BANK OF ENGLAND
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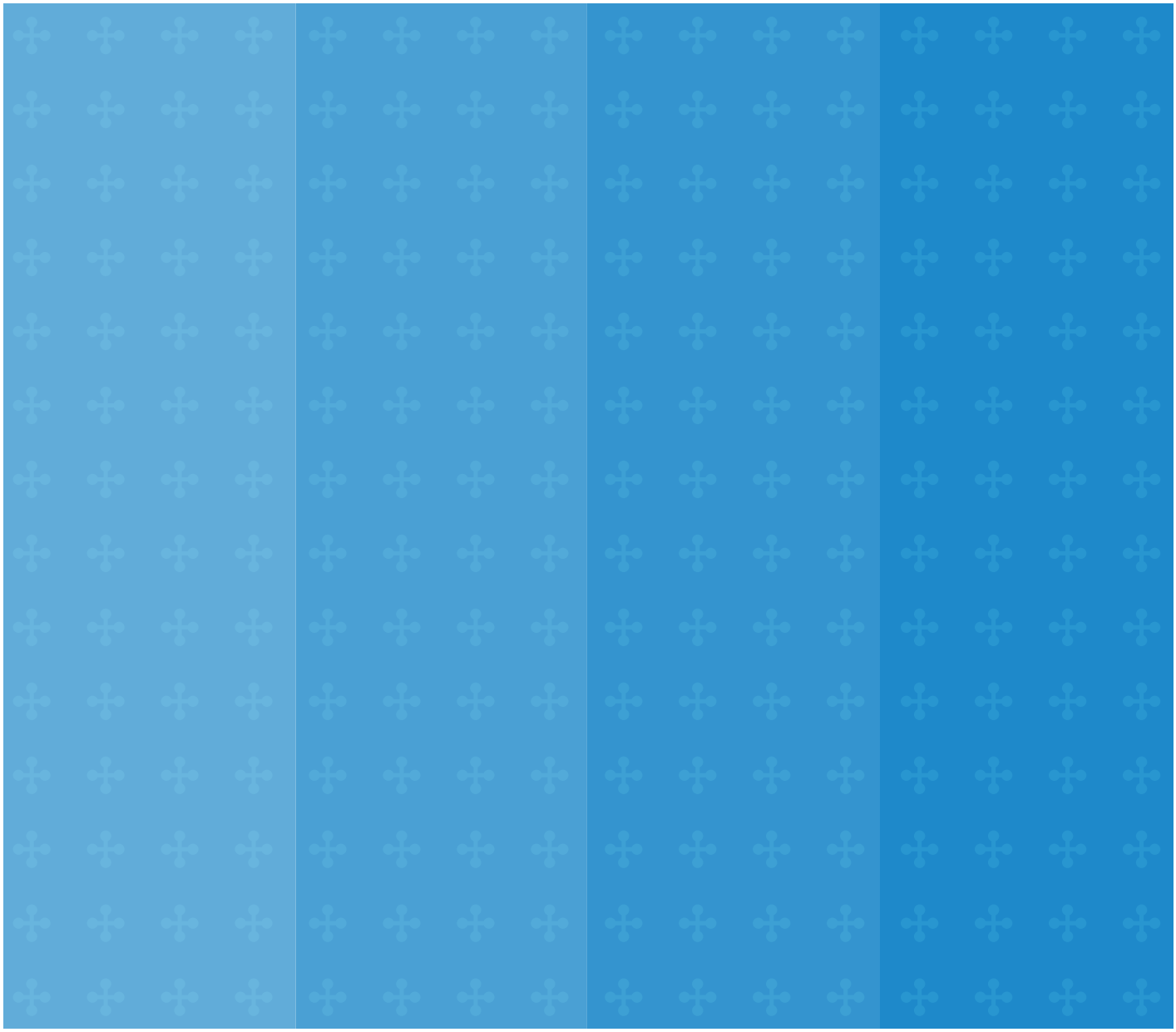
Publication

Report

# Proprietary Trading Review

September 2020



BANK OF ENGLAND
PRUDENTIAL REGULATION
AUTHORITY

# Proprietary Trading Review

Laid before Parliament pursuant to Section 9 of the Financial Services (Banking Reform) Act 2013

## Legal disclaimer

The Prudential Regulation Authority (PRA) has prepared and published this report pursuant to Section 9 of the Financial Services (Banking Reform) Act 2013.

The report was produced by PRA staff in accordance with the methodology set out in Chapter 1. The Prudential Regulation Committee of the Bank of England approved the conclusions of the report.

## Acknowledgements

This review was prepared with substantial assistance from authorised firms, market participants, and other regulatory and supervisory bodies. The authors of the report would like to express their gratitude for the assistance provided.

## Contents

## Executive summary

Proprietary trading is trading in financial instruments or commodities as principal. It requires the use of a firm's own capital, or liquidity, or both. The profits or losses of the activity accrue to the firm, rather than to its clients.

This report reviews the extent of proprietary trading engaged in by relevant authorised persons,[1] in order to consider whether the constraints on this activity, and the PRA's powers, are sufficient. 'Classic' proprietary trading is usually thought of as short-term own-account trading with the intent of profiting from market movements unconnected with client activity. However, there are also other activities falling within the definition of proprietary trading above, including some kinds of client facilitation, the management of liquidity, and various kinds of hedging. The report considers all of these.

