and evaluation of market prices, Basel also turned further away from investigating *the causes* of market volatility and instability. Any potential sources of disruption were assumed to have been assimilated in the market's price mechanisms. And ultimately, by ignoring questions of causation, the Basel Committee also disengaged from the problems associated with banks' own activities, or with the structure of the banking industry.

Interestingly, despite these developments, most of Basel's negotiators did not have much to say about the efficient market foundations of VaR, nor about the intricacies of the efficient market hypothesis (or its many different versions within academic finance theory).²⁹⁶ What we see is that banks' VaR models actually helped to consolidate a body of ideas and intuitions about the markets, weaving them into a set of quantitative risk measurement techniques. As a result, there was no longer a need to discuss the logics or validity of 'efficient markets', and indeed these questions disappeared from regulatory and public debates. The crystallisation of the efficient markets hypothesis' core insights, or rather its core instructions, into Basel's risk metrics thus facilitated the preservation of a simplified and commercialised version of the hypothesis, transforming it into a rough and ready 'common sense'. Indeed, the legalisation of VaR materialised the basic intuitions that 'markets know best' or 'market prices represent pretty good signals', enabling them to travel more deeply into particular institutional spaces, and more importantly, to steer the governance within these spaces.

b. Incorporating the substantive assumptions of banks' VaR models

Even though the BCBS' Advanced Approach made its market risk framework more quantitative and therefore supposedly more scientific, as any risk specialist would readily acknowledge, every risk model also necessarily depends on a set of *substantive* assumptions. Thus, although quantitative forms of risk analysis are fundamentally distinct from their qualitative equivalents, the former nevertheless rely on a series of qualitative starting points. The latter represent a set of substantive and subjective perspectives concerning the risk object at hand, as well as its relations with its surrounding environment. With respect to the Basel Committee's Advanced Approach, these assumptions reside in the different methodologies of banks' VaR models, as well as in the quantitative standards which structure the mechanics of every VaR model. First, regarding the methodological variants of VaR, there exist three different methods, each representing a distinct way of calculating the VaR of a bank's portfolio or trading department. As for the quantitative standards, these parameters structure the different components of every VaR calculation, regardless of the wider methodological framework that is used.

²⁹⁶ A few regulators openly admitted this.

Starting with the different methodological approaches of VaR, as discussed in the ‘historical overview’ section above, the purpose of VaR is to create a statistical distribution of the future losses and gains of a portfolio, and work out its maximum probable loss over a specific time period. To do this, the Advanced Approach permitted it banks to choose from three types of VaR analyses: the parametric or variance-covariance method, the historical simulation method and the Monte Carlo simulation method. The parametric method assumes that a bank’s risk factors and portfolio values are normally distributed. This means that its data points are assumed to follow a bell curve, so that the rates and prices near the mean are expected to occur more frequently than those far away from the mean. In the parametric method, a bank only uses the expected return and the volatility of the portfolio to calculate its VaR distribution, which therefore produces a simpler and cleaner distribution.²⁹⁷ The historical simulation approach, considered empirically more robust, does not plot out its distribution based on any assumptions of ‘normality’, but relies entirely on the historical price fluctuations of a given portfolio. And finally, the Monte Carlo simulation approach also relies on market data to create a distribution, but instead of using empirical data, its models generate random values based on which it creates multiple hypothetical trials.²⁹⁸

By allowing the use of these methodologies, the Basel Committee also incorporated their assumptions, thereby reshaping its framing of market risk. First, as discussed above, the parametric method assumes that market prices and rates converge around the mean, and thus occur less frequently at the extremes. In other words, it assumes that the banks experience far fewer instances of either major losses or major gains. However, this is problematic because numerous empirical studies have demonstrated that financial markets frequently exhibit what are known as ‘fat tails’. The phenomena of fat tails means that there are actually many more observations precisely at the extreme ends of a distribution. For obvious reasons, fat tails pose major problems for risk managers, because they demonstrate that significant losses are much more likely to occur than predicted.²⁹⁹ Moreover, parametric models say nothing about the magnitude of banks’ potential losses. As for the historical

²⁹⁷ The historical approach does still rely on historical data, but only to generate the ‘expected return’ and ‘volatility’ variables.

²⁹⁸ See Crouhy et al. 2014 and Hull 2015.

²⁹⁹ Some risk textbooks claim that well diversified portfolios will not exhibit as many fat tails. However, the problem is many correlations break down during financial crises, so it will not matter so much whether or not a portfolio is well diversified.

simulation model, although the empirical data will reflect the existence of fat tails, its main shortcoming lies in its total dependence on a banks' historical data set, and of the idiosyncrasies of this data.³⁰⁰ Not only is it now common knowledge to question the predictive value of the past, but historical data is particularly useless when drawn from a historical observation period of a single 12 month period – as became the rule under the Market Risk Amendment's Advanced Approach.

Turning to the Advanced Approach's quantitative standards, these include: how often a bank's VaR should be computed; the confidence interval (e.g. 95%, 97.5% or 99%); the holding period; the historical observation period; how often banks should update their data sets; whether banks are permitted to recognise empirical correlations within broad risk categories, and across risk categories; how to treat options risk; and how to treat specific risk.³⁰¹ Basel's negotiators also developed several 'add-on' safety measures, including the scaling factor and the calculation of a benchmark based on the average of the daily VaR measures on each of the preceding sixty business days.³⁰² The most significant of the above standards include the

³⁰⁰ Relying on history is particularly problematic when major structural changes occur, such as the introduction of the euro.

³⁰¹ In these cases, the Market Risk Amendment (BCBS 1996) made the following:

- "Value-at-risk" must be computed on a daily basis;
- In calculating the value-at-risk, a 99th percentile, one-tailed confidence interval is to be used;
- In calculating value-at-risk, an instantaneous price shock equivalent to a 10 day movement in prices is to be used, i.e., the minimum "holding period" will be ten trading days. Banks may use value-at-risk numbers calculated according to shorter holding periods scaled up to ten days by the square root of time;
- The choice of historical observation period (sample period) for calculating value at-risk will be constrained to a minimum length of one year. For banks that use weighting scheme or other methods for the historical observation period, the "effective" observation period must be at least one year (that is, the weighted average time lag of the individual observations cannot be less than 6 months).
- Banks should update their data sets no less frequently than once every three months and should also reassess them whenever market prices are subject to material changes. The supervisory authority may also require a bank to calculate its value-at-risk using a shorter observation period if, in the supervisor's judgement, this is justified by a significant upsurge in price volatility;
- Banks will have discretion to recognise empirical correlations within broad risk categories (e.g., interest rates, exchange rates, equity prices and commodity prices, including related options volatilities in each risk factor category). The supervisory authority may also recognise empirical correlations across broad risk factor categories, provided that the supervisory authority is satisfied that the bank's system for measuring correlations is sound and implemented with integrity;
- Banks' models must accurately capture the unique risks associated with options within each of the broad risk categories. [...]
- Banks using models will be subject to a separate capital charge to cover the specific risk of interest rate related instruments and equity securities as defined in the standardised approach to the extent that this risk is not incorporated into their models. However, for banks using models, the total specific risk charge applied to interest rate related instruments or to equities should in no case be less than half the specific risk charges calculated according to the standardised methodology.

³⁰² With respect to these two parameters, the Market Risk Amendment (BCBS 1996) demands:

- The multiplication factor will be set by individual supervisory authorities on the basis of their assessment of the quality of the bank's risk management system, subject to an absolute minimum of 3. Banks will be required to add to this factor a "plus" directly related to the ex-post performance of the model, thereby introducing a built-in positive incentive to maintain the predictive quality of the model. The plus will range from 0 to 1 based on the

confidence interval, the recognition of correlations, the treatment of specific risk, the multiplication factor, the holding period and the historical observation period. The first four of these parameters were most immediately concerned with regulators' concern for precaution. While the first two parameters prevent banks from using models in particular circumstances, the latter two create a buffer against the inaccuracy of the models. Regarding the holding period, it moreover contains assumptions about the role of liquidity in market risk, and finally, the historical observation period contains assumptions about the cyclicity of the markets.

A number of these quantitative standards were highly contentious during the negotiations of the Models Task Force. The major trading banks were of course immediately aware of the implications of the most important parameters. As soon as the Models Task Force was set up, they were prepared to argue in favour of particular parameters so as to minimise their capital requirements. On the other hand, a number of Basel's negotiators also persistently raised competing regulatory concerns, which the thesis considered in Part II of Chapter Three. With respect to regulators' concern for precaution, one regulator emphasised: 'we were constantly of the view that it was impossible to capture [market risk] accurately, so we had to take a reasonably conservative view.'³⁰³ Moreover, Basel's regulators also took a different view of the liquidity of the markets, as well as of the purpose of the holding period. Not only did they emphasise the illiquid nature of many equities and debt securities, but in setting the holding period, the regulators did not just consider how quickly banks can trade out of a position but also the possibility of the markets drying up, i.e. of 'liquidity freezes'. Finally, regulators' concern for convergence - between different parts of a bank, between banks from different countries and between securities and banking firms - remained an underlying thread which consistently guided the negotiators' inputs in shaping the Advanced Approach's parameters.³⁰⁴

outcome of so-called "backtesting." If the backtesting results are satisfactory and the bank meets all of the qualitative standards set out in B.2 above, the plus factor could be zero. The accompanying document, Supervisory framework for the use of backtesting in conjunction with the internal models approach to market risk capital requirements, presents in detail the approach to be applied for backtesting and the plus factor.

- Each bank must meet, on a daily basis, a capital requirement expressed as the higher of (i) its previous day's value-at-risk number measured according to the parameters specified in this section and (ii) an average of the daily value-at-risk measures on each of the preceding sixty business days, multiplied by a multiplication factor.

³⁰³ Anonymous interviewee five, 2019, second interview, 4th of November.

³⁰⁴ Anonymous interviewee six, 2019, first interview, 21st of March. Anonymous interviewee seven, 2019, first interview, 22nd of November.

Regulators' scepticisms regarding the accuracy of the models, and their corresponding preoccupation with precaution, represented the most important basis on which they disputed the banks' demands for more generous parameters. In the early days of the Models Task Force, even the US representatives, who tended to side with the banks on most of their demands, started out with relatively conservative positions on what they were willing to concede.³⁰⁵ According to the German representative (who claimed to be most at odds with the American regulators), 'it was also the Americans who said that we don't want to be fooled.'³⁰⁶ Indeed, at the earliest stages of the Task Force's negotiations, the US proposed a far more radical way of weighting the historical observation period, such that it would have amounted to a 'scaling factor of 16'. However, the proposal did not survive and the observation period further dropped from the possibility of five to ten years to just one year.³⁰⁷ As for the scaling factor, while the more conservative European negotiators wanted a higher number, starting with eight, the banks and the US representatives disliked this safety measure, with some arguing for a factor of just one or two – 'three was the compromise in the end.'³⁰⁸

Following an initial round of discussions, the regulators asked the banks to perform a series of dummy test, and most regulators were 'astonished' with the level of dispersion in the banks' results. These outcomes were therefore used to negotiate more conservative parameters.³⁰⁹ For example, while some banks used a confidence interval of 97.5% or even 95%, the Models Task Force insisted on 99%.³¹⁰ The regulators also succeeded in preventing a modelling option for specific risk, as well as in preventing the calculation of empirical correlations between risk factors. As one negotiator argued 'during crises, not only volatility increases significantly, but also correlations between broader and narrower categories tend to break down.'³¹¹ However, although empirical correlations between risk factors were prohibited, the negotiators conceded that the banks could calculate correlations *within* risk factors. Nevertheless, despite this concession, the latter was successfully used to bargain in

³⁰⁵ Anonymous interviewee six, 2019, first interview, 21st of March.

³⁰⁶ Ibid.

³⁰⁷ Ibid.

³⁰⁸ Anonymous interviewee eight, 2019, first interview, 4th of November.

³⁰⁹ Anonymous interviewee six, 2019, first interview, 21st of March.

³¹⁰ Anonymous interviewee eight, 2019, first interview, 4th of November.

³¹¹ Anonymous interviewee six, 2019, first interview, 21st of March.

favour of establishing the scaling factor to a factor of three (as opposed to one or two).³¹² More concerningly, despite initial proposals to set the historical observation period to five to ten years, or to use a weighted historical observation period, these proposals were undermined by the banks. Ultimately the Basel Committee only demanded a limited one year observation period.

Finally, the time horizon, or holding period, was also heavily contested. While the banks use their VaR models 'for short-term action, to close and open positions and so on', many regulators supported the position that 'the purpose of capital charges, and supervisory or regulatory measures, is to provide an adequate cushion for risk and unforeseen risk, and those capital charges cannot be dealt with within a few days.'³¹³ These arguments demonstrate that the regulators were keenly aware of the problem of liquidity risk, and its potential in exacerbating market risk fluctuations. Although the banks consistently argued that there would be no problem of liquidity, because they are constantly monitoring their portfolios and rapidly trading out of dangerous positions, the regulators rejected these arguments. While the BCBS only formally recognised the interactions between market risk and liquidity in its post-crisis frameworks, notably through the integration of liquidity horizons, during these early years, the negotiators nevertheless expressed a 'deep understanding and deep concern' about market liquidity.³¹⁴ In the end, a holding period of ten days was agreed, which consolidated the assumption that all banks could exit any of their positions within a maximum of ten days.

To conclude, the Advanced Approach modified the Consultative Proposal's market risk definition in several significant ways. By equating market risk with the outputs of VaR, its conceptual boundaries were redrawn based on the Advanced Approach's methodological assumptions about the 'normality' and 'cyclicality' of financial markets. Moreover, its quantitative parameters consolidated a specific set of assumptions about how the banks should gather, filter and re-interpret market prices in calculating their risk exposures. As described above, these assumptions reflect the compromises between banks' arguments that

³¹² Ibid.

³¹³ Ibid.

³¹⁴ Ibid.

their models are accurate and their activities relatively safe (including that they always rapidly close out of any dangerous positions), versus regulators' scepticisms and their concerns about correlations breaking down, liquidity drying up, and more generally, about ensuring regulatory coherence and convergence.

Finally, all these conceptual shifts highlight the importance of legal form. With the introduction of a modelling alternative, regulators could only express their scepticisms by disputing the Advanced Approach's model parameters. Thus, the institutionalisation of VaR not only changed the substantive boundaries of market risk, but it further altered the channels through which these boundaries could be negotiated. This matters because, as Chapter Five elaborates, forcing legal change through the re-adjustment of quantitative risk metrics prevents greater scrutiny of banks' risk frameworks, and thus also the likelihood of more radical reforms. Furthermore, compelling regulators to focus on model parameters has significant implications for the types of expertise that regulators maintain and develop, as well as the types of expertise that are included in the construction of these risk frameworks. With the shift to quantitative risk modelling, regulators typically focus on economic and statistical expertise, at the expense of other forms of expertise that are better able to investigate the substantive sources of banking instability.

ii. Erasing uncertainty

The Advanced Approach further transformed Basel's conceptualisation of market risk by reconfiguring the relationship between 'risk' and 'uncertainty' within it. As considered in Chapter Two, although both risk and uncertainty refer to situations in which the future is unknown, 'risk refers to decision-making in an environment of known probability of loss or gain, [whereas] uncertainty refers to situations in which the probable distribution of outcomes itself is unknown.'³¹⁵ Uncertainty therefore excludes those situations in which complete knowledge is at least theoretically achievable, because all the possible outcomes are known and the determinants do not change. The game of dice provides the relevant model, only a set number of outcomes are possible and no intervening variables can skew the

³¹⁵ Lockwood 2015, p727.

process. Furthermore, in other, less controlled, situations, probabilities may still be considered near perfect because particular outcomes are produced by recurring events and decisions, and the socio-political contexts only evolve slowly so that 'change can be mapped and expected frequencies adjusted.' As Froud writes, '[t]his covers the kinds of risks for which it is possible to obtain private insurance, such as accident, death or exposure to crime.'³¹⁶

Outside of these situations, most of social reality - particularly in the case of financial markets - are governed by the principles of uncertainty. In a famous passage by Keynes, he argues:³¹⁷

[b]y 'uncertain' knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty [...] The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolescence of a new invention [...] About these matters there is no scientific basis on which to form any calculable probability whatever.

The notion of uncertainty thus refers to future events for which we cannot make probabilistic predictions. Not only are we unable to predict the *probability* of particular outcomes, but we may not even be able to predict, nor in fact define, a comprehensive *typology* of all the possible outcomes.³¹⁸ Crucially, uncertainty exists not simply because of our cognitive and technological limits, but because the systems and phenomena examined are non-ergodic and not distributed according to knowable patterns. Thus, uncertainty arises when an event or decision is infrequent or unique, when consequences take a long time to emerge, as well as because complex systems are dynamic, non-linear and subject to randomness and complex feedback loops. Last but not least, present choices, including our attempts to predict the future, are understood as capable of influencing the course of future developments.³¹⁹

³¹⁶ Froud, Julie. 2003. "The Private Finance Initiative." *Accounting, Organizations and Society* 28(6): p574.

³¹⁷ Keynes, J.M. 1937. "The General Theory of Employment." *Quarterly Journal of Economics* 51(2): p214.

³¹⁸ Schropp, Simon. 2012. "Commentary on the Appellate Body Report in Australia–Apples (DS367): judicial review in the face of uncertainty." *World Trade Review* 11(2):p 171-221.

³¹⁹ Froud 2003; Lockwood 2015. See also Cooney, R., and A. T.F. Lang. 2007. "Taking Uncertainty Seriously: Adaptive Governance and International Trade." *European Journal of International Law* 18(3): 523–51.

The distinction between risk and uncertainty is relevant because financial markets are largely uncertain. This is because financial systems interact with social, economic and earth systems which are themselves marked by randomness, complex feedback mechanisms and non-linearities. Future market prices defy measurement because they are produced by complex relationships within and between these systems. According to Aaron Brown, the financial system is unmeasurable because of the many complex correlations between risks in one sector which are then hedged and bundled with positions from a whole range of other sectors; none of which are backed by historical precedents.³²⁰ Mandelbrot and Taleb take these claims further, and argue that financial markets are defined by non-normal distributions and may further be characterised by infinite variance.³²¹ The non-ergodicity of financial markets partly emerges from the fact that they are made up of human actors, whose actions depend on a host of calculations, beliefs and emotional responses to what they perceive. Finally, as with broader problems of description more generally, i.e. including descriptions of the present, all modelling exercises depend on the selection of qualitative, and thus subjective & situated, decisions. With respect to financial risk models more generally, these include: decisions regarding the exposures or vulnerabilities to be assessed; the scenarios against which to measure the exposures; decisions about the process of modelling; decisions about the format of the outcomes and so on.³²²

Although Basel's negotiators attempted to integrate their concerns about model inaccuracy and uncertainty into the Advanced Approach, they had to do so by re-adjusting VaR's model parameters. As discussed above, the Models Task Force targeted those parameters that could either prevent banks from making particular calculations (e.g. by denying particular empirical correlations), or alternatively, parameters capable of incorporating a margin of precaution by adding more capital buffers (e.g. the scaling factor). However, none of these solutions actually deal with the problem of 'un-measurability', the parameters simply bracket uncertainty by limiting banks' VaR models, or rounding up their measurements to generate vaguely larger capital requirements. The goal of these model parameters was to side-line the problem of

³²⁰ Brown, Aron. 2004. "The Unbearable Lightness of Cross-Market Risk." *Wilmott Magazine* 10: 20-23.