Evidence of a substantial amount of classic proprietary trading by relevant authorised persons has not been discovered. This is partly because it no longer features significantly in large financial institutions' business models, which in turn is partly because regulation put in place after the 2008 global financial crisis has substantially increased the capital required to support many activities, including classic proprietary trading. Another important factor is the UK ring-fencing regime. This structurally separates core retail banking activity from investment banking, and prohibits the retail and small business, or 'ring-fenced' bank from conducting a number of activities, including classic proprietary trading.

There is evidence that other activities falling within the statutory definition of proprietary trading are substantial for some firms. Many firms, especially larger firms, continue to serve their clients through market making and related activities. Firms' liquid asset buffers (LABs) hold material amounts of financial instruments, although these are largely cash, central bank reserves, or low risk government bonds. Interest rate risk in LABs is often largely hedged. Furthermore, firms hedge the risks arising from serving clients in both trading and banking books through own-account positions in financial instruments and commodities.

These activities and their hedges often fall within the definition, and they usually give rise to risks, including market risk, counterparty credit risk, and operational risk. The relative sizes of the risks generated depend on the precise nature of the activity.

One caveat to the finding that classic proprietary trading activity by relevant authorised persons is not substantial is that it is difficult to separate from market making, as both activities often involve holding positions for the bank's own trading account, and in both cases these positions often change quickly. It is only intent that separates the two: the risks are similar. However, analysis of both firms' market risk reporting and the capital requirements for market risks does not suggest that the two activities are conducted in such a way as to pose substantial risks to the safety and soundness of banks. Moreover, the market risks associated with these activities have declined since the 2008 global financial crisis, supporting the view that own-account risk taking in the trading book does not fit well with most banks' current business models.

Firms' hedging activities and liquidity investments are substantial and have not declined as market risk has. These activities are intended to reduce rather than to increase risk, and there is good evidence from both regulatory and firms' own risk measures that they typically do so. However, the sheer size of some of these activities in some banks means that, while they usually offer a net benefit in risk reduction to the firm conducting them, if they were to go awry, the impact on the firm could be material.

The operational risks arising from classic proprietary trading and market making do not always vary with the extent of market or credit risk taking in firms. For instance, as soon as trading infrastructure is available, there is the operational risk that a firm may acquire a position that it did not intend to take and that falls

[1] In this report, 'relevant authorised persons' means PRA-authorised deposit takers and investment firms incorporated in the UK. Unless otherwise indicated, 'banks' and 'firms' refers to the same set of persons.

outside its risk appetite. Operational risks are partially mitigated by firms' controls and capital requirements, but history suggests that when operational risks crystallise in trading businesses, the resulting losses can be significant.

The Prudential Regulation Authority (PRA) already has substantial supervisory powers which can be and are used to mitigate the risks created by proprietary trading in its various forms where appropriate. Different risks are addressed using different tools, including capital requirements, disclosure, supervisory expectations concerning controls, governance and risk management, and senior management attestation.

Classic proprietary trading is currently a small fraction of all proprietary trading activity by banks, both in terms of the numbers of transactions it generates and their risk. Consistent with the statutory restrictions on such activity, there is no evidence of it taking place in the entities with the largest share of retail banking, the ring-fenced banks. This suggests in particular that further restrictions on own account position taking in banks' trading books is not a necessary or proportionate response to the risks it poses. The experience of those countries which have banned this form of trading or required structural separation of these activities alone also supports this conclusion.

In something as innovative and rapidly changing as the global financial system there is always the potential for new risks to emerge, and it may take some time before a standard regulatory treatment of these risks is agreed. Intra-day risks are an example here – notably those created by algorithmic trading – as are the evolving risks created by the adoption of artificial intelligence techniques in finance such as machine learning. The PRA undertakes a number of 'horizon scanning' measures to identify and monitor evolving risks and emerging threats, and employs supervisory discretion to address particular 'hot spots' while standardised treatments are being developed.

The PRA also monitors a number of indicators that could indicate a growth in the risks arising from proprietary trading activity by relevant authorised persons. Individual firm supervisors review these indicators for concerning changes, and investigate where necessary. In addition, there are processes for identifying, monitoring, and acting on broader risks within the financial system which are directed by the Bank of England's Financial Policy Committee. These include risks emanating from beyond the core banking sector in general and market-based finance in particular.

Given that restrictions on a narrow range of classic proprietary trading activities would not have a large effect on the risks in the financial system, consideration could also be given to the desirability of restrictions on a wider range of activities falling within the statutory definition of proprietary trading. However, these activities are important for bank risk mitigation. When controls are adequate, they contribute to safety and soundness. For instance, while hedging typically requires own-account position taking, if conducted diligently, it reduces banks' earnings volatility and can support lending to the real economy. Therefore, restricting this broader class of activities would not support the PRA's objectives. This report therefore concludes that the PRA does not need new powers to address the risks of proprietary trading.