³²¹ Mandelbrot, Benoit and Taleb, Nassim. 2010. "Mild vs. Wild Randomness: Focusing on Those Risks That Matter" in F.X. Diebold, N.A. Doherty, R.J. Herring (eds.) *The Known, the Unknown, and the Unknowable in Financial Risk Management*. Princeton: Princeton University Press. p48-53.

³²² Borio, Claudio, Mathias Drehmann, and Kostas Tsatsaronis. 2014. "Stress-testing macro stress testing: does it live up to expectations?" *Journal of Financial Stability* 12: 3-15.

uncertainty in order to continue producing specific risk outputs. Thus, rather than acknowledging the problem of un-measurability, VaR proceeds as if financial risk is always measurable as long as we use the right methods and process the correct data. Significantly, although the Consultative Proposal's Building Block Approach also produced specific capital charges, its risk weights were presented as estimations rather than measurements. Moreover, as discussed in Chapter Three, not only were these estimations based on regulators' precautionary concerns, but they further integrated additional objectives that were rooted in a distinctly regulatory logic.

Ultimately, although the negotiators discussed the question of uncertainty in establishing particular parameters, once the latter were consolidated, both the banks and the regulators acted as if VaR's risk outputs represented reliable future predictions. Thus, even though VaR could not possibly produce accurate predictions of gains and losses, these parameters legitimised the models by allowing the actors involved to claim that the problem of uncertainty had been dealt with. Paradoxically, banks' VaR models actually allowed the banks to argue both that the future is calculable, while also arguing that even if the models are wrong, they represent the best instruments available to us at this time. On the one hand, Basel's negotiators were told by the banks that 'there were no more risks, because banks' models could take care of everything.'³²³ And on the other hand, many traders openly acknowledged the limitations of their models. As Lockwood writes '[i]n responding to criticisms of VaR, many risk modelers acknowledge its limitations, but contend that there is nothing else to be done about the truly uncertain.'³²⁴ In the following chapter, the thesis thus goes on to consider some of the real contributions of VaR. For example, VaR was used both by the banks and the regulators as a 'placeholder' to support banks in their risk and investment practices, whereas the regulators acquired a mechanism through which to monitor these practices. Within this placeholder, the specific parameters dealing with uncertainty represented the 'internal placeholders' of VaR, which helped to neutralise the potentially disruptive effects of acknowledging uncertainty to these market-making and regulatory processes.

³²³ Anonymous interview four, 2019, first interview, 25th of February.

³²⁴ Lockwood 2015, p729.

Chapter Five, The effects of the BCBS' market risk framework

Introduction

Chapters Three and Four looked at the contingent construction of Basel's market risk framework. Part of their purpose was to demonstrate that this framework does not represent a toolkit of neutral and purely observational instruments, but rather a strategic device constructed from a specific set of perspectives. To summarise the Market Risk Amendment, it treats market risk as the primary threat arising out of banks' trading activities, which it conceives as an objective phenomenon that can be determined based on analyses of historical price volatility and correlations. Chapter Four further showed that the substantive decisions regarding how to filter and process this data are consolidated in banks' models' methodological choices and quantitative parameters. As a result, the BCBS' conception of market risk implies that banking regulators should not reflect on the substantive causes of market instability, but rather focus on the qualitative and quantitative parameters which govern the use of the banks' risk models. Moreover, it brackets the problem of uncertainty which might otherwise create a more compelling case for transforming the ways in which banks' market risk findings are contested, including the number and types of actors who should be involved.

Chapter Five extends the analyses in Chapters Three and Four, by examining the productive effects of Basel's market risk framework. As such, Chapter Five demonstrates that this framework represents a significant market device, which helped the banks to build-up and expand their trading book activities. Moreover, as argued in Chapters Three and Four, because Basel's market risk device produces effects based on a set of perspectives internal to the banks' trading objectives, Chapter Five argues that it can further be reconceived as a technology of power. However, despite this reframing, it is not a technology of power in any straightforward sense, because it is not purely subservient to the interests of the banks nor of any other group of background actors. Instead, it often produces effects that are not deliberately intended, nor even anticipated, by the banks, even if these effects do not necessarily challenge their immediate interests. Most importantly, Basel's market risk framework produces effects which reflexively reshape the actors who created it, thereby

channelling the articulation and perpetuation of some of its embedded interests. Ultimately, through these multifaceted operations, Chapter Five shows how Basel's risk device ends up amplifying and redistributing risk in various ways, as well as producing important market-shaping effects.

Part I of Chapter Five starts by examining Basel's market risk framework as a practitioner's device, looking at the ways in which it produces effects in relation to banks' internal business activities. There are three main types of intermediations effected by market risk in this context. First, Basel's market risk framework operates as a calculative device, both enabling and justifying banks' financial trading activities. Second, it guides banks trading decisions, helping them to select their assets based on the objective of maximising their 'risk-adjusted' returns on their investments. Third, banks' market risk models support a number of organisational practices within the banks, allowing senior managers to centralise their authority. In addition to enabling and organising banks' internal trading and managerial activities, Part II examines the way in which Basel's market risk device also plays a productive role in shaping banks' external relationships, especially with the regulators and supervisors. Section i of part II looks at how the Market Risk Amendment produced a novel risk object that served to limit the scope of banking regulation, whereas section ii of part II considers the ways in which Basel's market risk framework constrains the number of actors involved in determining banks market risk exposures, as well as how they are able to contest these findings.

I. Enabling and organising banks' internal business and managerial activities

The first set of mechanisms through which Basel's market risk device produces important strategic effects relates to the way in which it influences banks' internal business practices. First, section i below argues that banks' market risk methodologies operate as a calculative device, which both enable and justify their financial trading activities. Particularly in the form of banks' VaR methodologies, market risk establishes a common framework through which banks collectively re-interpret, communicate and calibrate their trading activities, thereby forming a constitutive element of these activities. At the same time, Basel's market risk device also justifies the trades banks enter into as being worthy and secure. As a result, through

these calculative and cognitive mechanisms, banks' market risk models helped the banks to expand their trading books and take on greater levels of risk. Indeed, in a world of increasingly complex and opaque market transactions, banks' market risk instruments help to reassure both their own investors as well as the banks' liability holders about the security and efficiency of their financial investments, thus playing a productive role in supporting banks' internal trading and management activities and facilitating the accumulation of risk.

Second, in addition to making sense of and justifying banks' trading activities, banks' market risk framework *guides* their trading decisions to help them maximise the returns on their investments. As discussed in Chapter Two, historical notions of 'investment risk' in the securities markets have always focused on maximising investor profits, rather than on managing their risks of loss. Although in the 1996 Amendment, market risk was framed with a view of setting the appropriate capital buffers to absorb banks' potential losses, the same profit logic inherent in investment risk persisted here too. As the thesis has demonstrated so far, this is because Basel's conceptualisation of market risk was largely inherited from the securities sector. The purpose of this section is therefore to explore the ways in which 'market risk' helps the major trading banks prioritise the returns on their investments, over and above the aims of neutralising their risks of loss. Third and finally, banks' VaR models perform a number of organisational effects. The last subsection of Part I considers the ways in which VaR simplifies the task of risk management, and further serves as a performance metric to evaluate individual trading desks. In this respect, VaR helps to centralise authority within large banking firms, but also encourages many traders to 'game' the models.

Before delving into these different effects in greater detail, it is important first to distinguish market risk understood in terms of banks' internal conceptions of economic risk from the regulatory notion of market risk developed in Basel's prudential standards. Both refer to the risk of loss arising from adverse price movements but the former was developed by practitioners based on their commercial interests, whereas Basel's risk concept was also constructed from a regulatory perspective.³²⁵ Although Basel's risk concept was framed as if

³²⁵ As discussed in Chapter Two, modern conceptions of market risk emerged through the progressive developments in modern finance theory. In the 1970s and 1980s, modern portfolio theory was extended to options pricing formulas and the construction of new enterprise risk management (ERM) models. By the late 1980s, at the same time as Basel's market risk

it reflects the same ‘thing’, as discussed in Chapters 3 and 4, these regulatory conceptions were not only meant to fulfil a different function, i.e. that of banking stability, but they were also defined in slightly different ways reflecting the interests and logics of Basel’s negotiators. It is banks’ internal economic formulations of market risk, particularly in the form of their VaR outputs, which are primarily responsible for the effects discussed in the sections in Part I below. However, because Basel’s reformulation of market risk created a regulatory risk object largely aligned with banks’ investment risk frameworks, it merged, or at least overlapped, with banks’ own risk concepts, thus legitimising and supporting the latter’s interventions and their effects.³²⁶ Conversely, once embedded in a regulatory framework, Basel’s market risk device also limits the ways in which internal bank conceptions evolve over time, thereby constraining the divergence between these different risk frameworks.

- i. Enabling and justifying more risk-taking
 - a. Supporting banks’ trading activities

As a cognitive device, banks’ market risk framework represents a rational mechanism through which the banks can calculate the risks of loss associated with a single asset or combination of assets. In this way, banks’ market risk device becomes a precondition for entering into any transaction where securities or derivatives are exchanged. Its purpose is not simply to allow banks to explain the worthiness of a single or series of investments, but also to offer an essential conceptual instrument through which they can make sense of, and therefore perform, their trading activities. As discussed in Chapter Two, prior to the publication of VaR, securities traders historically relied on a range of risk instruments to measure, leverage and manage their investment risks, thereby forming a critical component of their investment activities.³²⁷ When more and more banks and securities firms started to use VaR - which were legitimised and popularised by its institutionalisation in Basel’s capital adequacy rules - these models began to take on a similarly constitutive role in banks’ financial trading activities.

subgroups were being set up to begin negotiating Basel's Market Risk Amendment, J.P Morgan had begun to develop its own ERM framework in the form of the Value at Risk model.

³²⁶ As many have argued, the 1996 Amendment legitimised and popularised the VaR methodology.

³²⁷ These included different asset pricing models, and later options pricing formulas.

The act of securities trading requires traders to take into account many considerations. An equities trading desk, for example, will rely on different kinds of information when it considers the stock of a company, such as its books and records, the likelihood of imminent mergers and all sorts of other commercial and geopolitical information that might affect the company's future performance. A trading desk focusing on fixed income will consider the type of bond it is purchasing, its credit ratings and so on. As VaR calculations entered into the standard practice of banks' risk management processes, banks also started considering the total value at risk they are willing (and obligated once the 1996 Amendment was translated into national requirements) to set for themselves. These are then turned into specific limits for an investment bank's many trading desks. As a result, when buying or selling any kind of financial asset, investors take into account the effects of each transaction on the overall value-at-risk of their portfolios. The standardisation of VaR meant that it was gradually integrated into the core structure of the trades banks enter into, helping their traders better understand the daily transactions through which they perform their market-making and speculative functions.

Moreover, as a cognitive institution underlying banks' trading activities, VaR is not only constitutive of these activities, but also serves to *justify* them. VaR's outputs form part of the reasoning for decisions as to whether an investment should be made, and if so how it should be hedged, as well as how much capital will have to be set aside to cover it. As long as a trading desk enters into, or hedges, its positions, such that the overall value at risk of a portfolio does not exceed the bank's set confidence level over a chosen time horizon, these positions are deemed secure. For example, based on the most commonly used historical VaR methodology, if a bank set its confidence level at a 99% confidence level over a one year time horizon (or if it was mandated to do so), a position is considered safe provided that the bank's own historical data does not contain any extreme loss scenarios which would compromise the portfolio's overall value at risk. Even if the position were highly risky, with significant historical volatility, it can still be justified if it is appropriately hedged, or covered by a sufficient capital buffer as determined by the bank's VaR calculations.

Thus, by supporting banks' trading activities, banks' market risk frameworks serve as a critical cognitive and legal institution which not only enable these activities - providing their

conditions of possibility - but also justify greater amounts of trading and risk-taking. The reason market risk is able to further banks' business interests so effectively is because, as has been argued throughout this thesis, the concept of market risk, including Basel's own reformulations of it, is not a descriptive but a strategic concept.³²⁸ This means that the particular perspectives of the actors who constructed it are integrated into its overall framework, and it is therefore better aligned with the concerns of these actors, as well as their logics and interests. As Millo & MacKenzie argue in relation to financial risk more generally, '[a]n actor's point of view is the initial coordination according to which risks are defined and risk assessments are made. Therefore, the way an organizational actor depicts its risks is contingent upon how that actor perceives itself, its goals and its relationships with other actors.'³²⁹

With respect to Basel's framings of market risk, the preceding chapters showed how its definition and metrics were constructed by the regulators in Basel's market risk subgroups and the Committee's Secretariat, as well as the major trading banks. The latter played a significant role in refining Basel's boundary work, especially after the publication of the 1993 Consultative Proposal when the banks began to lobby for the incorporation of their internal risk models. As argued in Chapter Three, Basel began its work on market risk based on a body of ideas which were inherited from securities traders. And the latter's conceptual framing of investment risk was shaped in the practice of financial trading, as a tool to help them select the assets which would maximise the efficiency of their portfolios. As a consequence, Basel inherited an investor-oriented conception of market risk, in which there is no engagement with the endogenous and systemic nature of risk, nor with any considerations of causality in general. However, as Chapter Three also discusses, in the first phase of Basel's work, when market risk was conceived through the Building Block Approach, it did at least incorporate a number of regulatory concerns, including the need for regulatory coherence and precaution.

³²⁸ Konings also argues that the purpose of describing one's risks is often not to gauge what might or might not happen, but to shape others' perceptions of one's situation. Similarly, Beckert claims that definitions of risk play a significant role in the 'politics of expectation' – the more people believe that something will happen, the more likely it actually will happen. Konings, Martijn. 2018. *Capital and Time: For a New Critique of Neoliberal Reason*. Stanford: Stanford University Press; Beckert, Jens. 2016. *Imagined Futures: Fictional Expectations and Capitalist Dynamics*. Harvard University Press.

³²⁹ Millo, Yuval, and Donald MacKenzie. 2009. "The Usefulness of Inaccurate Models: Towards an Understanding of the Emergence of Financial Risk Management." *Accounting, organizations and society* 34(5): p639.

Had the Standardised Approach (previously the Building Block Approach) been institutionalised as Basel's only measurement approach, all the major trading banks' understanding of market risk would have included a broader range of concerns – most importantly regarding uncertainty. Moreover, these concerns, and the gravity attributed to them, were explicitly based on regulators' subjective judgment, and include various points at which national regulators were given further discretion as to how to adjust banks' intermediate risk weightings. Overall, its analytical lens identified a greater amount of risk with respect to financial trading, and would have characterised fewer trades as being secure, thereby making them more expensive for the banks. But, as seen in Chapter Four, that is precisely why the banks intervened. By successfully including their proprietary VaR models as part of Basel's Advanced Approach, the way in which market risk is measured and identified was locked into the model parameters. This means that market risk came to be primarily associated with particular analyses of historical price volatility, and the Advanced Approach further permitted significant opportunities for calculating off-sets based on empirical correlations within particular risk factors.

The fact that market risk was designed for the purposes of strategic action, rather than simply to describe an aspect of reality, means that it also contains a set of predictions about how the future will unfold, as well as a plan for how to respond to these predictions to meet banks' particular objectives. Quoting Millo and MacKenzie again, 'the way organizations depict their risks has a significant effect on the way they will, eventually, react to events and other actors.' Therefore '[o]ver time an influential risk management system will bring about institutionalised patterns of risk embodiment.'³³⁰ It is the blueprints in banks' market risk framework regarding the threats and opportunities they face, and their collective and institutionalised reactions to them, that explain how it produces its performative effects. By ignoring the substantive causes of price volatility, banks act as if they face no risks beyond what can be observed over a short historical time frame. They further calculate their off-sets based on overly generous predictions about how particular positions may cancel each other out, and ignore the ways in which different sub-risks produce *compounding* effects.

³³⁰ Ibid.

In all these different ways, banks' market risk frameworks can thus be seen as technologies of power, allowing their users to increase the amount of risk they take on, because their projected futures consist mostly of scenarios with relatively stable price movements. As many political scientists and sociologists have argued, risk measurement instruments like VaR create an illusion of control, leading investors to become overconfident in their ability to foresee future losses and therefore accumulate more risk than they might otherwise have done. De Goede further argues that even if many market actors recognise that in reality risk management is more like an art than a science, in their daily professional work, risk models are treated as if they can predict the future.³³¹ The complex decisions embedded in the models' assumptions are simply ignored. This attitude is reflected in the words of a risk manager quoted in the Financial Times: 'Today's risk managers are getting involved in risk quantification, whatever its source...Behind this trend is the belief that if you can quantify a risk, you can hedge it.'³³² The assumption that VaR represents a reflection of real world developments thus reassured investors of their own extreme risk-taking, normalising these activities and thus enabling the build-up of a huge amount of risk.

Beunza's argument about the moral implications of the use of risk models is also relevant here. In his ethnographic study of an equities derivatives trading floor, Beunza demonstrates the effects of the use of models on the way in which moral norms are interpreted and enforced. He argues that these models 'have introduced a distinctively instrumental dimension to decision-making'³³³ and led to processes of moral disengagement, understood as the '[disabling of] the mechanisms of self-condemnation that are typically associated with immoral conduct.'³³⁴ As a result, the use of financial models like VaR frees banks' traders from 'self-sanction' and 'guilt', which can lead to an 'unrestrained pursuit of self-interest.'³³⁵ Models are able to do so because they undermine the authority of banks' managers, and supplant processes of subjective decision making. Because models enable banks to maintain

³³¹ De Goede, Marieke. 2004. "Repoliticizing Financial Risk." *Economy and society* 33(2): p212.

³³² Ibid.

³³³ Beunza, Daniel. 2019. *Taking the Floor: Models, Morals, and Management in a Wall Street Trading Room*. Princeton University Press. p6.

³³⁴ Ibid. p15.

³³⁵ Ibid.

most of the value they create, they also come to portray certain customers less familiar with models as undeserving of consideration, or even as economic adversaries.³³⁶

b. Re-assuring banks' liability holders

Banks' market risk devices do not simply justify banks' portfolios in the abstract, but importantly they also serve to reassure their liability holders. With respect to the major trading banks, the fact that VaR has been incorporated into the BCBS' standards, and produces simple and supposedly scientific risk indicators, reassures their creditors that they have proper risk management processes in place. This is especially significant in the context of an increasingly complex and fast-paced financial world. By liberalising finance, the post-Bretton Woods processes of deregulation enabled the production of more, and ever more complex, financial products, but also 'impacted negatively on banks' ability to present themselves to liability holders as a safe bet in a number of ways.'³³⁷ A major consequence is that banks' portfolios became incredibly complex and subject to rapid changes, such that the quality of a bank's investments and the soundness of its liquidity flows are largely inaccessible to its liability holders. And as was made evident by the financial crash of 1987, the banks had indeed become seriously exposed to losses from price volatility due to increased securities dealings as a core profit making activity.³³⁸

The large trading banks thus had to find new ways to demonstrate that they are adequately managing their risks, and persuade their liability holders to continue to loan them large sums of capital. Both proprietary trading and market-making in securities and derivatives markets require the consolidation of a wide network of relationships, and a critical task in contemporary financial markets is for the banks to reassure other market actors of their creditworthiness. As there is no international banking authority capable of imposing a universal regulatory framework, the banks themselves came together with regulators from

³³⁶ Ibid. p227. Luhmann makes similar arguments about the perception of 'misfortune in the form of risk'. If the moment of decision lies in the calculative processes of a model, then even a bad, or extractive, investment is not really any person's fault. Thus, he speaks of the immunisation of decision-making against failure, which can also be seen as a form of disengagement. Luhmann in De Goede 2004, p213.

³³⁷ Lindon, Duncan. 2013. "Political Economy of Financial Derivatives: A theoretical analysis of the evolution of banking and its role in derivatives markets." *PhD Thesis*. SOAS, University of London. p195.

³³⁸ Ibid.

the G-10 to formulate the Basel Accords. As Underhill writes '[t]he political demands for convergence on the question of capital standards came as much from international banks and other financial institutions as from governments and central bankers themselves.'³³⁹ Lindo further argues that banks' supposedly highly sophisticated metrics were essential to demonstrating that any potential threats were being taken into account. Moreover, he writes '[t]o some extent the capital adequacy requirement constrained bank activity, but, at least as importantly, it signalled to liability holders that risk management was practiced, capital was set aside and banks' activity was constrained.'³⁴⁰

By encouraging banks' creditors and shareholders to trust them, their VaR models thus not only enabled the banks to engage in financial trading, but to do so in a way which contributed to, and precipitated, the Global Financial Crisis. In 1997, in an interview where Nassim Taleb responded critically to Philippe Jorion, professor of finance and a well-known proponent of VaR, he said:³⁴¹

I believe that VaR is the alibi that bankers will give shareholders (and the baling-out taxpayer) to show documented due diligence, and will express that their blow-up came from truly unforeseeable circumstances and events with low probability not from taking large risks that they didn't understand. I maintain that VaR encourages untrained people to take misdirected risks with shareholders', and ultimately the taxpayers', money.

In the end, this is precisely what VaR did. Banks' market risk models, legitimised by Basel's Market Risk Amendment, greatly increased banks' profits, but they also entrenched a set of volatile investment practices which threatened the industry as well as the global macro economy more widely.

³³⁹ Underhill, Geoffrey. 1991. "Markets beyond Politics? The State and the Internationalisation of Financial Markets." *European Journal of Political Research* 19(2-3): p217.

³⁴⁰ Lindo 2013, p198. Although banks' liability holders have other, more direct, mechanisms to guarantee the security of their investments, it is still important that the banks are able to present themselves as credible institutions. Moreover, one such mechanism is by relying on collateral, which also uses the same VaR methodology incorporated in Basel's 1996 Amendment.

³⁴¹ Reproduced in Triana, Pablo. 2011. *The Number That Killed Us*. John Wiley & Sons.

ii. Guiding banks' investment decisions

In demonstrating how banks' market risk device enabled and justified banks' trading activities, section i above considers risk purely as something to be managed, i.e. as threats to be neutralised. However, such an understanding of market risk only reflects the discourses on risk most prevalent within regulatory communities. In the Basel Committee's Overview of the 1996 Amendment, for example, the text states that its rules are aimed at providing a 'capital cushion for the price risks to which banks are exposed' and constitute 'an important further step in strengthening the soundness and stability of the international banking system.'³⁴² Among traders and risk experts, on the other hand, the concept of risk is more ambiguous, and is as much if not more concerned with exploiting opportunities for gain as it is with avoiding the risk of loss. In his study of the history and definition of financial risk, Dionne argues that, overall, modern risk management procedures are now financial processes that are predominantly concerned with the effects they produce on firm or portfolio value, rather than on how well they manage or neutralise particular risks.³⁴³

The most obvious way in which the notion of risk focuses on returns rather than threats is that it is used to determine how much a bank should be compensated for taking a specific position, rather than as a means to avoid particular loss outcomes. This point is well captured by investor and risk specialist Robert Litterman's discussion of risk management in the context of climate risk. He claims,³⁴⁴

[t]he... lesson of risk management is, and this one may be not as intuitive, but trust me on it, the purpose of risk management is not to minimize risk. When Goldman Sachs said, "Bob, we want you to be head of risk management," they didn't want to reduce the risk. They wanted to make sure we were getting paid appropriately for the risks that we took. And if we weren't getting paid, why are we taking that risk? Hedge it.

³⁴² BCBS. 1996. "Overview of the amendment to the capital accord to incorporate market risks." Basel Committee on Banking Supervision. Basel: Bank for International Settlements. p1.

³⁴³ Dionne, Georges. 2013. "Risk Management: History, Definition, and Critique." *Risk Management and Insurance Review* 16(2): 147–66.

³⁴⁴ Litterman, Robert, Kormi, Nushin and Stiroh, Kevin. 2020. "Financial Regulation and Climate Risk Management." In the Climate Rising podcast, *Harvard Business School*. Available at: <https://www.hbs.edu/environment/podcast/Pages/default.aspx>

In addition to calculating banks' compensation, their risk frameworks also help them to maximise their returns by limiting their cost of hedging, or their cost of risk capital. Both are costly because they require banks to use limited working capital either as safety buffers, or as countervailing rather than higher yielding investments. As discussed in Chapter 2, in modern finance theory, the ideas and mathematical formulas on investment risk were not developed with a view of preventing financial loss. Markowitz's portfolio selection model, and its developments in the form of CAPM and later variations thereof, used risk (understood as volatility) to assess the relative risk characteristics of particular investments. The ultimate end was to maximise the risk return trade-off of a portfolio of investments. These are the interests and logics which drove finance's intellectual developments towards greater analyses of diversification and the use of hedging, particularly in the form of derivatives trading.

With respect to market risk, and VaR specifically, what we should consider are therefore its origins in the history of private risk innovations, which evolved to help financial institutions increase their profits rather than to guarantee the most stable and resilient investments. In accordance with the central idea in portfolio theory that there is a trade-off between the risk and returns of an investment - optimisable through the construction of efficient portfolios - VaR establishes a connection between the riskiness of a portfolio and the cost of hedging. As Crouhy et al write:³⁴⁵

[a] VaR system allows a firm to assess the benefits of portfolio diversification within a line of activity and across businesses. VaR allows managers to assess the daily revenue volatility they might expect from any given trading area, but it also allows them to compare the volatilities of different business areas, such as equity and fixed-income businesses, so that they can understand better how each business line offsets, or contributes to, the revenue volatility of the whole firm.

Using VaR, banks can therefore 'compare the economic capital required for certain activities... and funnel funds into those activities with the best risk-return trade-off and to justify such decisions as rational decision-making.'³⁴⁶ This was in fact the primary contribution of all

³⁴⁵ Crouhy, Michel, Dan Galai, and Mark Robert. 2014. *The Essentials of Risk Management*. Second ed. McGraw Hill. p214.

³⁴⁶ Coombs, Nathan, and Arjen Van der Heide. 2020. "Financialization as Mathematization: The Calculative and Regulatory Consequences of Risk Management." In *International Handbook of Financialization, The Calculative and Regulatory Consequences of Risk Management*. Routledge, p11.

RAROC frameworks, which emerged in the 1970s and helped banks with their ex ante investment decisions, as opposed to hedging their risks away after an investment has already been made.³⁴⁷

Significantly, in helping the banks to calculate their risk-return trade-off, VaR often produces lower risk outputs because it recognises empirical correlations within and between risk factors, allowing the banks to offset their different positions.³⁴⁸ Moreover, VaR models can be deliberately manipulated to maximise these off-setting effects. In this respect, it is important that VaR does not just enable off-sets within risk factors but also between different risk factors i.e. between interest rate risk, foreign exchange risk, equities and commodity price risk.³⁴⁹ As discussed in Chapter Four, however, the Basel's Models Task Force did succeed in resisting the banks' demands to recognise correlations *across* risk factors in the Advanced Approach of the Market Risk Amendment. While the banks argued that this would have produced 'more accurate' results,³⁵⁰ and further encouraged them to diversify their investments, the Committee held strong in maintaining that the banks' models were not yet advanced enough to capture all the relevant correlations.³⁵¹ Through these parameters, the regulators succeeded in preserving some acknowledgement of the ambiguity of banks' risk models, even though, as the preceding chapter argued, these parameters were ultimately too weak.

³⁴⁷ Kavanagh, Barbara. 2003. "A Retrospective Look at Market Risk." In *Modern Risk Management: A History*, ed. Peter Field. Risk Books, 251–61.

³⁴⁸ As mentioned in Chapter Three, Crouhy et al. argue that 'banks adopting the internal models approach [under the Market Risk Amendment] tended to realise substantial capital savings, on the order of 20 to 50 percent, depending on the size of their trading operations and the type of instruments they traded.' Crouhy et al. 2014, p128.

³⁴⁹ The Market Risk Amendment states that '[b]anks will have discretion to recognise empirical correlations within broad risk categories (e.g., interest rates, exchange rates, equity prices and commodity prices, including related options volatilities in each risk factor category). The supervisory authority may also recognise empirical correlations across broad risk factor categories, provided that the supervisory authority is satisfied that the bank's system for measuring correlations is sound and implemented with integrity. BCBS. 1996a, p44.

³⁵⁰ The BCBS Secretariat reported that according to the banks, 'several' of them 'argued that there should be full recognition of empirical correlations both within and across risk factors. It was argued that the simple-sum approach in the models proposal would create disincentives for banks to diversify their portfolios. It was also argued that the use of empirical correlations was more precise and that it was integral to the models of many banks.' Goodhart 2011, p256.

³⁵¹ Moreover, the size of the multiplication factor was also justified on the basis that 'the correlations in the model may prove to be incorrect.' Goodhart 2011, p253.

The point here is, in guiding banks' investment decisions, VaR not only focuses on the returns, rather than the risks, side of the equation, but it further does so in a way which misinforms the banks, and even allows the latter to manipulate their VaR models.³⁵² This explains why its methodologies produced so much ignorance about the risks contained in banks' different portfolios. Although VaR was supposed to enhance banks' hedging decisions, as well as help the banks allocate their capital more efficiently, as discussed in Chapter Two, VaR models were designed (and continuously developed) by the traders whose remuneration depends on the returns they generate, which in turn relies on the models' outputs. Unsurprisingly, as the banks developed these models, the latter became more generous in their risk management demands.³⁵³ VaR thus guides banks' investment decisions in ways that encourage those applying the models to tweak them in ways which prioritise banks' short-term investment opportunities, rather than maximising long-term efficient capital allocation.

iii. Organisational effects

Beyond enabling, justifying and guiding banks' investment decisions, VaR models have also facilitated *organisational* shifts in the banks, primarily by centralising authority among the senior managers. As in the above two sections, by incorporating VaR in Basel's Advanced Approach, the Basel Committee helped to consolidate VaR's performative effects because it aligned banks' regulatory obligations with their internal risk management practices. Once the major trading banks' regulatory and commercial risk practices were brought closer together, the way in which senior managers govern their firms broadly aligned with the wider rules they are required to observe. VaR ultimately became the primary tool in banks' internal as well as their external reporting requirements. And not only did regulators approve VaR as the basis for calculating banks' capital requirements, but ratings agencies also use their own VaR calculations to determine the ratings of banks.

³⁵² Philip Jorion, who has famously defended the VaR framework, also acknowledges that '[i]f a risk manager imposes a VAR system to penalize traders for the risks they are incurring, traders may have an incentive to "game" their VAR. In other words, they could move into markets or securities that appear to have low risk for the wrong reasons. For instance, currency traders in 1994 could have taken large positions in the Mexican Peso, which had low historical volatility but high devaluation risk'. Jorion, Philippe. 1997. "In Defense of VAR."

Derivatives Strategy [online] Available at:

<<http://www.derivativesstrategy.com/magazine/archive/1997/0497fea2.asp>>

³⁵³ Beunza 2019.

Ironically, as discussed in Chapter four, while VaR's proponents defended banks' VaR models based on arguments about their accuracy and precision, its methodologies were actually created in order to simplify communications about a bank's risks between traders, as well as to and among senior managers. VaR was therefore designed to simplify the risk landscape within large financial institutions, which are often enormously complex as a result of their many trading departments and massive investment portfolios. Moreover, many of the largest global trading banks own large quantities of financial products denominated in a range of currencies and subject to different interest rates. VaR produces a single and thus simple monetary figure representing the total risk exposure of a bank, or of particular departments within it. This allows banks' senior managers to ignore most of the information about the various kinds of risks in their banks, and just focus on a few big picture numbers.

Banks' risk models therefore consolidated managers' internal governance capacities, reinforcing their control over the different sections of their business. They provide a bird's eye view of a bank, which both enhances managers' decision-making power as well as their capacity to implement their decisions. With respect to their enhanced decision-making abilities, as mentioned above, VaR simplifies the risks of large trading banks, but even more significantly, it provides a consistent and integrated method based on which to analyse banks' market risks. Thanks to VaR, the different elements of market risk can all be calculated using one same approach - and this includes the derivatives of these elements, e.g. interest rate derivatives or foreign exchange derivatives. With respect to derivatives, option traders typically use a set of metrics known as 'the Greeks' to measure their riskiness, but these metrics cannot be aggregated, nor can the same Greeks for different markets be aggregated.³⁵⁴ Thus, not only does VaR simplify banks' risk analyses (i.e. producing simple place-holder figures), but it also enables the aggregation of risks in ways that were previously not possible.

This enhanced capacity to aggregate risk means that managers could henceforth compare the volatility, as well as the risk return trade-off, of different trading desks, and decide which lines

³⁵⁴ Crouhy et al. 2014, p238-39. For example, 'i. the delta and gamma risk of the same position cannot be added up and ii. one cannot sum the delta of a euro/US dollar call and the delta of a call on a stock index.' With VaR, the risk of a fixed-income position could now be compared with the riskiness of an equity derivative.

of business to enter into, prioritise, or close down. Through VaR, senior managers, along with other stakeholders such as a bank's shareholders and supervisors, are able to take many more decisions themselves, rather than delegate them to the middle managers of various trading desks, or to the traders themselves.³⁵⁵ As for managers' ability to *implement* their decisions more effectively, VaR - as is typical with many quantitative instruments - makes it easier to monitor the activity of those using it. Once a quantitative limit is in place, all that needs to be done is to ensure that the numbers add up, so that all the risks are kept under the established threshold. Moreover, in addition to monitoring investors' observation of their trading limits, VaR is also used to reward employees because it allows managers to measure their risk-adjusted performance.³⁵⁶ Rather than simply rewarding the highest returns, senior managers can incentivise the highest *yielding* performances – essentially, VaR serves as a more sophisticated metric for performance evaluation. All of these mechanisms enable a bank's managers to extend their command far beyond the limited circle of a bank's senior management team.

While VaR clearly serves as a technology through which senior managers exercise power and centralise their authority, it also produces effects beyond their specific intentions – reflexively reshaping the banks by facilitating further ripple effects in their organisational structures. As VaR was deployed at scale to facilitate the management of banks' trading operations, these methodologies generated additional effects in the way banks produce knowledge about risk, and subsequently translate this knowledge into further risk management and investment strategies. Indeed, the fact that VaR reduces the complexity of the Greeks means that, by definition, VaR is simpler and of broader scope. Thus, although VaR is presented as an evolution in quantitative risk management, its outputs are much more blunt and uniform than pre-existing instruments, especially derivatives instruments. This is particularly true of the historical and parametric VaR methodologies, which, as mentioned in Chapter four, are the most commonly used among the banks. Although VaR's methodologies can be discussed through highly complex statistical formulations, conceptually, their simplicity derives from the fact that their core mechanisms rely on historical price information and normality-based statistical parameters.

³⁵⁵ Crouhy et al. 2014, Chapter 17.

³⁵⁶ Ibid. See also Beunza 2019.

The result of producing risk knowledge predominantly within the confines of VaR is not just limited to the misleading nature of its outputs, but affects the way in which these risk management practices further erode banks' qualitative risk assessment skills, infrastructure and knowledge base. Although managers can better dictate and monitor particular risk limits at various levels of the firm, these numbers have come to mean very little. VaR's capacity to aggregate and simplify risk data came at the cost of ignoring significant information about banks' many different investment positions, and their underlying industries. This is not to say that better risk models could ever have predicted the future, but greater awareness of the multifaceted dimensions of an investment do enable more thorough judgments based on more relevant considerations. To take a recent and highly consequential example, despite obvious distinctions between positions in US treasury bills (backed by the state machinery of the US) and senior mortgage-backed securities (constituted mainly by pools of risky mortgages), VaR treated their risks in an equivalent manner because neither asset categories had undergone much price volatility in the period leading up to the crisis.³⁵⁷ Because risk models do not simply observe but create definitions of insecurity, by transforming banks' risk landscapes into such simplistic monocultures, VaR ultimately created a significant amount of ignorance in the financial system.

These limitations extend to the use of VaR as a metric for performance evaluation. As mentioned above, VaR is also used as a tool to measure the risk-adjusted performance of particular trading desks, or of individual traders. As Crouhy explains, 'risk-adjusted return on capital' systems like VaR 'can be used to compare the economic profitability, as opposed to the accounting profitability (such as return on book equity) of different activities' and can therefore be used as a way to compensate employees for their contributions to shareholder value.'³⁵⁸ However, due to VaR's many shortcomings, it often produces arbitrary results, not just by underestimating risk but also by generating obviously problematic equivalents, such as between treasury bills and mortgage-backed securities. Because VaR imposes limits on the amount of capital traders can deploy to generate returns, when it dictates limits that are deemed arbitrary or unfair, many traders react by seeking to game the models. Similarly, since VaR rewards high returns combined with low risk, it encourages investors to invest in the

³⁵⁷ Triana 2011.

³⁵⁸ Crouhy et al. 2014, p587.

riskiest positions (offering higher yields), but whose risks VaR fails to register.³⁵⁹ Banks' VaR models therefore do not just enhance the managerial capacities of senior offices, but their function as a managerial tool produces repercussions far beyond these capacities, ultimately encouraging traders to take on greater amounts of unsecured risk.³⁶⁰

II. Managing banks' external relationships

The second set of mechanisms through which Basel's market risk device plays a productive role concerns the way in which it affects banks' external relations, particularly with banking regulators and supervisors. In addition to enabling and organising banks' internal trading and managerial activities, Basel's market risk device minimises the intrusion of other actors in monitoring banks' investment activities, and in some ways even encourages these actors to support the banks. This is why, after the Global Financial Crisis, the Market Risk Amendment was so heavily criticised for having 'out-sourced' regulators' responsibilities. The two final sections below consider the mechanisms through which Basel's market risk framework channel banks' interactions with their external stakeholders, thus serving as an instrument through which the banks maintain their influence within their networks. First, Basel's market risk framework narrows the regulatory purview of the BCBS, and therefore also of the banks' national supervisors. And secondly, it polices, or constrains, the processes through which banks' historical price data are converted into market risk outputs.

While these effects illustrate the significance of Basel's market risk device as a technology of power, as in Part I above, these final sections also show that the device is capable of reflexively reshaping the actors who created it, by channelling the way in which they relate to other actors. Section one demonstrates how Basel's two measurement approaches reconfigured the relations of authority and the landscapes of expertise involved in the regulation of the banks. At the same time, it shows how these forms of knowledge affect the

³⁵⁹ Beunza 2019.