# 1 Introduction

This report reviews the extent of proprietary trading in PRA-authorised deposit takers and investment firms incorporated in the UK. It has been prepared pursuant to Section 9 of the Financial Services (Banking Reform) Act 2013 ('the 2013 Act'). This Act introduced a requirement for the largest UK banking groups to separate core banking services from investment banking, in a process known as 'ring-fencing'.[2] Deposits from UK individuals and small businesses must be placed inside the ring-fenced Bank (RFB). This bank is separately capitalised, and has substantial limitations placed both on what non-core banking functions it can perform and on its relationships with entities in the wider group. Ring-fencing thus seeks to protect retail banks from risks arising from investment banking activity, both by limiting them within the RFB and reducing their impact on the RFB if they occur elsewhere in the group. This protection includes guarding the RFB from the negative impact of many forms of proprietary trading. The UK ring-fencing regime commenced on 1 January 2019.

During the debates which preceded the 2013 Act, the question arose as to whether the UK should impose some form of ban on proprietary trading by all banks, as for instance the United States had.[3] Parliament took the view that there should be strong restrictions on proprietary risk taking within RFBs, but that a complete ban for all banks was not justified by the evidence available at the time. Instead, the PRA was required to review the case for further restrictions on proprietary trading within a year of the commencement of ring-fencing.[4] The review could then be informed by the experience of other countries that had taken different approaches to the issue. This report presents the conclusions of that review.

This report discusses proprietary trading carried out by relevant authorised persons. It discusses the extent of this activity, the risks it poses to the safety and soundness of firms, the tools the PRA has to mitigate these risks, and the experience of other countries in restricting proprietary trading within the banking sector. It also addresses whether the ring-fencing regime, together with the other tools available to the PRA, are sufficient to mitigate the risks proprietary trading poses to financial stability and the safety and soundness of firms.

This chapter introduces the mandate for the report, outlines the methodology used to produce it, and describes the contents of the following chapters.

## 1.1 The legislative mandate

The 2013 Act sets out certain requirements for the PRA's review. It should assess:

- 'the extent to which relevant authorised persons engage in proprietary trading';
- 'whether proprietary trading engaged in by relevant authorised persons gives rise to any risks to their safety and soundness';
- 'whether any kinds of proprietary trading are particularly likely to give rise to such risks';
- 'anything done by the PRA to minimise risks to the safety and soundness of relevant authorised persons arising from proprietary trading engaged in by them'; and
- 'any difficulties encountered by the PRA in seeking to minimise such risks'.

2 The PRA's policy on ring fencing is set out in Policy Statement 10/15 'The implementation of ring-fencing: legal structure, governance and the continuity of services and facilities', May 2015: https://www.bankofengland.co.uk/prudential-regulation/publication/2014/the-implementation-of-ring-fencing-consultation-on-legal-structure-governance. The requirements setting out which institutions must implement ring-fencing are in the 2013 Act.

3 The Volcker Rule in the United States imposes a form of ban. It applies to insured firms (i.e. any bank or savings association that has deposits insured by the Federal Deposit Insurance Corporation), any company that controls an insured firm, any bank holding company, and any affiliate or subsidiary of any of these entities. In July 2019, the US agencies issued a final rule to exclude from the rule's prohibitions and restrictions certain firms that have total consolidated assets equal to $10 billion or less, and total trading assets and liabilities equal to 5% or less of total consolidated assets.

4 The full mandate for the review is in Section 9 of the Act, available at https://www.legislation.gov.uk/ukpga/2013/33/contents/enacted.

The report must also include an assessment by the PRA of whether its powers 'are, and might be expected to continue to be, sufficient to enable it to advance its objectives in relation to relevant authorised persons who engage in proprietary trading'. It should consider 'the effectiveness of restrictions imposed in countries or territories outside the United Kingdom on proprietary trading by banks' and 'whether further restrictions on any kind of proprietary trading ought to be imposed'.

## 1.2 Review methodology and timing

The PRA collected data from a variety of sources to facilitate the review. A questionnaire on proprietary trading activities and risks was completed by both ring-fenced banks and the largest risk-taking firms supervised by the PRA.[5] Interviews with market participants active in proprietary risk taking both regulated by the PRA and outside the PRA's regulatory perimeter were conducted. Publicly available data disclosed by firms, and regulatory and other returns submitted to the PRA, were reviewed. Finally, discussions were held with other regulators, some of whom had implemented restrictions on proprietary trading, in order to understand their perspective and the lessons they had learned from their differing policy choices.

The 2013 Act was a response to the events of the 2008 global financial crisis and its aftermath. Given this, this report uses the state of affairs pertaining immediately before the financial crisis as a starting point, and maps how proprietary trading risks and their mitigations have changed since then. In some cases, difficulty was experienced in gathering data for the crisis and immediately post-crisis period, as both firms' systems and regulatory policy have evolved significantly since then. Where this issue means that a full data history is not available, or early periods are not directly comparable with later ones, this is noted in the text. Data from individual firms has been aggregated or averaged where not doing so would disclose confidential information from firms. Finally, where point-in-time data is used, December 2019 was selected as the most recent point for which all the required data was available. That said, in reaching its conclusions the PRA has also taken into account experience and information gained through its supervision of firms during the first half of 2020.

## 1.3 Context

In the years since the 2013 Act, there have been a number of structural changes to the banking sector and the wider financial system which are important context for this review. These include the implementation of the Act itself, with its requirements for ring-fencing. In addition, there have been a number of broader trends within the financial sector, such as the transformation of market-based finance, with the growth of non-bank activity in this area. Chapter 8 of the report explains some of these trends in more detail.

## 1.4 Contents of the report

The rest of this report is structured as follows. Chapter 2 discusses the definition of proprietary trading used in the 2013 Act, the principal activities conducted by authorised persons which fall within this definition, and relevant activities outside the banking system. Chapter 3 sets out the principal risks of these activities. Chapter 4 considers the motivations for restricting proprietary trading, the tools available, and the international experiences of their use. Chapter 5 considers the most relevant tools currently available to the PRA.

The report then turns to the evolution of proprietary trading activities and risks entered into by PRA-authorised persons. Chapter 6 considers the evolution of market risk and regulation since the 2008 crisis, setting out how both market risk and its mitigants have changed over time, while Chapter 7 considers other risks and their mitigants. Chapter 8 considers other consequences of the evolution of proprietary trading beyond the banking sector, including the impact of this activity on non-bank financial institutions, financial markets, and on the indirect risks taken by authorised persons. The legislative requirement for this report was that it must start within one year of 1 January 2019 and be completed within nine months. Given this, much of the work on this report was completed before the period of financial stress beginning in March

5 The 'largest' firms were identified by examining capital requirements, trading book assets, and risk positions using regulatory returns provided to the PRA and public disclosures.

2020 associated with the Covid-19 pandemic. The final section in Chapter 8 sets out our observations relating to this period.

Chapter 9 concludes with an assessment of the adequacy of the current regulatory toolkit and the need for further policy action to restrict proprietary trading by banks. Table 1 shows how this sequence of chapters maps to the statutory requirements for the review.

**Table 1**: Summary of statutory requirements and where they are met in this report

| **Requirement** | **Addressed in** |
|---|---|
| Assess the extent to which relevant authorised persons engage in proprietary trading | Chapter 2 for the activities which fall under the definition, and Chapter 6 for the evolution of those activities over time |
| Assess whether proprietary trading engaged in by relevant authorised persons gives rise to any risks to their safety and soundness | Chapter 3 for the risks of activities which fall under the definition, and Chapters 6 and 7 for the evolution of those risks and their mitigations over time |
| Assess whether any kinds of proprietary trading are particularly likely to give rise to such risks | Chapter 9 |
| Discuss what the PRA has done to minimise risks to safety and soundness arising from proprietary trading | Chapter 5 for a discussion of the tools used, and Chapters 6 and 7 for a discussion of how these mitigations have evolved |
| Set out any difficulties the PRA has encountered in seeking to minimise such risks | Chapter 8 for a discussion of other risks arising from the tools used and Chapter 9 for a discussion of the case for additional policy action |
| Assess the adequacy of the PRA's powers | Chapter 9 |
| Consider the effectiveness of restrictions imposed in other countries on proprietary trading by banks | Chapter 4 |

# 2 Activity falling under the definition of proprietary trading

This chapter discusses the scope of the review, considering both the definition of proprietary trading and the activities that fall within that definition.

## 2.1 The statutory definition of proprietary trading

The statutory requirement for this review is to consider proprietary trading engaged in by relevant authorised persons for the purpose of considering whether further restrictions ought to be imposed. The 2013 Act's definitions of both 'proprietary trading' and 'relevant authorised persons' for the purposes of this review are key to this. The first is:

> 'A person engages in 'proprietary trading' where the person trades in commodities or financial instruments as principal.[6]'

The scope of proprietary trading in the 2013 Act is therefore a wide one. The term is sometimes more narrowly conceived. For instance, one definition is that 'classic' proprietary trading is when a financial institution acts as principal in buying or selling a financial instrument for short-term gain in its trading account unrelated to customer activity. In contrast, the scope of proprietary trading in the 2013 Act includes all of the following activities:

(a) classic proprietary trading in the sense discussed immediately above;
(b) market making and other forms of client facilitation in the trading account where the firm acts as principal;
(c) positions in financial instruments (or commodities) entered into for the investment of liquidity and other treasury functions conducted as principal; and
(d) structural, capital, and other own-account hedging activity in financial instruments or commodities carried out by the firm.

Each of these activities is discussed below.

The scope of this review is also determined by the definition of 'relevant authorised person'. The 2013 Act defines this as a PRA-authorised person which:

(a) 'is a UK institution;
(b) either under the Financial Services and Markets Act 2000
    i. has permission to carry on the regulated activity of accepting deposits, or
    ii. is an investment firm, has permission to carry on the regulated activity of dealing in investments as principal and when carried on by it, that activity is PRA-regulated; and
(c) is not an insurer'.

Thus, PRA-regulated banks and investment firms that conduct dealing as principal are in the scope of this report and will be referred to as 'banks' or 'firms' interchangeably. Before discussing the relevant activities within these firms, a discussion of the distinction between institutions' trading books and their banking books provides useful context: see Box 1 for details.

6 The full definitions are that 'commodity' includes any produce of agriculture, forestry or fisheries, or any mineral, either in its natural state or having undergone only such processes as are necessary or customary to prepare the produce or mineral for the market; 'financial instrument' includes anything specified in Section C of Annex I to Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments.

### Box 1: Trading and banking books

Broadly speaking, a firm's trading book contains positions in financial instruments that the bank enters into with trading intent. Thus it typically contains positions in securities, foreign exchange, commodities, derivatives, and financing arrangements (including cash) that are for trading, or associated with trading positions, perhaps as hedges. It may contain positions that are designed to profit from short-term price movements or to profit from deviations from the expected relationship between risk factors.