³⁶⁰ As ex financier Triana argues, '[t] Trading decisions and traders' compensation began to depend on what VaR said; if the number churned by the model was deemed unacceptably large, a trader would be asked to cut down their positions, if the number was deemed comfortably tame the trader would be assigned more capital. If you made good money while enjoying a lowish VaR, you would be considered a hero by your bosses, someone capable of bringing in big bucks with seemingly minimal risk. Clearly, traders had every incentive to own portfolios endowed with low VaRs, and thus began a long-honored tradition to try to game the system into delivering subdued mathematical risk estimates.' Triana 2011, p xv.

regulators who created 'market risk', by altering their role and style of regulation. Section two then examines the way in which the device channels banks' strategic risk framings, and therefore also the ways in which they are able to persuade banks' various stakeholders to support them. Overall, both sections illustrate how Basel's market risk device served as a condition of possibility for wider industry shifts, which were not always deliberately intended by any particular set of background actors. By altering the banking industry, the interventions of Basel's market risk device thus also affect the networks in which all these actors evolve, thereby further reflexively reshaping them through their broader environment.

i. Narrowing the focus of regulation

In exploring how Basel's market risk device narrowed the focus of banking regulation, this section draws from Chapters Three and Four on Basel's boundary work on market risk. In those chapters, the thesis demonstrated the ways in which the 1993 Consultative Proposal, and more importantly the 1996 Market Risk Amendment, consolidated Basel's market risk concept as the relevant 'object of governance' with respect to the banks' growing trading book activities. Recall that at the beginning of its negotiations, the Basel Committee explained the necessity of including market risk capital charges on the basis of the 'changes in technology, in market practices, and in the nature of many "banking" activities.'³⁶¹ The '[d]eregulation of interest rates and capital controls, the liberalisation of banks' permitted range of activities and the rapid development of financial markets'³⁶² were all seen to be implicated in the rise of greater market volatility. By 1996, Basel's response to these problems was consolidated in the Market Risk Amendment, notably in its two-tiered measurement system. In the Amendment, market risk was essentially equated with the outputs of the Standardised, but especially the Advanced Approach.³⁶³

Chapter Four further explained the meaning, and some of the implications, of equating market risk with the outputs of the Advanced Approach. As in the Building Block Approach,

³⁶¹ BCBS. 1993b. "Supervisory Treatment of Market Risks." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements. p1.

³⁶² *Ibid.*

³⁶³ The Advanced Approach was seen to represent the most accurate, and thus real, expression of market risk. Theoretically, it was considered to provide the most sophisticated calculations of risk, and pragmatically, it was more significant because it regulated the large trading banks, i.e. the global systemically important financial institutions.

Basel's Advanced Approach inherited securities traders' as well as academic finance theorists' conceptions of market risk, defining it as a quantitative object, which is measurable based on statistical analyses of historical price relationships. But in contrast to the Building Block Approach, the Advanced Approach further quantifies Basel's understanding of market risk, removing regulators' supposedly 'seat of the pants' judgments about risk, and replacing them with hard statistical assessments of historical price data.³⁶⁴ However, as Chapter Four further argued, while the Advanced Approach reduced the margins for regulatory discretion, this was not only achieved by greater reliance on quantitative correlations analyses, but also by incorporating a novel set of substantive model assumptions. In the Advanced Approach, these substantive assumptions were contained in VaR's methodological commitments as well as its model parameters. Thus, in regulating banks' trading activities, Basel's object of governance was narrowed to the consideration of historical price data, specifically filtered based on the substantive assumptions considered in Chapter Four.

Most of the criticisms regarding Basel's limited regulatory reach have focused on the nature of these assumptions, which are seen as both reductive and dangerously misleading. Indeed, after the 2008 crisis, much of the post-crisis introspection, including among regulators, concentrated on VaR's problematic assumptions, especially with respect to its backward-looking nature and its assumptions of normality. In the words of an ex-financier '[b]y endowing VaR with the power to dictate the positions and the leverage that banks could take on, regulators effectively left the fate of the world in the hands of a tool with a natural capacity to severely underestimate risk.'³⁶⁵ Thus, according to him, '[t]he exile of VaR from financeland, not the nationalization of economic activity or the dusting-off of Das Kapital, would have been the truly on-target, preventative, healing response to the mess.'³⁶⁶ However, although VaR's different assumptions have many shortcomings, Chapters Three and Four also argued that there is indeed a deeper problem in both the Advanced, as well as the Standardised, Approach. And while this problem cannot be captured by abstract references to capitalism, it *is* connected to the more specific workings of the ideology of modern finance, notably regarding the efficient market hypothesis.

³⁶⁴ Goodhart 2011, p238.

³⁶⁵ Tirana 2011, pxvii.

³⁶⁶ Ibid. p4.

The preceding chapters already discussed the efficient market foundations of Basel's market risk framework. The point here is that by relying on such a conception of market risk, the Basel Committee legitimised an unjustifiable preoccupation with market prices. The following paragraphs consider two further implications resulting from this narrowing of Basel's regulatory focus. First, because the efficient market hypothesis prioritises the cognitive mechanisms of the market, its incorporation into Basel's market risk concept produced a shift in regulation both with respect to its functions, as well as the skills & expertise it must develop to perform these functions. Chapter Four already considered the way in which the function of regulation shifted from a responsibility to identify banks' risks, to being responsible for establishing minimum quantitative and qualitative standards to support banks' own risk management processes. Elaborating on this, the point here is that this represents a narrowing in what it means to exercise regulatory oversight. The shift is important because it entails a technicalisation of regulation. Regulators are no longer tasked with making independent, qualitative interventions, but instead, what is expected of them (and the basis on which they can be said to be doing their jobs well or badly) is to ensure that the parameters are correct, that banks use the right data, that they are crunching the numbers properly and that they are generally accurately measuring their risks.³⁶⁷

As for the changes in the types of skills and expertise that are valorised, an understanding of market risk that is based on quantitative price analyses encourages regulators to develop greater know-how in statistical and econometric modelling. To some degree, these shifts have simply followed the changes in the techniques of financial risk management more broadly. As mentioned in Chapter One, with the transition to market-based banking, hard statistically-driven techniques gradually replaced soft relational methods of risk management. Thus, just as the banks abandoned their qualitative forms of data collection (including regular contact with borrowers, personal relations and on-site visits), in favour of arms-length' calculations of information like age, income and assets, the regulators also adjusted their skill-set to better monitor banks' shifting risk processes. As one of the Model Task Force's regulators said about the period between 1993 and 1996, 'it was the first time that we in Germany hired

³⁶⁷ This shift is fundamentally connected with the efficient markets hypothesis, because (as explained in preceding chapters) the latter's core claim is that regulators cannot second guess the markets' price mechanisms, but can only help to ensure the adequate operation of these mechanisms.

statisticians in the regulatory board, to get a clearer understanding and to even know what was going on.’³⁶⁸ And of course, these structural pressures did not just influence the forms of expertise which the regulators themselves developed, but also the kinds of experts invited to participate in the regulation and the supervision of the banks.³⁶⁹

Turning to the second implication arising from the focus of Basel’s market risk device on price information, this narrowing further prevented any serious examination of the structures and practices that actually drive the rise and fall of market prices. The preceding chapters already talked about the way in which the efficient market hypothesis valorises the information processing capacities of the market over those of any group of experts. Chapter Two further explained that this is because the hypothesis assumes that all the relevant information about a financial asset is always already assimilated into its market price. The specific repercussion I explore here, concerns the way in which this assumption prevents regulators from deliberating on the substantive causes of market volatility. In this sense, this second implication flows from the first implication discussed above. Because regulators no longer make independent, qualitative interventions with respect to the identification of financial risks - which crucially also means the identification of financial ‘threats’, or more broadly, any ‘problems’ in the financial system - regulators are effectively held back from any critical engagement with respect to the banking system and industry, since the question of causation has largely been made redundant.

However, because of the many problems associated with the efficient market hypothesis, the consequence is that Basel’s market risk device prevents regulators from reflecting on the critical, and therefore most often the structural, problems in the banking system. After the Global financial crisis, qualitative analyses of the structural dimensions of banking were brought back as part of a resurgence of thinking around systemic risk.³⁷⁰ Moreover, as discussed in Chapters One and Three, historically, prudential regulation has always been grounded in qualitative and systemic concerns about banking stability. The point here is, in

³⁶⁸ Anonymous interviewee six, 2019, first interview, 21st of March.

³⁶⁹ Again, those invited are generally economists and other lawyers. This is particularly problematic when regulators deal with various substantive risk categories, like environmental or climate related risks, where a wide range of other experts are at least just as qualified to reflect on these questions.

³⁷⁰ This will be discussed in greater detail in Chapter Six.

light of the questions that banking regulators used to foreground and have now started to re-engage with, we can more clearly see the types of issues that Basel's market risk device has helped to elide. These include questions about the unequal distribution of risk, its pathways of contagion, its dynamic relationship with the real economy and so on. More specifically, these questions highlight phenomena such as common exposures, Too Big To Fail (TBTF), credit cycles, moral hazard and bank runs.³⁷¹ Alternatively, the structural issues can be framed as concerning banks' excessive borrowing powers, their ceaseless creation of liquidity as well as banks' predatory forms of financial investment, including through the proliferation of junk assets. The specific issues deemed relevant would thus involve banks' leverage ratios, control over the creation of new forms of shadow money, securitisation, the legitimacy of proprietary trading and so on.³⁷²

There are indeed many ways of framing the structural problems in banking, because there exist different substantive theories about its functions as well as the best ways to achieve banking stability. Broadly, however, Basel's market risk device side-lined all of these issues, including most importantly questions about the dangers of allowing the banks to trade at all. It side-lined questions about the markets banks trade in, on whose behalf they are trading, as well as the instruments and processes they deploy in their trading activities. These omissions are particularly significant because after the 1929 crash, banks' trading activities were specifically considered in terms of their systemic repercussions.³⁷³ As a result, Basel's conception of market risk helped to facilitate the evolution of banking towards market-based banking, framing its problems in such a way that the aforementioned questions could not be raised. This is not to say that Basel's market risk device was constructed only, or even mainly, for the purposes of facilitating this shift, nor that the device is the most determinative causal factor behind it. However, once its mechanics were consolidated in such a way as to direct attention away from banks' systemic risks, Basel's market risk device became one further cog

³⁷¹ These are questions considered in most textbooks on banking regulation.

³⁷² These are questions that are more commonly dealt with among 'critical macro finance' theorists. See for example: Ban, Cornel, and Daniela Gabor. 2016. "The Political Economy of Shadow Banking." *Review of International Political Economy* 23(6): 901–14; Gabor, Daniela. 2016. "The (Impossible) Repo Trinity: The Political Economy of Repo Markets." *Review of International Political Economy* 23(6): 967–1000. Knafo, Samuel. 2013. *The Making of Modern Finance: Liberal Governance and the Gold Standard*. Routledge. Konings, Martijn. 2018. "The Logic of Leverage: Reflections on Post-Foundational Political Economy." *Finance and Society* 4(2): 205–13.

³⁷³ See for example: Erturk, Ismail. 2011. *Make the Break, Why Ring-Fencing Falls Short and Full Separation Is a Necessary First Step for British Banks*. Good Banking Forum; Crotty, James, Gerald Epstein, and Iren Levina. 2010. "Proprietary Trading Is a Bigger Deal than Many Bankers and Pundits Claim." *SAFER Policy Brief* 20(2): 18.

facilitating banks' wider industry shifts that would affect the further development of all the entities within it.

ii. Reducing the spaces of contestation in banks' risk measurement process

In addition to restricting the BCBS' regulatory purview, Basel's market risk framework also performs a productive role by limiting the processes through which banks' trading risks are measured. What is meant here by 'limiting the processes' is that, especially with respect to the Market Risk Amendment's Advanced Approach, it prevented a greater number of actors from being able to contest banks' risk measurements, and therefore the capital charges they must set aside.³⁷⁴ Thus, even if we accept that analyses of historical price relationships represent the best way of determining the riskiness of banks' various trading activities (section i above), by limiting the processes through which prices are converted into risk outputs, the possibilities for scrutinising and contesting these processes are correspondingly diminished. This final section considers, first, the way in which Basel's Advanced Approach allowed the banks to monopolise their decision-making power with respect to the measurement of their trading risks. And secondly, it examines the implications of these effects, notably that the banks were able to acquire significant control in shaping our collective expectations about the future, and thus the development of the financial markets and our common economic life.

a. Shaping our responses to uncertainty

To limit the external challenges to banks' risk findings, it was first necessary for these risks to be understood as objective threats, rather than as the outcome of any kind of deliberative process. As discussed in the preceding chapters, the objectification of market risk began long before the Basel Committee started negotiating the definitions and metrics of market risk. It began as part of securities traders' efforts to capture these risk objects in their risk-return calculations. Indeed, the quantification of risk did not come about specifically to exclude others from interfering in one's attempts to measure risk, but as the basis of investors'

³⁷⁴ This section focuses on the conceptual shifts in market risk after 1993, because it is the institutionalisation of banks' risk models in Basel's Advanced Approach that produced the effects considered here.

commercial trading practices. Nevertheless, these processes of quantification enabled market risk to emerge as an objective entity, existing independently of risk analysts' attempts to define and measure it. As many in the social studies of finance have argued, it is not because financial risks are objective that they are deemed to be measurable, but rather through their measurement processes that they acquire the properties of objectivity and measurability. Kalthoff, for example, writes that risk devices 'embed [particular risk] objects in the sense that they portray them, make them emerge... but also form their limits.'³⁷⁵ In this way, calculation is an activity which does not simply operate with things already in place, but which brings objects like risk or profit into being.

Ironically, although it is through banks' risk models that their risks emerged as objective entities, once these risks are treated as objective threats, we return to risk models like VaR as the best, or even only, mechanisms through which they can be identified. This is because a critical aspect of ascribing objectivity to risk, is that any determination of risk is deemed to be assessable against standards of accuracy and precision. Questions about whether an institution is exposed to a particular form of risk, and if so how much, henceforth need to be answered in the language of right and wrong, as well as in specific numerical indicators. Naturally, risk models are best suited to delivering these type of responses, and can further claim do so within coherent and rational frameworks. In an illustrative quote from a popular financial risk textbook, the authors claim:

[i]f we can assign absolute numbers to some risk factor then we can weigh one decision against another with some precision. And if we can put an absolute cost or price on a risk then we can make truly rational economic decisions about assuming, managing and transferring risks.³⁷⁶

By incorporating banks' VaR models in Basel's Advanced Approach, the BCBS legitimised these models as the most sophisticated and empirically precise means for capturing banks' trading risks. And as Porter argues, 'to the extent that VaR is perceived as an approximately accurate, detached representation of market processes, it is unlikely to be seen as a political practice –

³⁷⁵ Kalthoff, Herbert. 2005. "Practices of Calculation: Economic Representations and Risk Management." *Theory, Culture & Society* 22(2): p70.

³⁷⁶ Crouhy et al. 2014, p17.

one that is contestable because it is necessarily unable to foresee devastating losses and one that serves to legitimate banks' claim to authority and responsibility.³⁷⁷

Yet, as discussed in the preceding chapter, VaR models (like any risk models) also rely on a set of substantive, *and subjective*, choices. However, buried in its granular and mathematical parameters, VaR's subjective positions substituted important regulatory decisions while largely escaping external scrutiny. Using a term elaborated by the social studies of finance literature, risk models like VaR can be described as 'black boxes'.³⁷⁸ Originally an engineering analogy, it represents a device whose internal mechanisms are opaque to the non-expert, but can nonetheless be used by a wide range of actors as long as it effectively 'transforms given inputs into predictable outputs.' The term is helpful because it enables a more detailed analysis of power, portraying dominant actors as those who 'sit on top of black boxes', and who are capable of maintaining this position so long as their devices continue to transform inputs into outputs undisturbed. It is their complexity and opacity that shield their contents from the outside world, and thereby depoliticise the decisions and activities they enable. As an increasingly complex output that could only be determined through difficult quantitative, and computationally demanding, processes, Basel thus consolidated a market risk concept that allowed the banks to acquire a significant level of decision-making power.

b. Wider implications

In constraining the processes of market risk measurement, Basel's Advanced Approach effectively legitimised banks' predictions about the future as the only plausible predictions. But because future market developments cannot be predicted, this means that the banks were actually given the power to impose their subjective projections of the future onto everyone else. Thus, critical decisions about how the future will unfold were relegated to the seemingly neutral frameworks of professional risk managers, even though, as the thesis has demonstrated, market risk models are not 'neutral devices, but ... theory-loaded instruments

³⁷⁷ Porter, Tony. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*, Princeton: Princeton University Press. p195.

³⁷⁸ MacKenzie, Donald. 2005. "Opening the Black Boxes of Global Finance." *Review of international political economy* 12(4): 555–76.

of (scientific or economic) representations.³⁷⁹ Although each bank only makes predictions about the possible futures of their own portfolios, to do so, they must also make wider predictions about the multitude of markets their portfolios are invested in. For the large global trading banks, these markets include all the major financial markets in equities, debt securities, foreign exchange, commodities and derivatives. This means that, by allowing the large trading banks to speak authoritatively about the future of their investments, the Basel Committee further ensured that the financial markets would operate on the basis of their predictions about the financial and macroeconomic systems, and displace the possibility of more collective responses to the uncertain future of these systems.

Indeed, as many have argued, where uncertainty exists, there are necessarily multiple possibilities about how to anticipate future events, as well as a range of legitimate opinions about how one might prepare for them. As Reddy argues, when we acknowledge the ‘truly radical and irreducible nature of our ignorance about the future world’, this uncertainty turns any discussion about the future into an ‘irreducibly political space.’³⁸⁰ Similarly, in Amar Bhidé’s defence for a greater reliance on subjective judgment in financial markets, he explains how the move to quantification has worked to exclude case-by-case evaluations in modern finance, arguing that statistical models are ‘utterly at odds with a decentralized, innovative economy where different individuals make different choices, depending on how they interpret the world around them and the facts that they uniquely observe.’ Further, he claims that ‘[o]ne need not endorse the full-scale replacement of statistical modelling by judgment to recognize that the latter is diminished when VaR is represented as the best way to foresee financial losses.’³⁸¹

More significantly, Basel’s market risk device intervenes in further ways than simply obscuring the uncertainty or openness of the future – the device also allows the banks to bend the future in their favour. This is because the practices of defining, measuring and managing risk have always straddled an ambiguous line between simple description and strategic interplay. As discussed in Chapters Two, Three and Four, the discourses and practices of risk

³⁷⁹ Kalthhoff 2005, p71.

³⁸⁰ Reddy in Lockwood 2015, p748.

³⁸¹ Bhidé, A. (2010) *A Call for Judgment: Sensible Finance for a Dynamic Economy*, New York: Oxford University Press. p103

management are deeply entangled with investors' many strategic objectives. Although banks do have an interest in objectively gauging the future, due to the fundamental limitations in quantitative risk modelling, the processes of analysing one's own, as well as others', risk profiles are often further conducted with a view of *influencing* future market developments. Indeed, the only way in which we could arrive at perfect probabilistic knowledge about the future is if we assumed that the world is governed by objective laws, and that all historical as well as future information can be treated in a similar way as manifesting these laws – i.e. that there are no essential differences between the past and the future.³⁸² Not only is this untrue, but financial investors understand this to be the case.