Positions in the trading book are mainly accounted for using fair value through the profit and loss statement (P/L) (sometimes called 'mark to market') items, so that their value is re-estimated each day based on market prices. This means that the trading book generates profits and losses as market prices move. In order to ensure that any losses do not threaten the safety of the institution, trading book items are subject to the market risk capital framework. This requires that firms must have sufficient capital to support estimates of the potential losses of fair value from market risk taking in the trading book. Other frameworks, such as the counterparty credit risk framework, apply too; these create additional capital requirements for other risks arising in the trading book.

In contrast to the trading book, a firm's banking book will consist of positions for which the firm does not have trading intent. In many cases this will be because the firm intends to hold them to maturity, or because they have no contractual maturity. Thus, most bank deposits and loans will be in the banking book, together with hold-to-maturity investments and hedges for other banking book items. Many banking book items are accounted for on an amortised cost basis, so income from taking credit risk broadly appears as it is earned.[7]

The capital framework for the banking book reflects the fact that the predominant risk in most banking books is credit risk. It addresses both default risk and the risk that the credit quality of banking book items decreases, leading to an increase in provisions for loan losses. The PRA's capital framework addresses other risks too, such as interest rate risk: this can arise in banking books from a mismatch in maturity, or in the timing of interest rate resets between assets and the liabilities used to fund them. Finally, to the extent that banking book items have foreign exchange or commodities risks, these are also subject to capital requirements.

## 2.2 Types of proprietary trading

Proprietary trading as defined in the 2013 Act covers a wide range of activities. Some of these are difficult to separate from each other, such as client facilitation from classic proprietary trading. Given this, proprietary trading for the purposes of this report has been organised into two pairs of activities. The first pair, classic proprietary trading and market making, covers own-account trading activity. The second pair, liquidity investment and banking book hedging, covers a range of activity mostly carried out in banking books, and centred on banks' treasury functions.

## 2.3 Classic proprietary trading

The key features of classic proprietary trading are that it is short-term and that it is conducted for profit (as opposed to hedging risks that the firm is already exposed to or in response to customer demand). For instance, if a firm buys a security for its own account in the expectation that its price will go up in the short-term, with the intent of selling it if this happens, then it is conducting proprietary trading in the classic sense. Classic proprietary trading positions are almost always found in the trading book, as these positions are usually financial instruments or commodities held with trading intent.

The issue of the definition of proprietary trading has been discussed extensively, for example in the hearings that led to the 2013 Act. Some witnesses before Parliament suggested substantially narrower

[7] Other measurement models, such as fair value through the P/L or fair value through other comprehensive income, may also be used in some circumstances.

definitions than those in the 2013 Act. These would only encompass some of what the report has termed classic proprietary trading. Unlike these witnesses, this report does not limit classic proprietary trading to illiquid positions. Rather, it takes the view that classic proprietary trading can involve liquid positions too. Moreover, some firms' internal definitions of proprietary trading restrict classic proprietary trading to activity 'solely' for the purpose of generating profit. This restriction seems unnecessary, as many transactions have multiple purposes.[8] 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. One merit of the statutory definition is that it focuses attention on a wide range of activities, many of which are important from a financial stability perspective, as they can create significant risks to banks' safety and soundness.

An example of classic proprietary trading is given in Box 2. It is important to note, as discussed further in section 6.2, that there are statutory restrictions on the activities that RFBs can conduct, and these place highly constraining bounds on the ability of RFBs to conduct classic proprietary trading.

### Box 2: Example of classic proprietary trading

A bank's bond trading desk identifies a corporate bond in the secondary market from a small issue that is in a different currency to the other bonds from the same issuer. The bond trades on a credit spread significantly wider than that of the other bonds from the issuer. The bank sees this as an opportunity to get excess income for the credit risk it is taking, and purchases the bond, with the intent of selling it when the bond's credit spread tightens.[9]

## 2.4 Market making and other forms of client facilitation in financial instruments

It is critical to the functioning of securities and other financial markets that intermediaries stand willing to provide market liquidity – that is, to buy and sell financial instruments to facilitate customer transactions. These 'market making' transactions almost always happen with the intermediary acting as principal. The intermediary then sells or hedges its position, often at a different point in time. Thus, market making falls within the statutory definition of proprietary trading, as it typically involves trading in financial instruments or commodities as principal.[10] Box 3 gives an example of this activity.

Some markets – such as parts of the corporate bond market – are not sufficiently liquid that market makers can rely on being able to buy a security from the market to meet customer demand. Therefore, being a market maker can depend on having inventory positions, and firms may acquire positions in expectation of future customer demand. The distinction between inventory available to meet customer demand and inventory acquired for the sole purpose of profit is a delicate one. Both activities involve inventory bought from the market by the intermediary as principal, and in both cases that inventory will be held in the intermediaries' trading books. It is only the intent of the purchases, and perhaps whether customer demand for a position of that size could credibly be expected in the near term, that distinguishes the two situations.

Some banks facilitate client needs for trading financial instruments or commodities in other ways too. For example, they may provide financing for trading activity, or assist in the issuance of financial instruments in the primary markets. In each case, the bank takes a position as principal in order to facilitate customer activity.