The point here is that the banks do not attempt to bridge their lack of knowledge about the future simply by analysing numerical probabilities - their goal is 'not simply to know a given normal distribution, but rather to shape norms as [they] make history.'³⁸³ Because investors understand that the present makes a difference, and that it introduces opportunities for change, they strategise around the limits of what is knowable, and leverage the uncertainty of what may or may not be. This is why risk models' claims to objectivity are so important, and why Basel's market risk device empowered the banks so greatly. By institutionalising banks' VaR models, the latter enabled the banks to influence our collective expectations about the future, and this capacity is critical in shaping what can actually happen. As Beckert argues, expectations are 'interpretative frames', i.e. stories rather than probabilistic assessments 'that structure situations through imaginaries of future states of the world and of causal relations.'³⁸⁴ They orient decision-making and organise activities by creating narratives that serve as reference points, thereby enabling actors to plan and coordinate their actions. Expectations thus represent 'an entry point for the exercise of power in the economy.'³⁸⁵

³⁸² As Konings writes, '[t]he way we think about a lottery provides the relevant model here: precisely because randomness has been systematically produced and the influence of the subject has been systematically isolated, we can say that our knowledge is perfect.' Konings, Martijn. 2018. *Capital and Time: For a New Critique of Neoliberal Reason*. Stanford: Stanford University Press. p15.

³⁸³ Ibid.

³⁸⁴ Ibid. p9.

³⁸⁵ Beckert, Jens. 2016. *Imagined Futures: Fictional Expectations and Capitalist Dynamics*. Harvard University Press. p80.

What matters is therefore the capacity to tell the most persuasive imaginaries, and risk models are excellent story tellers. Not only do they produce simple and precise quantitative outputs, but they also present themselves as scientific instruments, able to observe future realities with objectivity and accuracy. Hence the importance of analysing Basel's market risk frameworks as technologies of power. Not only are the major trading banks the only banks allowed to use their internal models, but they also possess the greatest material resources - in terms of the risk experts and computational machinery at their disposal - to manipulate the operations of their risk models to meet their needs (and this is in addition to the fact that VaR's methodologies were already constructed in close alignment with investors' interests).³⁸⁶ Thus, what we see is: despite there being a necessary first movement of objectification, just as importantly, there ensues a second moment of re-contestation, when banks' risk models enable them to re-engage in a level of *strategic* action. Indeed, because of the banks' control over the socio-technical arrangements of their internal VaR models, they do not confront 'market risks' as external objects, but as a series of calculative manoeuvres through which they can shape the expectations, and thus the plans and the coordination points, of their most important stakeholders.³⁸⁷

More specifically, Basel's market risk device allows the banks to deploy their risk models to persuade regulators and other market actors that their portfolios are both stable and lucrative. With respect to banks' commercial stakeholders, by forecasting low volatilities for

³⁸⁶ Although, in the lead up to the 1996 Amendment, it was acknowledged that Basel's Advanced Approach would allow banks to control their own risk management practices, because banks' risks were characterised as objective threats, any concerns about this devolution of power could not be divorced from countervailing concerns about the feasibility of top-down regulation. Only the largest trading banks could afford the physical infrastructure, as well as the quantity and level of expertise, required to operate and monitor the risk systems deemed capable of adequately capturing banks' investment exposures. It is because market risks were seen as objectively identifiable entities, too difficult for supervisors to monitor, that the rational response was to allow more voluntarist modes of regulation. Moreover, it was assumed that the best modelling techniques would continue to evolve, becoming both more accurate and precise over time. Again, it was argued that only the banks could guarantee the necessary investments to continue improving these technologies, and that they would only do so if they were allowed to use their internal models with relatively little regulatory intervention.

³⁸⁷ Andrew Haldane's analysis of the BCBS's capital rules and banks' internal models is illuminating in this respect: [T]he rationale for the original Basel Accord is that it would effectively defuse an international race to the bottom by setting a common, internationally-set capital standard. But the use of risk weights, in particular those based on internal models, in calculating banks' capital ratios has provided an alternative avenue through which this race can be run.' Indeed, '[t]he trend [of the average risk weight applied to the assets of the 17 major international banks over the period 1993 to 2011] is steeply and strikingly downward-sloped, falling on average by 2 percentage points each year. Banks' average risk weight (risk-weighted assets per unit of assets) has almost halved, falling from over 70% in 1993 to below 40% at end.' He concludes: '[t]here are three possible interpretations of this trend. One is that banks' assets, in aggregate, are around half as risky today as they were 20 years ago. A second is that banks are twice as good at managing these risks as they were 20 years ago. In the light of the crisis, which unearthed huge risks on banks' balance sheets accumulated over this period, neither proposition rings especially true.' Haldane, Andrew. 2013. "Constraining Discretion in Banking Regulation." *Bank of England*. p4.

the assets in banks' trading books, VaR's interventions allows them to increase their creditors' confidence (see part I section I above) as well as influence competing investors' trading patterns. The banks using the Advanced Approach are therefore able to secure more stable and greater amounts of funding, in addition to increasing the value of particular investments through the self-realising mechanisms of VaR.³⁸⁸ As for banks' relationship with the regulators, by consolidating their authority to frame collective expectations about the price stability of specific markets, the banks are also able to dictate the riskiness of their own trading activities. Thus, as the banks induced the regulators to believe, or act as if, their portfolios are sufficiently safe, they also successfully reduced their capital requirements, freeing up significant amounts of working capital. This entrenched the market power of largest banks, which already dominated the securities and derivatives markets, and further increased their profits by allowing them to invest in high yield, high risk assets whilst committing very little capital to these investments.

Beyond enabling the materialisation of these specific interests, Basel's market risk device also provided the conditions of possibility for the banking industry to ignore, and therefore accumulate, an enormous amount of risk. Moreover, in addition to hiding these risks, banks' risk models have further perpetuated uncertainty by encouraging the creation of self-perpetuating complexity and widespread ignorance.³⁸⁹ At the same time, Basel's market risk frameworks allowed the banks to drastically reduce their capital requirements, thus undermining the resilience of the banking industry. As quoted in Chapter Three, as a result of the introduction of the Market Risk Amendment, banks adopting the internal models approach 'tended to realise substantial capital savings, on the order of 20 to 50 percent, depending on the size of their trading operations and the type of instruments they traded.'³⁹⁰ Thus, as MacKenzie highlights, while 'US banks had average levels of equity of just below 25 per cent, and UK banks of around 15 per cent' in the late 19th Century, '[b] By the time the

³⁸⁸ Lockwood argues: [t]he institutionalization of a common method of measuring risk in banks' risk management divisions causes investment strategies to converge, producing temporary stability, with few unexpected losses, in financial markets... With everyone calculating the market risk of common investments similarly, it is unlikely that the asset price will exhibit unexpected volatility, helping to ensure the accuracy of the VaR estimate of losses, and shoring up its apparent capacity to effectively manage risk. This stability, however, is exceptionally fragile because it is not the result of objective risk calculations, but rather an artifact of highly correlated investments.' Lockwood 2015, p736.

³⁸⁹ De Goede 2004; Lockwood 2015; see also Datz, Giselle. 2013. "The Narrative of Complexity in the Crisis of Finance: Epistemological Challenge and Macroprudential Policy Response." *New Political Economy* 18(4): 459–79.

Giselle Datz; Lockwood; De Goede in Lockwood p730

³⁹⁰ Crouhy et al. 2014, p128.

crisis began in 2007, equity levels had fallen to small fractions of those numbers, and remain well below them today. The consequence is that the banking system has become inherently more fragile.³⁹¹

³⁹¹ MacKenzie, Donald. 2013. "The Magic Lever: How the Banks Do it." London Review of Books.

Chapter Six, A critical analysis of the Basel Committee's post-crisis reforms

Introduction

In Chapters Two to Five, the thesis reconceives Basel's market risk framework as a strategic device, capable of generating productive and market shaping effects, as opposed to a neutral or mathematical set of tools, simply improving (or aimed at improving) our understanding of the financial markets. Based on the theoretical framework elaborated in these chapters, Chapter Six concludes the thesis by developing a new set of arguments in relation to the Basel Committee's post Global Financial Crisis market risk reforms – including Basel 2.5 and the Fundamental Review of the Trading Book (FRTB). The purpose of this chapter is to provide a different perspective from which to investigate the strengths and weaknesses of these reforms, focusing on their continuities with the Market Risk Amendment, as well as the problematic effects that flow from these continuities. Based on these arguments, the chapter further offers a number of suggestions as to how BCBS, or other regulators, might respond to the problems of the Market Risk Amendment more productively. As Chapter Six argues, by consciously treating regulatory risk frameworks as a strategic device, the regulators might not only be able to identify the ways in which it is leveraged by the major trading banks, but they could further find ways to reinforce the regulatory concerns and priorities that are already embedded within it. Looking at Basel's FRTB, Chapter Six offers a number of specific ways in which these objectives might be achieved.

Part I of Chapter Six starts by examining the ways in which the Global Financial Crisis generated a further epistemological crisis in Basel's regulatory risk metrics, and sets out the reforms which have been implemented to restore confidence in them. Section i describes the reforms aimed at incorporating a novel systemic risk category in Basel III. Section ii looks at the reforms directed specifically at the Market Risk Amendment's Advanced Approach, resulting first in the Basel 2.5 Agreement and subsequently in the FRTB. Part II of Chapter Six then turns to the criticisms of these reforms. Section i first considers the most prominent strands of criticisms that have been discussed in the literature, whereas section ii turns to the thesis' arguments in relation to these reforms. The core claim is that by continuing to treat market risks as facts, measurable through risk models that focus on historical price data, the

BCBS reproduces a number of continuities in the contingent and strategic framing of market risk. Although Basel's post-crisis reforms have produced a number of positive changes, the continuities in Basel's conceptualisation of market risk mean that these gains are not only limited, but also relatively fragile. The final paragraphs of section ii conclude by proposing some suggestions that might enable the BCBS to implement more targeted and meaningful changes.

I. The BCBS' post-crisis reforms

The magnitude of the Global Financial Crisis provoked wide-ranging debates about the financial sector and its regulatory architecture, not only among politicians and regulators but also among the wider public. For the first time, significant parts of academia and the general public who had never seriously, or never at all, engaged with the technicalities of banking and finance, began paying much closer attention to the micro-structures of the financial system. The Basel Committee's regulatory risk frameworks, which, as demonstrated in the preceding chapter, had become intricately tied up with the infrastructure of global banking, represents one such set of micro-structures. Particularly with respect to the Advanced Approach of Basel's Market Risk Amendment (later also adopted in Basel II for the calculation of banks' credit risk charges), its institutionalisation of VaR as a set of regulatory instruments attracted significant criticism from a growing spectrum of constituencies. Indeed, as a result of the enormous failures of banks' regulatory VaR models, in the aftermath of the crisis, these modelling techniques became a target of condemnation even among non-expert communities outside regulatory and risk specialist circles.

Based on banks' in-house models, trading positions considered to be very low risk suffered incredible losses. As described by a quantitative risk specialist at Lehman Brothers, '[e]vents that models only predicted would happen once in 10'000 years happened every day for three days.'³⁹² Even more devastating, Lehman's multiple 10'000 year events paled in comparison to the losses sustained by Goldman Sachs in the summer of 2007. During that time, the Financial Times reported a discussion with David Viniar, Goldman Sachs' Chief financial

³⁹² Daníelsson, Jon. 2008. "Blame the Models." *Journal of Financial Stability* 4(4): p322.

officer, who claimed: 'We were seeing things that were 25-standard deviation moves, several days in a row... There have been issues in some of the other quantitative spaces. But nothing like what we saw last week.'³⁹³ Putting these claims in laymen terms, Danielsson explains:³⁹⁴

[u]nder a normal distribution, a -25 sigma event happens with probability once every 10-140 years, which implies that Goldman suffered a number of days losses, each of which their models predict occurs approximately once every 14 universes, using the current estimate of the age of the universe of approximately 10-10 years old.

Thus, despite the continued inaccessibility of the models' mathematical formulas, the losses suffered by the largest and most sophisticated banks were so extraordinary as to provoke an epistemic crisis in Basel's market risk framework. As a result, the Basel Committee began negotiating a series of reforms with a view of amending its measurement approaches to more accurately capture the risks of the banking system, and thus better guarantee the stability of the financial system.

Two main types of responses dominated Basel's post-crisis response. First, the renewed attention to macroprudential thinking also produced a shift in the conceptualisation of financial risk, from a microprudential focus on credit and market risk (represented by the first Basel Accord and the 1996 Amendment respectively) to the incorporation of a new *systemic* risk concept. This renewed interest in systemic risk, abandoned in the 1970s amidst the rise of market-based forms of regulation, went beyond the historical concern with bank runs and instead led to a problematisation of new - including structural - questions in relation to the size, interconnectedness and procyclicality of the different institutions in the financial sector.³⁹⁵ Many of these insights were subsequently incorporated into the Basel III Agreement.³⁹⁶ Secondly, the Basel Committee also implemented extensive reforms to its market risk rules, replacing the 1996 Amendment with Basel 2.5 and the Fundamental Review of the Trading Book. While these reforms are relatively extensive - touching on the substantive definition of market risk, its metrics as well as the procedural oversight afforded to banks' supervisors - Part II of the Chapter argues that *conceptually* these amendments only

³⁹³ Ibid.

³⁹⁴ Ibid.

³⁹⁵ Thiemann, Matthias, Mohamed Aldegwy, and Edin Ibrocevic. 2018. "Understanding the Shift from Micro-to Macro-Prudential Thinking: A Discursive Network Analysis." *Cambridge Journal of Economics* 42(4): 935–62.

³⁹⁶ BCBS. 2010. "A global regulatory framework for more resilient banks and banking systems." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

amount to technical adjustments of the pre-existing regime, leaving its underlying logics and relations largely unscathed.

i. Introducing 'systemic risk'

Debates about macroprudential regulation (MPR) and systemic risk have a longstanding history in macroeconomic policy. Although these topics have taken various forms over time, the idea that finance should be regulated as an integrated whole goes back to at least the early 20th Century with policies aimed at controlling aggregate credit growth.³⁹⁷ According to MPR, *microprudential* approaches are mistakenly constrained by the assumption that all banking risks are identifiable from the standpoint of individual institutions. From a microprudential perspective, a risk is only deemed to exist insofar as it represents a threat to an individual bank, and calculating the total risk within a banking system simply involves adding up every single bank's exposures. To speak of financial stability is therefore to refer to the system's aggregate safety as derived from the stability of each and every banking firm.³⁹⁸ As we will see, casting a macroprudential critique over the specific formulations of Basel's market risk category reveals the many, and significant, shortcomings of this risk concept. While the macroprudential paradigm does not go as far as many extra-regulatory responses to the crisis, the post-crisis debate between micro versus macro approaches has introduced an important paradigm shift, at least in regulatory discourse.

There exist many interpretations of the nature and implications of systemic risk, but here I consider three core themes demonstrating its potential to disrupt the pre-crisis framings of market risk. First, as an object conceived from a perspective transcending banks' internal viewpoints, systemic risk represents a novel paradigm based on reformulated ideas about the threats it addresses and the interests it seeks to protect. Unlike with market risk, the underlying threat of systemic risk is no longer embodied by fluctuating market prices, but by the triggers and pathways of risk that manifest across the financial system and over multiple credit cycles. Thus, as an object of governance, systemic risk examines the *structure* of

³⁹⁷ Kenç, Turalay. 2016. "Macroprudential Regulation: History, Theory and Policy." *BIS Paper*. p2.

³⁹⁸ Alexander, Kern, and Steven L. Schwarcz. 2016. "The Macroprudential Quandary: Unsystematic Efforts to Reform Financial Regulation." In *Reconceptualising Global Finance and Its Regulation*. Cambridge University Press; Lastra, Rosa. 2015. "Systemic Risk and Macro-Prudential Supervision." In *The Oxford Handbook of Financial Regulation*, Oxford University Press.

financial markets, looking at banks as well as non-banking institutions, the variation between different banks and other financial actors, and the interactive dynamics within these complex networks.³⁹⁹ Moreover, what systemic risk considers to be a threat is also reshaped based on the particular entities which the risk concept ultimately seeks to protect. In MPR, banking stability is no longer defined by the aggregate stability of individual banks, because even if all the banks' balance sheets are sufficiently healthy at a given point in time, this does not guarantee the resilience of the banking *system*. As a result, it does not make sense to simply focus on the threats to banks' balance sheets, which again, might otherwise justify a limited focus on market prices.⁴⁰⁰

To capture the shift entailed by systemic risk, proponents of MPR have developed the concept of endogenous risk. The latter 'refers to the risk from shocks that are generated and amplified *within* the system', i.e. created by the activities and dynamics between the banks themselves.⁴⁰¹ The idea of endogeneity is also commonly explained by reference to the mechanics of cross-sectionality (how risk develops unevenly across different parts of the banking system) and procyclicality (the cyclical dimensions of systemic risk, both within finance and in relation to wider macroeconomic cycles).⁴⁰² Although engaging with endogenous conceptions of risk may entail more or less radical policies, it necessarily reverses the priorities of microprudential regulation which focuses on risks emanating from outside the banking system, and which represent a threat to banks' individual portfolio valuations. In contrast, targeting systemic risk involves investigating banks' own activities, and it further promises more intrusive interventions based on *social* conceptualisations of loss, aimed at protecting the systemic operations of finance in which individual banks' interests may be sacrificed.⁴⁰³ Regarding the translation of these ideas into Basel's post-crisis reforms, while Basel III has not significantly reshaped the structure of contemporary banking, it did implement a range of 'systemic' policy tools, which have entailed some reassertions of public

³⁹⁹ Caruana, Jaime. 2010. "Systemic Risk: How to Deal with It?" BIS publication; Clement, Piet. 2010. "The Term 'macroprudential': Origins and Evolution." BIS Quarterly Review, March.

⁴⁰⁰ Alexander 2016; Lastra 2015.

⁴⁰¹ Danielsson, Jon, and Hyun Song Shin. 2003. "Endogenous Risk." *Modern risk management: A history*: p297

⁴⁰² Caruana 2010.

⁴⁰³ Lastra 2015.

authority including by incorporating greater procedural powers for monitoring banks' risk models.⁴⁰⁴

A second respect in which systemic risk represents a discontinuity from market risk concerns its underlying theory of financial markets. As discussed in Chapters Three and Five, the Advanced Approach of the 1996 Amendment relies on the efficient market hypothesis as a theoretical basis for the calculations of banks' risk outputs. VaR assumes that the causes of volatility are continuously assimilated into the prices of all financial instruments, even if these causes are not substantively spelled out. As a result, under the 1996 Amendment, the role of regulation was limited to supervising banks' use of the Advanced Approach, but regulators were prohibited from formulating their own explanations about the causes of market risk, as this would imply second guessing the price mechanism of the market. In contrast, MPR rejects the efficient market hypothesis, and rather than relying on quantitative price analyses as a shorthand for measuring market risk, regulators and other experts are expected to *qualitatively assess* the triggers and pathways of risk.⁴⁰⁵ Moreover, once the regulators are directly involved in defining and capturing banks' risks, they naturally also tend to take a more active position in balancing stability with other prudential goals (like maintaining market confidence or promoting credit growth) since different synergies and trade-offs will need to be worked out as part of their effort to measure and manage systemic risk.

As with the shift implied by reconceiving risk endogenously, there is no necessary substantive outcome resulting from the requirement that regulators engage in qualitative forms of market analysis to identify and manage systemic risk. The outcome will depend on the practices and ideas prevalent in and around the regulatory community, which in turn will depend on the structures and relations making up the financial sector. Thus, because of the deeply neoliberal and financialised state of the global economy in 2008, the crisis did not engender the same transformations in banking as after the 1929 crash, when Roosevelt's New Deal implemented a decisive separation between banking and securities trading.⁴⁰⁶ Nevertheless, the mere fact that systemic risk requires regulators to perform qualitative

⁴⁰⁴ BCBS 2010.