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8 The proposed definitions which this report considers overly narrow were 'If the bank is using its capital for its own account to generate profits (and risking taking losses) from illiquid inventory, disconnected from customer activity, then that is 'pure proprietary trading' and 'Proprietary trading is trading for the bank's own account solely for purpose of generating profit.' See the Parliamentary Commission on Banking Standards, 'Third Report of Session 2012–13, Proprietary trading', available at: https://publications.parliament.uk/pa/jt201213/jtselect/jtpcbs/138/138.pdf.

9 All other things being equal, a wider credit spread for a bond means that it has a lower price, while if the credit spread tightens, the bond price would increase.

10 For instance, even matched principal broking, which is not usually thought of as proprietary trading, is captured within the statutory definition.

### Box 3: Market making

A bank's bond dealing desk identifies a corporate bond in the secondary market from a small issue that is in a different currency to the other bonds from the same issuer. The bond trades on a credit spread significantly wider than that of the other bonds from the issuer. The bank believes its clients will be interested in purchasing this bond in the near term, given its relatively higher yield, so it buys it into inventory, with the intent of selling it when a client wants to purchase the bond.

One important feature of some banks' client facilitation relating to classic proprietary trading is prime brokerage. As discussed further in Chapter 8, a significant amount of classic proprietary trading is conducted by hedge funds and principal trading firms. Prime brokerage is the provision of a package of services to these firms whereby the prime broker executes transactions in securities and derivatives, provides securities financing, and perhaps other services such as cash management. Prime brokers are therefore important facilitators of the activities of these firms and, hence, of classic proprietary trading.

The term 'market making' will be used for the rest of this report to cover both direct client facilitation in financial instruments and commodities, and hedging activity related to the provision of these services.

## 2.5 Investment of liquidity and other treasury functions

Financial institutions need to keep a stock of highly liquid financial instruments in order to be able to meet payments as they fall due. These are known as the firms' liquid asset buffers (LABs). Typically they comprise cash, central bank reserves, and high quality securities.

For banks, liquid assets are required by regulation. They are intended to be sufficient to cover a firm's potential liquidity needs over a period of stress; see Chapter 7 for more details. Beyond this, some financial institutions naturally find themselves with surplus liquidity, for instance if they take more retail deposits than are required to fund the loans they wish to make, or other assets in the currency they wish to acquire.[11] In this case, risk free choices may not be available or, if they are, economically rational. The investment of liquidity may therefore involve taking credit risk. Box 4 gives an example of this situation. If the bank buys bonds to absorb surplus liquidity, these are financial instruments, so this aspect of liquidity management falls within the statutory definition.[12]

LABs are typically not recorded in the institution's trading account, as they are not acquired for trading purposes; rather they are banking book items. Nevertheless, the management of liquidity often falls within the statutory definition of proprietary trading.

### Box 4: Surplus liquidity from deposit taking

A bank has significant activity in deposit taking in a country where government bonds are not viewed as very low credit risk. The bank does not have sufficient demand for loans it wishes to make in the relevant currency to absorb the available deposits. The bank does not wish to take foreign exchange risk by buying assets in a different currency, and it determines that the cost of hedging the government's credit risk is excessive, given its judgement of the likelihood of the risk crystallising. Therefore, despite the credit risk, it invests the surplus liquidity in government bonds issued by the country concerned.

11 This arises for instance when the currency of the deposit is one where none of the available investments is risk free. In this case the bank must decide between making a risk free investment in another currency, and entering into hedging transactions to convert the asset back into the currency of the deposit, or buying assets which are denominated in the currency of the deposit but which entail some risk.

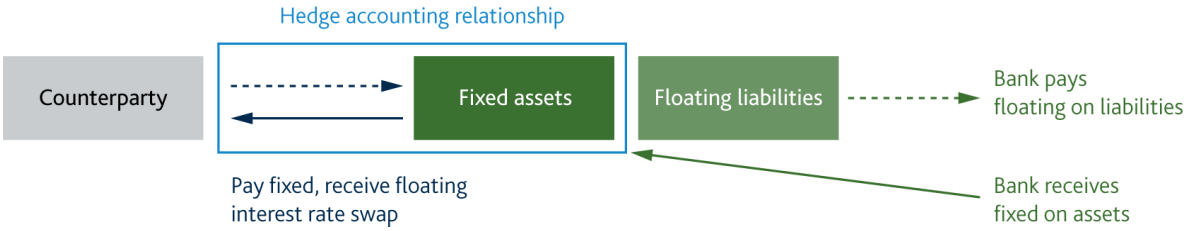
12 In contrast, if the bank keeps the investment in central bank reserves, these are not financial instruments under the statutory definition, so this aspect of liquidity management is not captured in the scope of this review.

## 2.6 Own-account hedging activity in the banking book

Risks naturally arise as a result of engaging in financial services activity. For example, some balance sheet items have an uncertain maturity, such as demand deposits or mortgages which can be pre-paid. An uncertainty in the maturity profile of assets means that liabilities cannot be reliably chosen to match them; and, symmetrically, the same applies with regard to assets matching uncertain liabilities. Interest rate risk therefore arises.

Banks often hedge these risks. They might, for instance, transact in interest rate derivatives to hedge interest rate risks in the banking book or to reduce the risk of its investments. For example, suppose a bank has structurally fixed rate assets such as loans, but liabilities where the bank plans to pass on some or all increases in short-term floating rates, such as deposits, and where the fixed rate is initially larger than the floating rate. If interest rates rise, the gap between the fixed rate received on the assets and the effective rate paid on the liability mix will decrease, resulting in a reduction in net interest income. To hedge against this, the bank might enter into an interest rate swap. Typically this position is measured using hedge accounting,[13] as illustrated in Figure 1.

**Figure 1**: A simple example of hedging interest rate risk to net interest income




Hedges might also be entered into if a firm has an investment in a subsidiary that is capitalised in a foreign currency,[14] or which earns income in a foreign currency, or both. These hedges are typically either marked to market or hedge-accounted, and they may be booked in either trading or banking books, often depending on where the risk being hedged arises. Box 5 illustrates an example of this situation.

### Box 5: Earnings hedges

As a result of its prominent position in retail banking in a foreign country, a bank expects to earn significant net revenues in a foreign currency, but it accounts in Sterling. In order to hedge the risk that foreign exchange rate movements will reduce the value of its foreign currency income, the firm chooses to enter into a series of forward foreign exchange (FX) transactions.

Another example of hedging activity falling within the statutory definition of proprietary trading is the hedging of credit valuation adjustments (CVAs). A CVA arises when a bank trades derivatives or enters into securities financing transactions. For a given counterparty, it is the difference between the value of the portfolio of transactions with the counterparty and the value of the same portfolio with a risk free counterparty. A CVA changes as the risk factors in the portfolio move and the credit quality of the counterparty changes. Firms hedge the risk of adverse changes by entering into offsetting transactions in the relevant risk factors, in credit default swaps referencing the counterparty, or in related instruments.

13 Hedge accounting is a measurement method that allows firms to measure gains and losses on hedging instruments and the exposure they are intended to hedge, with both being registered in the same accounting period, provided that the 'hedge' does indeed substantially reduce income volatility. In this case, it would be necessary to demonstrate that the interest rate volatility of one or a collection of fixed rate assets was indeed well-hedged by the interest rate swap.

14 Here 'foreign' currency means a currency different from the bank's reporting currency.

## 2.7 Summary of the accounting and regulatory treatment of the activities covered

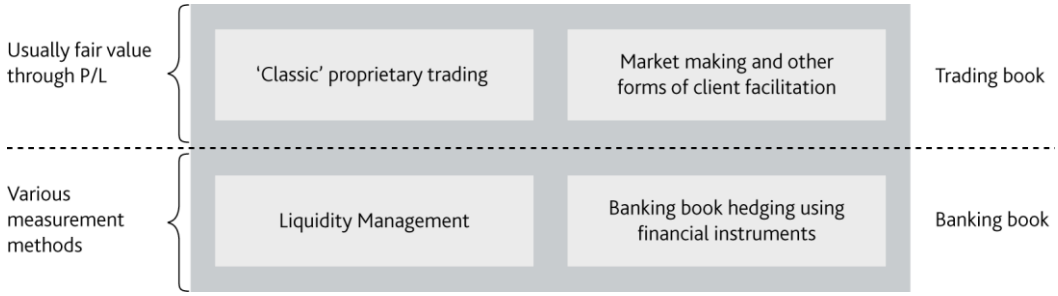
Table 2 summarises the principal activities falling within the statutory definition of proprietary trading, the most important accounting measurement model or models for them, and where they are most often booked.

**Table 2**: Activities discussed in the report, the main accounting measurement model for them, and the principal book used to record them

| Activity | Main measurement model(s) | Main book used |
|---|---|---|
| Classic proprietary trading | Fair value through the P/L | Trading book |
| Market making | Fair value through the P/L | Trading book |
| Investment of liquidity | Fair value through other comprehensive income or amortised cost | Banking book |
| Own-account hedging activity | Hedge accounting, fair value through the P/L, fair value through other comprehensive income or amortised cost | Trading book or banking book |

Figure 2 gives an alternative view, showing how the four classes of proprietary trading activity referenced in the report are split between the trading and banking books, and how they are often measured for accounting purposes.

**Figure 2**: Illustration of activities within the statutory definition of proprietary trading




## 2.8 Authorised persons within the wider system

As discussed in the previous chapter, it is important to understand how the activities described above for banks fit within the context of the wider financial system and how it is evolving. This system includes both PRA-authorised persons and other financial market participants. In particular, market-based finance has grown in recent years to become vital to the provision of financial services to the real economy. Both the types of firms providing different services within market-based finance and the nature of their provision has changed. For instance, non-banks have become important liquidity providers in many markets, and both their liquidity provision and that of their bank peers is often algorithmic, as discussed further in Chapter 8.

Algorithmic techniques are becoming more widely used in other areas of the financial system too. A good example is the increasing use of machine learning and related techniques in a variety of areas, including the design of hedging strategies and risk pricing/underwriting.