⁴⁰⁵ Thiemann et al. 2017; Baker, Andrew. 2013. "The New Political Economy of the Macroprudential Ideational Shift." *New Political Economy* 18(1): 112–39.

⁴⁰⁶ Konings, Martijn. 2018. *Capital and Time: For a New Critique of Neoliberal Reason*. Stanford: Stanford University Press.

analyses signifies an important discontinuity with microprudential conceptions of risk, as it gives regulators more decision-making power. Introducing systemic risk thus transforms their relationship with the banks, i.e. the relationships that channel the potential for new practices and ideas. Just like for Basel's Building Block Approach then, Basel III gives regulators greater discretion to determine the riskiness of banks' activities, but in the case of Basel III, regulators are further guided by macroprudential conceptions of risk. As a result, there has been a consolidated focus on procyclicality, as well as the adoption of provisions concerned with the problems of size and interconnectedness in the financial system.⁴⁰⁷

Third, and finally, introducing systemic risk challenges pre-crisis conceptions of risk by bringing back the distinction between risk and uncertainty - famously theorised by authors like Knight and Keynes – and thus clarifying the limits on what risk analyses can and cannot tell us.⁴⁰⁸ As discussed in Chapter Four, the 1996 Amendment's Advanced Approach ignored the problems of uncertainty by bracketing them within VAR's model parameters. As a result, Basel's conception of market risk assumed that the financial system naturally tends towards stable equilibria, or that events and outcomes in the system are always measurable as positive and recurring trends. In the wake of the Global Financial Crisis, however, discussions around systemic risk have begun to recognise the reality of fundamental uncertainty. According to Andrew Haldane, Chief Economist at the Bank of England, systemic risk requires us to accept the redundancy of general equilibrium models and to 'rethink the financial network as a complex adaptive system' characterised by non-linear dynamics and vulnerable to sudden shifts.⁴⁰⁹ For regulation, it implies making greater space for precautionary margins. However, as scholars like Melinda Cooper have argued, properly engaging with uncertainty contains the potential for far more radical change. It provides the foundations for focusing on resilience as opposed to pre-emption, and for conceiving of both investment and loss in more collective terms, factoring necessary large scale losses for the sake of innovations in the public domain.⁴¹⁰

⁴⁰⁷ Caruana 2010; Alexander 2016; Lastra 2015.

⁴⁰⁸ Lockwood 2015; Lastra 2015; Best, Jacqueline. 2010. "The Limits of Financial Risk Management: Or What We Didn't Learn from the Asian Crisis." *New Political Economy* 15(1): 29–49; Cooper, Melinda. 2011. "Complexity theory after the financial crisis." *Journal of Cultural Economy* 4(4): 371–85.

⁴⁰⁹ Haldane, Andrew G, and Robert M May. 2011. "Systemic Risk in Banking Ecosystems." *Nature* 469(7330): 351–55; Haldane, Andrew. 2014. "The Corridor of Uncertainty." Bank of England.

⁴¹⁰ Cooper 2011.

ii. Updating the methodologies of the Market Risk Amendment

As a result of the failures of Basel's market risk framework, not only was Basel's broader conception of financial risk transformed to include systemic risk, but its market risk rules were also amended in an attempt to address the problems exposed by the financial crisis. First, the Basel 2.5 Agreement was adopted as an emergency response to provide an immediate fix to the most evident failures of the 1996 Amendment.⁴¹¹ It replaced the Amendment's single VaR calculation with three new capital charges: the calculation of a stressed VaR (SVaR), a new incremental risk charge (IRC), and a comprehensive risk measure (CRM) for instruments dependent on credit correlation. Each of these reforms, as well as their effects on Basel's conception of market risk, are considered in turn below. Second, immediately after the adoption of Basel 2.5, the Committee also began to negotiate the FRTB, which contains a far more comprehensive revision of the Market Risk Amendment.⁴¹² After examining Basel 2.5, this section describes the most recent changes brought about by the FRTB, including an objective distinction between the banking and the trading books, as well as further technical adjustments in both the Standardised and Internal Modelling Approaches.

In the Basel 2.5 Agreement, the most important reform was the introduction of a stressed VaR calculation. SVaR required banks under the Advanced Approach to expand their market risk calculations by further processing price data from a 12 month period of significant market stress. This was designed to correct for normal VaR's limited sample data which poorly reflects the build-up of risk during economic booms or relatively stable periods. As discussed in Chapter Four, under the 1996 Amendment, most banks using the historical simulation method only relied on sample data from the past one to four years. The assumption is that the percentage changes in the market variables for the following day would be a random sample from the percentage daily changes observed in the last several years – an incredibly short period which ignores the history of financial credit cycles. This was particularly problematic in the lead up to 2008 when the markets were mostly stable and banks' capital reserves thus correspondingly low. To update the Amendment's methodologies, Basel 2.5

⁴¹¹ BCBS. 2009. "Revisions to the Basel II market risk framework." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

⁴¹² BCBS. 2019a. "Minimum capital requirements for market risk." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

requires the banks to calculate an additional SVaR, derived from a sample of market data from a 250-day (the number of trading days in one year) period of stressed market conditions. The normal and SVaR were then combined to generate an increased capital charge, typically at least double the charge of the normal VaR under the Market Risk Amendment.⁴¹³

With respect to the IRC, this new charge was designed to reflect the increasingly marketised nature of banks' credit instruments. Since the early 2000s, the Basel Committee had already begun grappling with the growing exposures 'in banks' trading books to credit-risk related and often illiquid products whose risk is not reflected in value-at-risk.'⁴¹⁴ The IRC implemented an extra charge for unsecuritised loan instruments, such as unsecuritised corporate bonds, sensitive to default or credit migration risk (also referred to as credit spread risk). The latter refer to the risks of sudden devaluations from defaults or negative readjustments in an instrument's credit ratings. Moreover, because banks' market risk exposures require less capital requirements, the banks deliberately held their credit-sensitive products in their trading books, despite having no intention to sell them off. Many large trading banks thus accumulated a dangerous amount of risky credit products in their trading books, without backing these assets with the same amount of capital they would have done under Basel's credit risk rules.⁴¹⁵ The IRC was aimed at correcting all of these problems by setting capital charges for the trading book equal to that obtained using banking book calculations. Finally, regarding the CRM, this provided an exception for *securitised* products in the correlation book. It was a single capital charge replacing the IRC for instruments dependent on credit correlation, as long as the banks could demonstrate that their models were capable of capturing the relevant correlations.⁴¹⁶

⁴¹³ C Crouhy, Michel, Dan Galai, and Mark Robert. 2014. *The Essentials of Risk Management*. Second ed. McGraw Hill.

⁴¹⁴ BCBS 2009, p1.

⁴¹⁵ For example, if a bond was held in the trading book, the capital would be calculated by applying a multiplier to the 10-day 99% VaR. If held in the banking book (and treated like a loan), however, capital for the bond would be calculated using VaR with a one year time horizon and a 99.9% confidence level. The trading-book calculation usually gave rise to a much lower capital charge than the banking-book calculation. As a result, banks tended whenever possible to hold credit-dependent instruments in the trading book.

⁴¹⁶ The correlation book is the portfolio of instruments such as asset-backed securities and collateralised debt obligations that are sensitive to the correlation between the default risks of different assets. Thus, in normal times, there is relatively little risk of loss from a triple A rated asset-backed security, however, in stressed market conditions, correlations increase and these assets become more risky.

The updated methodologies in Basel 2.5 compelled the banks to account for greater market risk exposures, and thus to hold significantly more capital than before. Building on these changes, the FRTB instigated a more extensive and complex set of regulations, further refining Basel's market risk concept based on its twin objectives of greater accuracy and precision. The FRTB begins by introducing a more rigid distinction between the trading and the banking book, thereby establishing an objective division between banks' assets, clarifying which of them expose banks to market versus credit risk. Instruments 'for short-term resale... and hedging' (as opposed to instruments *intended* for trading) must be registered in the trading book, and are associated with market risk. On the other hand, instruments 'not easily converted into cash' attract credit risk and must be registered in the banking book. This distinction sought both to capture risk more effectively and to encourage banks to implement 'a well-defined business strategy' while simultaneously discouraging regulatory arbitrage.⁴¹⁷ Second, and more importantly, the FRTB introduces 'more sophisticated and accurate' measuring techniques both for its Internal Models Approach and for its Standardised Approach. According to Basel, these metrics represent a significant upgrade in Basel's market risk technologies, moreover, their closer integration aims to grant banks' supervisors greater procedural powers in monitoring the calculation of banks' risk exposures.

The Internal Modelling Approach replaces VaR with Expected Shortfall (ES), a new statistical metric for calculating market risk. As with Basel 2.5's reforms to VaR, ES captures the credit sensitivities in banks' trading books while also accounting for financial market cycles by calibrating its models using data from periods of market stress. But ES goes further than these adjustments, and aims to capture the losses *outside* VaR's confidence levels as well as to measure the *magnitude* of the losses in these extreme, or 'tail', events. In other words, ES updates the science of VaR by accounting for the likelihood of financial crises as well as the types of losses to expect in these rare crisis situations. Another change introduced by ES is that it does not assume banks' trading book assets are tradable within a ten day horizon. Instead, ES treats volatility (market risk) and liquidity spirals as inter-related dynamics, which

⁴¹⁷ The problem prior to the global financial crisis was that banks could hold certain instruments in their trading books (often intentionally restructuring their assets to this end) even though these instruments also, or continued to, possess certain credit risk qualities. Banks tended to do this whenever possible because, as mentioned, the trading-book calculation usually gave rise to a much lower capital charge. The main story of the crisis became the question of how banks had managed to build up billions of subprime CDO tranches in their trading books, and why the regulations were so lax when it came to policing the trading book.

it addresses via the incorporation of a series of 'liquidity horizons'. These horizons represent Basel's estimations of the duration required for liquidating different asset classes under conditions of financial distress. Finally, the FRTB promises more robust risk calculations by establishing stricter rules on the number and quality of the price observations required before a bank is permitted to calculate its own market risks. Thus, for a risk factor to be classified as 'modellable', the FRTB demands 'continuously available real prices for a sufficient set of representative transactions.'

As for the FRTB's Standardised Approach, it replaces the old system with three new capital charges, the sensitivities based approach (SBA), the default risk charge and the residual risk add-on. The most important addition is the SBA, which was designed to achieve greater risk-sensitivity, thereby making the Standardised Approach more complex and model-like. Under the SBA, banks begin by mapping their portfolios against an extended set of regulatory risk factors, including, interest rates, foreign exchange, commodities and equity prices, as well as three credit spread risk factors for securitised, unsecuritised and correlation trading portfolio instruments. Three risk sensitivities (the Delta, Vega and curvature risks) derived from banks' own pricing models are then used to determine the size of a bank's positions with respect to each risk factor. Lastly, the SA's aggregation method allows banks to calculate any diversification effects so that their final risk charge does not only depend on stand-alone securities, but also on the composition of their trading books. Ultimately, the SBA is much closer to a variance covariance approach like VaR - measuring a trading portfolio's historical volatilities and correlations - than it is to the Building Block Approach of the old SA.⁴¹⁸ In addition to the SBA, a residual risk add-on charge provides a simple and conservative stopgap for the (typically more exotic) instruments which the SBA fails to capture.

Finally, the FRTB also aims to re-balance the power between banks and their supervisors. As part of the Internal Modelling Approach, the FRTB altered the processes for model approval so that it is now the standalone desk, rather than the entire banking firm, which is subject to regulatory approval. Each trading desk nominated by a bank for the Internal Modelling Approach must satisfy Basel's qualitative standards as well as perform positively against a set

⁴¹⁸ Orgeldinger, Jorg. 2018. "Critical Appraisal of the Basel Fundamental Review of the Trading Book Regulations." *Journal of Risk Management in Financial Institutions* 2(2).

of quantitative standards. The latter include clear thresholds for breaches of profit and loss (P&L) attribution as well as stringent back testing procedures. The stated purpose is to level the playing field between different banks, as all banks may now have certain desks that are 'in scope' and others that are 'out of scope' (and thus subject to the SA's rules). Moreover, the FRTB requires all banks qualified under the Internal Modelling Approach to further calculate what their market risk charge would amount to under the SA. The aim is to facilitate the comparability of modelling results between banks, but more importantly to ensure that the Standardised Approach can always act as a credible threat and fall back option. The fact that the Standardised Approach has been redesigned to make it more precise, and more model-like, also supports this objective, because it reduces the differences between the Standardised Approach and the Internal Modelling Approach. Overall, as soon as the performance of a trading department is deemed unsatisfactory, the FRTB aims to enable banking supervisors to more easily force particular trading desks to switch back to the SA.

II. Challenging the BCBS' post-crisis reforms

i. Criticisms in the literature

Following the Basel Committee's efforts to redress the problems exposed in its market risk framework, there has been much commentary on its post-crisis reforms. Most of this commentary has focused on Basel III's new rules on systemic risk, but some of it is of a broader nature and looks at the general characteristics of Basel's reforms. There have been far fewer analyses considering Basel 2.5 or the FRTB specifically, although banking and private consulting groups continue to publically review these frameworks – suggesting their ongoing significance for the banking industry. This sub-section focuses on the different strands of criticisms insofar as they have something to say about Basel's reforms in relation to its evolving market risk frameworks. Thus, it includes criticisms of Basel III where they are of a more general nature, but not the more targeted criticisms about the new instruments designed to capture systemic risk. This is because, as subsection ii below will explain, although Basel's systemic risk concept has highlighted the many incoherences in the notion of market risk, the former has nonetheless been constructed in such a way as to preserve much of the

pre-existing regime on market risk. Basel's rules on systemic risk were thus developed in a separate framework which relate to, but do not challenge, its rules on market risk.

The most common criticisms about Basel's post-crisis reforms focus on their overly technical and complex nature.⁴¹⁹ As always, '[t]he primary source of complexity in the Basel framework' is seen to come from its 'granular, model-based risk-weighting',⁴²⁰ and both Basel 2.5 and the FRTB exacerbated these trends. Thus, banks' risk outputs continue to be disconnected from the actual sources of risk in banks' investment portfolios. According to Haldane:⁴²¹

[O]n the face of it, the very act of risk-weighting assets would appear to guarantee a greater degree of risk-sensitivity than, say, using a risk un-weighted leverage ratio. Yet this intuition is wrong on two counts. Wrong empirically because it ignores the risks which come from modelling. And wrong theoretically because risk across banks' whole portfolio may bear little relationship to the aggregated risk of each of its parts.

These claims can be empirically demonstrated based on observations of the variation in banks' model calculations. The BCBS completed a series of hypothetical portfolio exercises (HPE) in relation to Basel 2.5, revealing the huge variability of calculated risk weights:⁴²²

[f]or some portfolios, [the variability] runs to three figures. For one, it runs to four, with one bank's model suggesting \$1 of capital, another's over \$1000, for an identical exposure. These inconsistencies are likely to be an under-statement of the true problem. Because they cover only a sub-set of the banks using internal models, these exercises may significantly under-estimate variability across the bank population. The portfolios covered by existing HPE exercises have also tended to be relatively simple. More complex portfolios would probably result in wider cross-bank variability.

Thus, Haldane argues that '[t]here is a delicate line to tread between useful diversity in model outputs on the one hand and useless inconsistency on the other... If a regulatory regime can

⁴¹⁹ The BCBS itself recognised this an important issue, but has not acted on its own advice. BCBS. 2013. "The regulatory framework: balancing risk sensitivity, simplicity and comparability - discussion paper." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

⁴²⁰ Haldane, Andrew. 2012. "The Dog and the Frisbee." *Bank of England*. p13.

⁴²¹ Haldane, Andrew. 2013. "Constraining Discretion in Banking Regulation." *Bank of England*. p6.

⁴²² *Ibid*. p5.

generate capital ratios of 5%, 10% and 20% for three identical banks, it is not a robust basis for assessing capital adequacy.⁴²³

Complexity further creates opacity, which both complicates ‘the task for investors pricing banks’ financial instruments’⁴²⁴ and makes it more difficult for regulators to detect the vulnerabilities in banks’ trading books. More importantly, as Herring argues, Basel’s post-crisis reforms have created further ‘incentives for the banks to develop still more complicated financial instruments and financial structures that will enable them to comply with the letter of the regulations while evading their intended constraints.’⁴²⁵ The ongoing concerns about regulatory arbitrage has been echoed in many corners. In their highly-regarded investigation of the contemporary failures of finance, Engelen et al. claim that ‘[e]xpectations were low because Basel III like its predecessors was shaped by lobbying and provided a new opportunity for bricolage.’⁴²⁶ By retaining complex forms of risk weighted assets, Basel’s reforms constitute ‘an invitation to create new forms of securities whose weight as capital is determined by regulatory risk weightings rather than underlying asset quality, and an invitation furthermore to try out novel accounting treatments of SPV, derivative netting, and repos.’⁴²⁷ Haldane too argues that ‘aggregate evidence is consistent with [regulatory arbitrage] having occurred secularly and on a significant scale.’⁴²⁸ Quoting a 2012 survey, he writes that 65% of firms are engaged in ‘RWA optimisation’.⁴²⁹ Herring moreover points to the revealing number of ‘compliance personnel employed to operate the system’ – ‘Citigroup now employs a larger compliance staff than the entire number of employees (25,000) at Lehman Brothers when it collapsed.’⁴³⁰

In addition to the complexity of Basel’s post-crisis reforms, critics have also emphasised that they have little consideration for the kinds of investment that the banks end up taking on. Engelen et al. argue that ‘the technical discussion of capital adequacy and risk weightings

⁴²³ Ibid. p6.

⁴²⁴ Ibid. p10.

⁴²⁵ Richard, Herring. 2018. “The Evolving Complexity of Capital Regulation.” *Journal of Financial Services Research* 53: p201.

⁴²⁶ Ibid. p232.

⁴²⁷ Ibid.

⁴²⁸ Haldane 2013, p4.

⁴²⁹ Ibid. p5.

⁴³⁰ Herring 2018, p202.

completely disconnects banking from any consideration of social purpose.⁴³¹ To evidence this claim, they write that '[u]nder Basel regulations, banks now need to hold five times as much capital when lending to a small business or an entrepreneur than when investing in a triple A-rated investment vehicle.'⁴³² The same problems are raised by Haldane, who argues that one of the 'conceptual problem[s] with risk weighting is that it takes no account of the collective consequences of banks' asset allocation decisions.'⁴³³ Haldane also compares banks' regulatory incentives to invest in the real economy versus the financial system, and complains that 'no account is taken of the externalities, positive or negative, that banks' portfolio choices may give rise to.'⁴³⁴ Although regulatory risk weights could be used to benefit lending that supports sustainable growth rather than benefit lending that drives negative externalities in the financial system (such as by raising interconnectivity and amplifying systemic risk), Haldane says 'there is scant evidence of this having happened' and that 'if anything the current risk-weighting system appears to generate the opposite set of incentives.'⁴³⁵

Finally, a number of academics continue to emphasise the inadequate level of capital reserves that banks are required to set aside under Basel's reforms. Admati and Hellwig are the most well-known proponents of a strategy that would require financial institutions to hold substantially more capital. In their study of bank capital regulation both before and after the crisis, these authors argued that 'Basel III maintains [a] flawed approach with hardly any change.'⁴³⁶ More specifically, they argue that while 'Basel III eliminates some abuses, it fails to address the basic problem that banks can easily game the regulation. Banks' equity can still be as low as 3 percent of their total assets.'⁴³⁷ Furthermore, '[i]t is not clear that anything would have been substantially different in the 2007-2009 crisis had Basel III already been in place.'⁴³⁸ Sceptics of higher bank capital requirements have responded that bank capital and bank runs are loosely related, and that capital requirements do not apply to non-banking

⁴³¹ Ibid. p234.

⁴³² Ibid.

⁴³³ Haldane 2013, p7.

⁴³⁴ Ibid. p7.

⁴³⁵ Ibid.

⁴³⁶ Anat Admati, and Martin Hellwig. 2014. *The Bankers' New Clothes: What's Wrong With Banking and What to Do About It*, Princeton University Press. p170.

⁴³⁷ Ibid. p96.

⁴³⁸ Ibid.

financial institutions, so higher capital reserves cannot in any event prevent contagion in the shadow banking system.⁴³⁹ However, Admati and Hellwig maintain that higher capital requirements will prevent banks' liability holders from panicking and that systemic crises are therefore less likely to materialise. More importantly, banks are already subsidised by deposit guarantees and informal bailouts, so that heightened capital reserves would beneficially counteract the problem of moral hazard.⁴⁴⁰

ii. A different critique of Basel's post-crisis reforms

a. Continuities from Basel's Market risk Amendment regime

Although all of these critiques highlight important aspects of Basel's post-crisis reforms, this final section examines them from a slightly different angle, by drawing from the body of arguments developed in this thesis. The core claim here is that the deeper problem with Basel's reforms lies in its persistent treatment of the risk frameworks underlying its capital requirements primarily in mathematical terms, as a set of scientific and observational tools. The contrary position adopted in this thesis, however, is that risk objects like market risk are not naturally occurring facts, and their measurement techniques are neither scientific nor objective. Responses to the failures of Basel's market risk regime cannot therefore be limited to finding more accurate or precise definitions of market risk, especially not by developing ever more complicated or sophisticated measurement techniques. Instead, the regulatory community would have a better chance at achieving its objectives by recognising that risk objects and their metrics are strategically constructed, and by reconceiving these metrics as devices that do not just reflect back reality, but rather actively generate productive and ordering effects.

The reason why it is important to engage with this more precise framing of market risk and its measurement frameworks is because Basel's reforms should not only address the extent

⁴³⁹ Gorton, Gary. 2012. *Misunderstanding Financial Crises: Why We Don't See Them Coming*. New York: Oxford University Press; Van Der Weide, M.E. and Zhang, J.Y. 2019. "Bank Capital Requirements after the Financial Crisis." In *The Oxford Handbook of Banking*. Oxford University Press; Scott, Hall. 2016. *Connectedness and Contagion: Protecting the Financial Systemic from Panics*. The MIT Press.

⁴⁴⁰ Admati and Hellwig 2014; Hellwig, Martin F. 2010. "Capital Regulation after the Crisis: Business as Usual?" SSRN Electronic Journal.

to which its pre-crisis metrics misunderstood banks' risks, as this would suggest that the solution can be appropriately be limited to attempts at 'correcting' banks' risk calculations. Moreover, adopting these alternative framings is not even simply about recognising the impossibility of predicting the future, however intricate banks' risk models are. The more important point, as discussed in Chapter Five, is that Basel's risk metrics' predictions about future market volatility themselves produce specific patterns of market-shaping effects. And these effects, along with the strategic mechanisms through which they are materialised, are best understood (and therefore more like interrupted or deviated) by treating Basel's measurement approaches as 'strategic devices'. Indeed, as argued in Chapters Two to Four of the thesis, the contingency and productiveness of market risk frameworks are closely related. The mechanisms through which market risk produce particular effects are intimately connected with the networks in which they have been, and continue to be, shaped. To understand how Basel's market risk framework intervenes or could intervene in the world, this thesis therefore examines its essence in the form of its mutually constitutive relationships with its surrounding networks, and the resulting logics folded within it.

The problem, however, is that Basel's post-crisis reforms on market risk mainly focus on updating the quantitative methodologies of its risk measurement approaches. Significantly, the specific reforms dealing with 'systemic risk' could have produced more meaningful changes, because they represent an actual paradigmatic challenge to Basel's pre-crisis framework. However, the result of these reforms was not a transformation of Basel's market (and credit) risk concepts and metrics, but simply the addition of a new systemic risk category.⁴⁴¹ Indeed, although MPR's re-interpretation of financial risk laid bare the many problems of the MRA regime, these exposures were contained by treating both systemic and market risks as objective, and therefore complementary, threats. This led to the production of an additional set of rules, problematising novel agents and dynamics, without seriously revisiting existing frameworks and the worldviews they continue to perpetuate. Thus, while it was recognised that '[t]he financial crisis demonstrated weaknesses in the micro-prudential regulatory approach', the necessary response was framed in terms of 'a balance between

⁴⁴¹ As demonstrated in section 6.II.i, systemic risk rests on a fundamentally different theory of financial markets, requiring regulators, among other experts, to qualitatively evaluate and intervene in the structural composition of the markets. MPR also takes a different ontological and epistemic stance to Basel's market risk device, rejecting the notion that financial markets, or the social world more widely, are based on positive laws uncoverable through probabilistic risk instruments.

macro-prudential and micro-prudential regulation.⁴⁴² Basel III's rules on systemic risk were thus implemented alongside the successive adoption of Basel 2.5 and the FRTB, guaranteeing the separate co-existence of market risk.

As for the reforms dealing specifically with market risk, both Basel 2.5 and the FRTB are predominantly concerned with updating the science of the Market Risk Amendment's measurement approaches. These reforms added many more risk factors and thus new calculations, and altered core parameters and assumptions across the expanded range of formulas used to measure market risk. However, fundamentally, the same logics that shaped Basel's conception of market risk in the MRA continue to shape the BCBS' reforms.⁴⁴³ Indeed, because Basel continues to treat its market risk framework as a set of scientific or mathematical instruments, the same core conceptual choices in Basel's pre-crisis conceptualisation of market risk remain unchallenged in Basel 2.5 and the FRTB. As argued in Chapters Two, Three and Four, the MRA inherited much of its thinking from securities traders' investment risk frameworks, including their foundations in modern finance theory. Based on these frameworks, the Basel Committee constructed a market risk category - as well as a set of market risk metrics - that treats market risk as an objective and quantitative threat, that is measurable based on examinations of historical price correlations. Moreover, as explained in those chapters, the idea that a bank's market risks can be found in the historical price data of its investment portfolios is supported by modern portfolio theory and the efficient market hypothesis, which, importantly, also support the position that there is no need to investigate the substantive causes of market volatility, and further imply the absence of uncertainty.

Although the Global Financial Crisis revealed the extraordinary failures of Basel's pre-crisis market risk approaches, these core strategic assumptions were maintained in Basel 2.5 and the FRTB.⁴⁴⁴ Indeed, the particular issues thrown up by the crisis were simply re-interpreted

⁴⁴² Alexander 2015, p348.

⁴⁴³ For example, in the explanatory note attached to the FRTB, the BCBS claims '[I]osses suffered by banks in the financial crisis of 2007-09 revealed that the design of the framework was not sufficient to ensure that banks could withstand such significant market distress... The objective of the project was to develop a new, more robust framework to establish minimum capital requirements for market risk.' BCBS. 2019c. "Explanatory note on the minimum capital requirements for market risk." *Basel Committee on Banking Supervision*. Basel: Bank for International Settlements.

⁴⁴⁴ Arguably this is because the financial crisis did not significantly alter the overall configuration of global finance. Although crises are often studied as important social events capable of exposing a system's inner workings, or as necessary turning points to disrupt tightly woven social connections, they have also been shown to protect prevailing hierarchies. Many scholars who predicted deep-seated systemic shifts after 2008, notably in the form of public re-assertions of power over the

as pertaining to the relatively superficial assumptions addressed in Basel's post-crisis reforms. Fundamentally, however, the largest banks are still allowed to rely on an internal modelling approach, in which the same basic price inputs continue to be converted into the same price (balance sheet loss) outputs. Going back to the different critiques of these reforms discussed in section I above, while these critiques highlight a number of important issues, the latter can all be understood as effects of the operations of Basel's market risk framework as a contingent and productive device. Thus, the fact that Basel 2.5 and the FRTB remain overly technical and complex, and focus predominantly on historical losses rather than the positive and negative externalities they may engender, can be explained on the basis of the modern finance theory and efficient market hypothesis foundations of Basel's market risk measurement approaches. As considered in the preceding chapters, these theoretical foundations enabled the development of market risk through an increasingly complex set of statistical techniques, which moreover, focused exclusively on market volatility.

The point here is that all of the MRA's conceptual choices are preserved as a result of the fact that Basel 2.5 and the FRTB treat market risks as facts, measurable by risk models focused on historical price data. On the one hand, it is based on these assumptions of facticity and the scientific nature of risk models that the above conceptual choices were formulated and consolidated to begin with. As discussed in Chapter Two, the objectification of market risk occurred in tandem with securities traders' efforts to quantify their market risks for the purposes of calculating the most efficient risk-return investment decisions. The development of modern finance theory, including its many market risk metrics, relied on the validity of these assumptions to make sense of what it was doing. At the same time, of course, the acceptance and use of these risk models further confirmed and strengthened the authority of these assumptions. On the other hand, by treating market risks as objective facts and their models as scientific instruments, it becomes harder to discern the specific perspectives from which these risk objects and instruments have been constructed. Thus, following the social studies of finance's techniques in challenging the objectivity of facts more generally, this

financial sector, were heavily disappointed. Authors such as Konings and Pistor have in fact argued that during financial crises, the entities standing at the core or apex of a system tend to attract more, not less, protection (because it is precisely in moments of crisis that many other parts of the system depend on the survival of its core to safeguard their own continued security – hence the logic of Too Big to Fail). Thus, since the wider networks in global finance were never actually on the brink of collapse, unsurprisingly, neither were many of its microstructures on risk regulation. Konings 2018; Pistor, Katharina. 2013. "A legal theory of finance." *Journal of Comparative Economics* 41(2): 315-330.

thesis has sought to study the ‘scenography’ of the production of market risks as facts, and their models as purely mathematical and quantitative tools.⁴⁴⁵ As a result, the thesis has been able to emphasise the actors and struggles involved in the *ongoing* production of these facts, as well as the interests and logics imbued within their struggles. Significantly, as discussed in greater detail below, these relations, interests and logics represent the spaces that Basel’s negotiators can leverage in order to influence the operations of banks’ regulatory risk mechanisms.

b. Positive and negative shifts, and the possibilities for more meaningful change

Despite the continuities between the Market Risk Amendment of 1996 and Basel 2.5 and the FRTB, Basel’s reforms did also introduce a number of changes, including changes with a positive, and resilience-building, effect on the banking industry. As argued in Chapter Four, much of the politics in risk regulation lies in the negotiations of the specific model parameters in banks’ regulatory risk metrics, and both Basel 2.5 and the FRTB implemented more conservative, and capital-intensive, standards. With respect to Basel 2.5, because of the new rules on Stressed VaR, the incremental risk charge and correlations trading, ‘[b]anks were required to hold significantly more market risk capital than hitherto.’⁴⁴⁶ For example, JP Morgan’s market risk charges breakdown in 2013 were as follows: ordinary VaR, \$909M; stressed VaR, \$2727M; incremental risk charge, \$908M; comprehensive risk charge for correlation trading, \$4209M.⁴⁴⁷ As for the FRTB, the latest impact analysis produced by the Bank of International Settlements (BIS) in 2015, estimates that these new rules will substantially increase banks’ market risk charges compared to Basel 2.5. As a result of the replacement of VaR with Expected Shortfall, the new rules on liquidity horizons, the reduction of diversification benefits and the splitting of the trading book into trading desks, the BIS’ impact analysis estimates that the FRTB will ‘result in a weighted average increase of 74% in aggregate market risk capital charges’ based on a study of 44 large banks.⁴⁴⁸

⁴⁴⁵ Latour, Bruno. 2005. *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.

⁴⁴⁶ Murphy, David. (forthcoming, 2022). *Derivatives Regulation - Rules and Reasoning from Lehman to Covid*, Oxford University Press.

⁴⁴⁷ Ibid.

⁴⁴⁸ BCBS. 2015. “Fundamental review of the trading book - interim impact analysis.” Basel Committee on Banking Supervision. Basel: Bank for International Settlements.

However, although higher reserves will strengthen banks' resilience against future losses, the fact that Basel delivered these increases by claiming to make its risk metrics more accurate, means that their deeper conceptual framings have remained intact. Thus, many of the problematic effects discussed in Chapter Five - also reflected in the criticisms of Basel's reforms considered in section I above - are likely to persist in relation to the FRTB. In fact, in seeking to enhance the quantitative methodologies of the Market Risk Amendment, Basel's reforms have actually undermined their regulatory risk regime in a number of ways. The FRTB's increased number of parameters, as well as the 'modellisation' of the Standardised Approach, have made the regime even more technical and complex - with all the attendant repercussions in terms of the depoliticisation of banks' trading activities and the creation of greater opportunities for regulatory arbitrage. At the same time, Basel's reforms have also removed some of the MRA's margins for precaution. As Christopher Finger argues, the MRA recognised that 'the purpose of capital is more than absorbing 99% worst case, ten-day losses.' It 'defines neither the horizon nor the confidence level they consider prudent, but enforce prudence through their subjective choices of multipliers. The new rules [in the FRTB] tilt this balance, attempting to define capital in a more rigorous statistical framework.'⁴⁴⁹

In addition, because Basel increased banks' capital reserves by re-adjusting its risk metrics' methodological framework and parameters, the BCBS must always stand ready to defend them, in the present and in future. Many of the major banks have already responded to Basel's incremental proposals with a torrent of detailed criticisms and 'guidance' - which partly explains the complexity of Basel's reforms, and why it has taken so long for them to be finalised and implemented.⁴⁵⁰ Reflecting some of the same arguments that were made after the publication of the 1993 Consultative Proposal, the banks have argued that their recommendations would make the FRTB more accurate, less costly and distorting, as well as better support their market-making activities.⁴⁵¹ For example, in the industry's response to a

⁴⁴⁹ Finger, Christopher. 2009. "IRC comments." *RiskMetrics Group Research Monthly* p3-4

⁴⁵⁰ As of the time of writing, the FRTB will not be implemented until 2022.

⁴⁵¹ See for example, the following excerpt from ISDA which contains its second round of responses to the BCBS' FRTB revisions: '[w]e would first like to sincerely thank the BCBS and its Market Risk Group (MRG) for their continued engagement with the industry, as well as their consideration of the Quantitative Impact Study (QIS) feedback, resulting in this targeted consultation and required revisions to the FRTB standard. The changes proposed in the CP improve the standard's operational robustness, mitigate potentially adverse impacts, and address many of the issues with the initial calibration of the FRTB standard ... The industry believes that continuing such engagement in the months ahead can lead to further enhancements to the market risk standard, and industry is pleased to present its views and recommendations on these

prior version of the FRTB, it recommends that the Standardised Approach be no higher than 1.5 times the Internal Modelling Approach, to 'avoid further reduction in bank market-making capacity.'⁴⁵² Regarding the Internal Modelling Approach, the industry was most worried about the non-modellable risk factors (NMRF), which it claims were 'still excessive... to such an extent that it will significantly disincentivise banks from building the internal models and providing liquidity in products that will be most impacted by the NMRF.'⁴⁵³ Generally, the banks remained 'concerned about the operational requirements, complexity and potential rigidity in instrument designation, as well as downside effects in funding and liquidity activities.'⁴⁵⁴ While some of these concerns were taken on board, the banks continue to express discontent in relation to the comments which have not been accepted by the BCBS.

Moreover, aside from the above issues, the inbuilt logics and biases in Basel's market risk device mean that by focusing solely on its measurement parameters, any deeper structural problems in the banking system will continue to be re-interpreted as lesser concerns, fixable by reframing Basel's quantitative standards. As mentioned above, although the Global Financial Crisis exposed the profound inadequacies of the MRA's Advanced Approach, these inadequacies were construed as pertaining to a much more specific set of issues, mostly in relation to the assumptions in banks' regulatory VaR models. After the crisis, because banks' losses far exceeded the predictions of any risk models, and because these losses were clearly linked to a range of structural dynamics, the BCBS was compelled to face the 'causal' questions it had always successfully avoided. For example, it was forced to consider issues like banks' pre-crisis practices of securitisation, the problem of liquidity spirals and their effects on decreasing asset values. Moreover, the Basel Committee was confronted with the

matters.' ISDA. 2018. "Revisions to the minimum capital requirements for market risk, industry response." BCBS Consultation Paper

⁴⁵² Ibid. p6. Further, ISDA writes, 'the industry believes that a few further enhancements to the standardised approach framework are critical to avoid any hampering of global capital market activities. These recommendations deal with the elements of: Capture of positive gamma; Curvature for Linear Instruments; Defaulted Position Capitalisation; RRAO on interest rate yield curve options and variance derivatives; Correlation Trading Portfolio (CTP) Capital treatment; and Risk Weight treatment of Covered Bonds.'

⁴⁵³ In another telling segment, ISDA argues: 'NMRF is the primary concern and source of uncertainty in the FRTB framework as NMRFs could account for a disproportionate amount of the market risk capital requirements under internal models and generate significant volatility in the capital requirement. If the methodology is not appropriately defined, it could result in significant overcapitalisation, poor capital alignment with the underlying risks and will ultimately undermine the viability of IMA.' ISDA 2018, p7.

⁴⁵⁴ ISDA 2018, p8. The report further demanded additional changes in relation to the: 'Treatment of structural FX positions; Equity investments in funds; Net short credit/ equity in the Banking Book; Underwriting in securities; ALM mandate; and Trading desk requirements.'

reality of correlation break downs during crises, and the fact that most models therefore become useless in these circumstances. However, although the crisis required regulators to address these causal and deeper structural problems, by focusing on its risk metrics, the BCBS simply responded by transforming these problems into a novel set of assumptions and calculations - thus only making changes in relation to the types of price data to be processed, or the quantitative techniques dictating how they should be processed.

Taking Basel 2.5's IRC, for example, it adds an additional charge to capture certain credit risks in banks' trading books. It thus represents a technical fix in recognition of the fact that banks are now increasingly vulnerable to volatility arising from events typically associated with credit risk. Indeed, due to the development of credit risk transfer markets (asset-backed securities, CDOs, credit default swaps and so on), the risk of default and credit migration manifested in devastating ways onto banks' trading books. As for the FRTB, it skilfully sidesteps any questions in relation to the nature and causes of financial stability, instead honing in on the behaviour of the markets during times of financial crisis. The FRTB has in fact been described as an epistemic shift from the MRA and Basel 2.5, because it no longer seeks to measure price volatility in general, but refines its focus on analysing risk solely during times of market distress. Significantly, by transforming causal and structural issues into the definitional elements, or quantitative standards, of a new set of formulas, not only can the BCBS exclude alternative perspectives regarding the types of substantive questions to be integrated into these standards, but similarly, it also depoliticises Basel's framing of these issues. For example, although the FRTB's liquidity horizons suggest a mathematically definite relationship between liquidity and risk, the number of days in each bracket can be determined based on different rationales of these relationships, and in practice these horizons have been significantly contested.⁴⁵⁵

⁴⁵⁵ Christopher Finger, argues that behind banks' and regulators' disagreements about Basel's liquidity horizons, lies a tension between banks' trading interest, and the regulatory risk horizon, which foregrounds the longer term solvency of banks. As he argues: 'A big tension has arisen between the regulatory risk horizon and the horizon at which banks manage their trading portfolios. From the regulatory point of view, the concern is the bank as a "going concern". The aim of minimum regulatory capital, is that banks can withstand losses, and are able to continue their normal activities, without the need to raise additional capital. The dispute between industry and the regulators over the appropriate regulatory risk horizon, in fact, has been essentially a proxy battle over the frequency at which banks are able to raise capital. Whereas back in 2007, early industry responses to the IRC proposals argued for a shorter risk horizon, asserting that banks could raise additional capital if they suffered capital depleting losses, the events of the last year has rendered such arguments void, and it is the regulators with the upper hand in pushing for a longer horizon. With their going concern, long horizon view, the regulators have put themselves firmly in the camp of seeking models for banking (or trading) practices. Regulatory capital, then, is intended to support not just possible losses on existing positions, but on all of the positions throughout the next year, as a bank is

Although the Basel Committee's post-crisis reforms include a far greater reform agenda beyond its capital adequacy rules - so that the political importance of Basel's new market risk frameworks are correspondingly reduced - banks' capital requirements continue to carry significant weight in shaping the banking industry. Moreover, Basel's market risk rules continue to legitimise the notion that banks' risks can be effectively and accurately measured, thus maintaining the possibility that at some future moment (likely when the markets are in a period of growth), the banks will again be able to argue in favour of lighter touch regulation, based on predictable arguments about how their 'new models' will henceforth be able to predict all future risks. It is therefore crucial that the regulators continue to emphasise the 'essential non-predictability of systemic risk.'⁴⁵⁶ As Cooper argues, in some quarters, this recognition may have started to function 'as a challenge to develop new forms of intervention capable of operating at the level of networked infrastructure... *even in the absence of foresight.*'⁴⁵⁷ For example, this may imply 'techniques of market intervention that are pre-emptive rather than predictive, and informed more by the psychology of collective expectation than any claim to objective, mathematical knowledge about the future.'⁴⁵⁸

Relatedly, the effects of Basel's market risk device extend beyond the struggles over banks' capital requirements. As discussed in Chapter Five, while it is the interactions between Basel's various sub-entities and the banks which created Basel's market risk framework, the latter also has a counter-shaping effect on these different actors. Aside from the fact that the growing support of banks' risk management frameworks have progressively changed both the corporate structure, as well as the risk and investment practices, of the banks, as discussed in Chapters Three to Five, the incorporation of these frameworks have also altered the function and role of the regulators. Thus, banking regulators have started to shift their regulatory approach from defining and identifying the threats in banking, to monitoring and supervising banks' own processes of risk management. And as the latter have become increasingly quantitative and computer-intensive, this has also affected the types of expertise

assumed to continue its normal operations. Internal trading risk management, on the other hand, focuses on positions. As such, the risk horizon is not the frequency over which the bank can raise capital, but rather the frequency at which positions can be traded. This horizon, particularly with trading portfolios and even accounting for stressed levels of liquidity, is markedly shorter than the capital horizon. It is this problem—short horizon risk on constant portfolios—that market risk managers have focused on for over a decade.' Finger, 2009, p3.

⁴⁵⁶ Cooper, Melinda. 2011. "Complexity theory after the financial crisis." *Journal of Cultural Economy* 4(4): p379.

⁴⁵⁷ Ibid.

⁴⁵⁸ Ibid.

that regulators develop, or the types of experts that are invited to participate in the regulatory process. Moreover, because the banks are able to invest a huge amount of resources into their quantitative risk processes, it also affects the relations of authority between them and their supervisors. Significantly, this also means that, prior to the crisis, the forms of knowledge and know-how involved in examining and regulating the industry's systemic risks were gradually eroded. To the extent that regulators continue to rely on quantitative risk instruments, this may imply a continued overconfidence in the models, and an under-appreciation of the sources of the next crisis.⁴⁵⁹

To conclude, the overarching point of this chapter is that all of the effects discussed above are inherently tied to the specific logics and perspectives based on which Basel's market risk framework was originally constituted. Furthermore, it is because of the continuities in the *strategic and productive* framings of this framework, that it continues to produce certain similar market shaping effects – hence the argument in this chapter that regulators should treat their risk frameworks as regulatory *devices*. Not only does such a perspective better explain the nature and role of Basel's market risk frameworks, but arguably, it also provides a better analytical lens through which to intervene in this space. By understanding the sources and biases of the strategic contingencies in Basel's market risk device, the Committee, as well as the regulatory community more broadly, can potentially interrupt and even reverse some of its mechanics. In other words, rather than treating banks' risk models as scientific instruments, to be integrated as effectively as possible in regulators' capital adequacy regulations, these risk frameworks should be treated as instruments of governance, which can and have been leveraged by the banks, but could also be bent towards a different set of macroprudential objectives. Since, practically, it would not be immediately feasible to replace Basel's market risk regime altogether, because the banks have built a massive risk infrastructure through and in tandem with these frameworks, and because they remain extraordinarily powerful financial institutions, Basel's regulatory microstructures can and should also be exploited in favour of progressive regulatory change.

⁴⁵⁹ This lack of knowledge and know-how includes the development of alternative ways of dealing with uncertainty, as discussed above.

The rationale for these arguments goes back to the theoretical foundations of the thesis, discussed in the introductory chapter, which examines Basel's market risk frameworks as devices through which banks and banking regulators shape their environments and their places within them. From this perspective, the thesis has approached these regulatory microstructures in relation to the wider background logics, relations and interests embedded within them, and further treats them as critical mechanics through which these wider systemic logics manifest themselves, and through which they are further able to operate and evolve. Indeed, this is why bigger systemic objectives can also be productively pursued at the level of the microstructures of the financial system. By finding ways to challenge or leverage Basel's Standardised and Internal Modelling Approach's quantitative and qualitative standards, their underlying assumptions, and these assumptions' deeper ideational foundations, we may also be able to contest their productive and ordering effects. Some of the reforms in the FRTB could already be interpreted in this way, for example: both the Standardised Approach and Internal Modelling Approach now have a category of 'non-modellable risks', for which the regulators can dictate the quality and consistency of the price data required to produce particular risk outputs; the distinction between the banking and the trading book now allows supervisors to monitor the way in which banks categorise their investment assets; and the FRTB has deliberately sought to make the Standardised Approach a credible threat and fall-back alternative.

By targeting the framing of Basel's quantitative and qualitative standards, its market risk regime can be re-adjusted not to improve their precision or accuracy, but to achieve a more important set of objectives. These include, reconfiguring the relations between banks and their supervisors, challenging the types of knowledges and know-how that are valorised and reproduced through these regimes, and thus also curating the types of investment activities that are facilitated by Basel's market risk rules. In the same way that the Market Risk Amendment produced a first moment of objectification & depoliticisation and a second moment of re-contestation and strategic action *between the banks*, future reforms aimed at redrawing the boundaries of market risk can be implemented with a view of including more voices in the strategic framing (and the possibilities to 'recontest') the operations of market risk (notably in the collective expectations about the future that it generates). For example, these reforms might include the simplification of Basel's measurement approaches, the re-

introduction of various precautionary measures, further procedural rules to enhance supervisors' monitoring powers, the emphasis on more progressive forward-looking stress-tests and so on. Thus, the aim is not simply to strengthen regulators' inputs, but that particular forms of regulatory expertise, or particular groups of experts, would be empowered in the processes of banking regulation. In this context, it is particularly important that Basel's post-crisis reforms have supported the re-emergence of MPR, which, although its programme continues to be contested, offers a significantly different paradigm from which a potentially more progressive set of ideas could be drawn to inform the design, use and interpretation of Basel's qualitative and quantitative risk standards.⁴⁶⁰

⁴⁶⁰ Baker, Andrew. 2013. "The New Political Economy of the Macroprudential Ideational Shift." *New Political Economy* 18(1): 112–39. Kranke, Matthias, and David Yarrow. 2019. "The Global Governance of Systemic Risk: How Measurement Practices Tame Macroprudential Politics." *New Political Economy* 24(6): 816–32.

Conclusion

In the 1980s, the BCBS officially began to address its concerns about the increased growth of the banks' trading activities. Over a decade later - and following multiple interventions by the banks which would be subject to the BCBS' new rules - the Market Risk Amendment was adopted in 1996. Today, as a result of the upheaval caused by the Global Financial Crisis, the BCBS is again rewriting its rules to quantify banks' risks in relation to their trading book operations. And despite the public loss of faith that is now more commonly expressed with respect to its regulatory risk frameworks, in certain respects, we find ourselves in a similar situation to the 1990s. In 2018, ten years after the BCBS began to renegotiate its market risk framework, the Committee received a second round of responses from the banks, resulting in further refinements to the revised framework.⁴⁶¹ As of the time of writing, the Fundamental Review of the Trading Book will not be implemented until 2022. More significantly, just as when the BCBS negotiated its first comprehensive treatment of market risk in the 1980s and 1990s, the Committee continues to be guided by the objectives of achieving greater accuracy and precision in regulating banks' investment activities. The final text of the FRTB contains over 130 pages, replete with mathematical formulas aimed at increasing the 'risk sensitivity' of the banks' regulatory risk models. In other words, the BCBS continues to treat its market risk framework as a neutral and objective framework.

The central argument in the thesis is that the Basel Committee's market risk framework does not primarily embody a set of scientific or objective measurement instruments. As described in the Introductory Chapter, following SSF and political economy literatures, the thesis treats Basel's market risk framework as a strategic 'device', i.e. as a material and discursive assemblage that is actively involved in constructing the financial markets. This means that the framework is contingently constructed - through a multiplicity of actors, alliances and political struggles - and that it is further capable of producing performative effects, in line with the theoretical commitments and objectives embedded within it. Moreover, in addition to treating Basel's market risk framework as a strategic device, the thesis argues that it can also be reconceived as a technology of power. The framework's interventions have,

⁴⁶¹ ISDA. 2018. "Revisions to the minimum capital requirements for market risk, industry response." BCBS Consultation Paper.

unsurprisingly, predominantly supported the commercial interests of the major trading banks. However, this is not a unidirectional story: despite the many ways in which Basel's risk framework can be instrumentalised by powerful commercial actors, the thesis also demonstrates that it has the potential to be leveraged by a *variety* of actors and networks to different and competing ends, and that it is capable of *reflexively reshaping* the entities involved in its creation and ongoing reformulations. Thus, it reveals the mutually constitutive nature between Basel's market risk framework and the various banks and regulatory entities which brought it into being. In doing so, it further shows that focusing on these relationships helps to uncover new explanations of banking developments, and suggests that leveraging the mechanics of Basel's market risk framework might provide productive channels for interrupting these developments.

In drawing from SSF scholarship on market devices, the thesis further expands on SSF's insights by extending it to the analysis of transnational regulatory risk frameworks. In doing so, it highlights the ways in which calculative devices operate with and through legal processes & institutions, and together produce enduring performative effects. By analysing the legal and calculative aspects of market risk in tandem, the thesis further brings out the political complexities which make up the core institutions shaping and underpinning financial markets. As the actors in this story seek to achieve their different objectives, they draw from their particular resources, expertise and political channels to embed formalised calculative and legal processes within critical market-shaping devices. It is through this bricolage-like process that market actors enlist each other, and reconfigure the fluctuating structures in their environment to expand their options and influence. By focusing on the interaction between actors, devices and wider systemic structures and practices – each of which could be reconceived in some sense as its own socio-material network – we see that the persistence of certain patterns of power, or limits in strategic flexibility, cannot be explained by the permanence of particular actors or institutions, but rather by the social power differentials between the different nodes of a network, even as they transform and evolve in relation to each other.

One important point which emerges from the above is that none of what are typically conceived as the most significant background actors, nor the devices through which they

operate, are immutable in their present forms. The thesis shows that market devices, such as the Basel Committee's regulatory risk frameworks, provide creative or dynamic spaces in which a variety of perspectives and interests are continuously recombined - thus further altering both market actors' as well as market devices' nature, logics and capacities. This means that while the systemic logics emerging from their interactions are often reproduced in what might seem like predictable ways, they do in fact evolve and renew themselves. It therefore also becomes possible to hone in on the pragmatic dimensions of social constructivism, and within it the possibilities for disruption or contestation. At no point do exercises of power sediment into immutable forms, or give way to passive submission, rather, as different actors struggle and enlist each other in their projects, they generate new interdependencies that compel changes in the identities of the actors and devices that make up wider systemic networks. With respect to the story of this thesis, this means that despite past developments risk regulation, the legal and calculative processes that make up these frameworks can and should be thought of in new ways to move forward.

Chapter Two argued that the conceptual building blocks of the BCBS' market risk framework lie in the ideas and risk management practices of modern finance theory, which the Committee repurposed to create a regulatory risk framework. The chapter retells the evolution of contemporary ideas about market risk, to tease out the logics through which its conceptual boundaries were consolidated. From its origins in the mean variance framework, through its transformations in modern portfolio theory, subsequent capital asset pricing models, options pricing formulas and enterprise risk management models such as VaR – the concept of market risk was refined to help securities traders confront the uncertainty of their investments, while maximising their returns through the logic of 'risk-adjusted returns on capital'. Chapter Two showed that these different market risk frameworks all rely on the Efficient Market Hypothesis, and deploy a similar set of statistical techniques to produce risk outputs based on specific methods of historical price analyses. As a result, 'market risk' is understood as an objective and quantitative concept, defined by historical price correlations. Moreover, as a device, it focuses on the problem of market volatility in relation to banks' risk-adjusted returns, i.e. their business interests. Crucially, this diverges from historical regulatory approaches to financial trading, which focused on the problems of market 'structure' in relation to more collective notions of harm associated with financial and economic *systems*.

Chapters Three and Four examined the ways in which the BCBS inherited these risk practices and transformed them into a regulatory framework, the first of which was the Market Risk Amendment of 1996. In the early 1990s, the BCBS created its first market risk measurement approach, called the Building Block Approach, which measured banks' market risks by adding up the risk weights attached to the different assets in a bank's portfolio. Significantly, these risk weights were constructed by Basel's negotiators, based on their subjective judgments about the riskiness of particular asset classes. However, these subjective judgments were formed within the statistical frameworks of the market risk methodologies set out in Chapter Two. Thus, the Basel Committee adopted an *investment* risk conceptualisation of market risk, the subcomponents of which were also inherited from modern finance theory's understanding of market risk. Moreover, the Building Block Approach's risk weighting system was similarly based on analyses of historical price volatility, and permitted discounts for correlations within and across risk factors. Nevertheless, within this broader paradigm, Basel's negotiators did imbue the Building Block Approach's risk weights with a number of distinctly regulatory objectives and priorities. While some of these objectives (such as the regulators' concerns for precaution) lay in tension with banks' investment interests, others (like the negotiators' focus on competitive equality) aligned with and thus supported them.

Regardless of these ambiguities, when the Building Block Approach was published, the major trading banks collectively opposed its methodology. They demanded that the Basel Committee institutionalise an additional Advanced Approach, which permitted the largest banks to use their internal models to measure their market risk exposures. As Chapter Four argued, by successfully lobbying for the incorporation of an Advanced Approach, the banks succeeded in reshaping the mechanisms of Basel's market risk framework. First, the Advanced Approach further quantified the Building Block Approach's methodology, placing greater emphasis on mathematical analyses of historical price correlations. This also meant that the risk models' quantitative parameters became correspondingly more significant. Second, the Advanced Approach bracketed the question of uncertainty, preventing any meaningful engagement with its problems and implications. In both respects, the banks successfully reconfigured the mechanics of Basel's market risk framework, so that it could more easily be made to produce lower market risk charges. By tracing the details of the banks' demands, often tabled and supported by the US and UK representatives, the chapter showed how

Basel's market risk device was shaped to better align with the banks' interests. However, it also showed that ongoing disputes persisted, and that the politics of this space was moved to disagreements about the particular parameters of Basel's Advanced Approach.

Having examined the contingent formulation of Basel's market risk framework, Chapter Five then turned to its performative effects. Significantly, not only did the framework lower banks' capital requirements, but it further reshaped various aspects of the banks' investment and organisational practices, as well as the BCBS' regulatory practices. With respect to banks' investment activities, Basel's market risk framework legitimised banks' risk management procedures, supporting the ways in which these procedures enabled and justified their trading operations, and the ways in which they centralised the authority of the senior managers. As shown in Chapter Five, these organisational effects also led to various forms of 'gaming', leading to even more risk-taking among individual traders. As for the BCBS' regulatory practices, the institutionalisation of the Advanced Approach led the BCBS to valorise and develop new forms of quantitative expertise, and further shifted the function of regulation from a responsibility to identify banks' risks, to being responsible for establishing minimum quantitative and qualitative standards to support banks' own risk management processes. While many of these effects supported the banks' interests, not all of them were deliberately intended. However, through these different effects, Basel's market risk device ultimately facilitated wider industry shifts towards market-based forms of banking, and thus also contributed to the production and amplification of new forms of private risk-taking.

Finally, Chapter Six examined the BCBS' efforts to reform its market risk framework after the Global Financial Crisis. Based on the theoretical approach developed in the preceding chapters, it provides an alternative perspective from which to investigate the strengths and weaknesses of these reforms, focusing on their continuities with the Market Risk Amendment, as well as the problematic effects that flow from these continuities. By re-imagining Basel's market risk framework as a strategic device, Chapter Six argued that the BCBS can better identify the particular logics and relations which continue to determine the framework's substantive definitions and quantitative parameters. As a result, the Basel Committee can more clearly isolate the ways in which its revised risk framework still maintains the internal perspective of banks' investment and risk management practices, and

thus the ways in which the framework remains vulnerable to being leveraged by the major trading banks. Furthermore, by reconceiving its market risk framework as a strategic device, the BCBS can also engage in more careful analyses about the *limits* of financial risk measurement. Most importantly, shifting its perspective in this way would enable the BCBS to better examine the ways in which the framework reflexively reshapes the banks and the regulatory bodies involved in the ongoing reformulation and application of the framework's rules. Thus, as mentioned above, the Basel Committee can become more self-aware about the ways in which its regulatory instruments might be generating new forms of risk - including how and where they are produced as well as how these risks become amplified - at the same time that it seeks to contain the materialisation of banks' market risks.

In addition to being more attentive to the ways in which its risk frameworks generate and redistribute risk-taking, the BCBS could also become more active in aligning its frameworks with more progressive trends in macroprudential regulation. By attending to the mechanics of its market risk device, the Basel Committee could dedicate some efforts towards identifying the most relevant parameters in relation to their effects on banks' trading activities, and the manner in which banking supervisors are able to monitor and constrain these activities. As discussed in Chapters Three and Four, the foundation of Basel's market risk framework already embeds a set of regulatory concerns, but they have so far been contained by the banks' ongoing efforts to ensure the dominance of their own investment logics and objectives. However, as Chapter Six suggests, there are a number of ways in which the BCBS, and other regulators, could revise their risk frameworks to strengthen these regulatory concerns, including by simplifying their parameters, introducing more precautionary measures, and most promisingly, leveraging the current trend in favour of stress testing. By contesting the particular rules, definitions and parameters of regulators' risk instruments, banking regulators are thereby able to directly engage in the politics of the micro-configurations of the market's devices, which ultimately shape the conditions of possibility for wider macro changes. As argued in the Introduction of the thesis, in this way, it is possible to maintain analytical clarity of the legal and calculative institutions that underpin the markets, while leveraging these institutions' place in the wider relations of force that determine the way in which they are able to intervene in the world.

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