The evolving mix of market participants, their techniques, and their interactions may create new risks or increase old ones,[15] so it will continue to be important to contextualise proprietary trading activity by PRA-authorised persons within the wider financial system. The Bank of England's Financial Policy Committee (FPC) is responsible for identifying, monitoring, and taking action to remove or reduce broader risks within the financial system, including those emanating from beyond the core banking sector. As part of meeting

15 These include risks due to increased data sizes and potentially decreased quality, model risks, and conduct and reputational risks. The Bank of England and the Financial Conduct Authority (FCA) have recently set up a Financial Services Artificial Intelligence Public-Private Forum to undertake work to better understand how these developments are driving change in financial markets.

this responsibility, the FPC performs an annual assessment of risk and regulation beyond the core banking sector, covering financial markets, non-bank financial institutions and market infrastructure. The FPC decides whether to monitor closely certain activities or sectors, or to launch an in-depth assessment. Following these considerations, the FPC may recommend changes to regulation, via either: activities moving into the 'regulatory perimeter' (the boundary between regulated and non-regulated activities); or a change in regulation for activities already within the perimeter.

The FPC carried out an in-depth assessment of financial market liquidity in 2016,[16] and considered risks from 'fast markets' in 2017,[17] and has been monitoring these closely since. It has recently published a more detailed assessment of the risk oversight and risk mitigation systems for the non-bank financial sector, including market-based finance, as requested in HM Treasury's 2020 remit letter to the FPC.[18]

16 See 'Financial Stability Report – July 2016', available at: https://www.bankofengland.co.uk/financial-stability-report/2016/july-2016.
17 See Box 5 in 'Financial Stability Report – November 2017', available at: https://www.bankofengland.co.uk/financial-stability-report/2017/november-2017.
18 For a wider discussion of market-based finance, see Building the resilience of market-based finance, 'Financial Stability Report – August 2020', available at: https://www.bankofengland.co.uk/report/2020/monetary-policy-report-financial-stability-report-august-2020.

# 3 Risks arising from proprietary trading

The previous chapter set out how proprietary trading arises both from activity designed to profit from market movements and from the provision of financial services. This chapter discusses the risks that are created by those activities.

## 3.1 Classic proprietary trading

By definition, classic proprietary trading involves taking positions in financial instruments or commodities. This almost always involves taking market risk, which is the risk that changes in the market prices of financial instruments or commodities may create a loss for the firm. Some forms of classic proprietary trading, such as those that use derivatives or securities financing transactions, may also involve counterparty credit risk, which is the risk that the failure of a counterparty to perform on its obligations creates a loss for the firm. Operational risk will also typically be involved to some degree. Operational risk is discussed further in section 3.5 while Chapter 8 sets out some further considerations on the risks created by relationships with counterparties.

Some forms of classic proprietary trading focus on the exploitation of arbitrage. Here there is some theoretically expected relationship between market risk factors. For instance, the expected future foreign exchange rate between two currencies can be derived from a knowledge of the current (spot) rate and risk free interest rates in the two currencies. If there is a deviation from the expected relationship and a market participant believes that this is anomalous, then they may execute transactions which will profit if the deviation reduces. As such, arbitrage transactions tend, if executed across the market in sufficient volume, to reduce the deviation between actual and expected values.

Table 3 gives examples of several different types of classic proprietary trading. Here 'long' positions profit if the instrument's value rises, whereas 'short' positions profit if it falls.

**Table 3**: Some examples of proprietary trading and the risks arising from them

| Asset class | Position | Principal risks |
|---|---|---|
| Equity | Long the equity of a merger target and short the acquirer in expectation of a profit if the merger is completed | Equity price risk |
| FX | Long a currency in expectation that a rise in short-term interest rates in that currency will be announced, leading to appreciation in the currency | FX risk |
| Interest rates | Long government bonds, short interest rate futures | Interest rate risk (including repo rate risk if the bond is funded by repo) |
| Credit | Buying protection on a corporate via a credit default swap, and buying a bond issued by that corporate | Credit default swap/bond basis risk |
| Commodities | Buying natural gas futures expiring in March delivery and selling an equal number expiring in April | The spread between the price of natural gas in the two months concerned |

A form of proprietary trading that typically involves taking risk for longer periods of time is principal investment. Here a firm uses its own capital to make an investment with a long-term horizon. These investments sometimes reflect strategic partnerships, so for instance a bank might take a stake in a firm that provides it with key services, or in another bank in order to gain access to a different jurisdiction or market segment. On other occasions, these investments are used to enhance the banks' attractiveness to a client, so for instance it might make a private equity investment in a company in the hope of eventually winning a mandate to take the company public. Alternatively, a bank might 'warehouse' assets with the intention of securitising or otherwise selling them in due course. Finally, it might co-invest in assets primarily managed for its clients. All of these types of longer term investments give rise to credit and market risks.

## 3.2 Market making

Market making involves similar or identical position taking to classic proprietary trading, so the risk classes involved are similar. The largest risk, often, is market risk, with counterparty credit and operational risk typically also present.

Some of the risks of market making arise from the need to have inventory to meet customer demand, but this is not the only situation. Sometimes meeting client needs requires transacting financial instruments other than securities or commodities, including derivatives and securities financing agreements. A bank will often look at the net risk in a collection of client trades, and hedge these, rather than hedging each transaction individually. Where meeting client needs requires a complex instrument, it may be unlikely that this instrument can ever be bought or sold. Rather, it will be hedged until it expires or the client decides to terminate or restructure the transaction. Client facilitation may also involve taking positions in expectation of client demand that does not materialise. Thus, positions related to client activity can stay in a bank's trading book for a considerable period for various reasons.

## 3.3 Investment of liquidity and other treasury functions

For banks, most treasury functions, including the management of liquidity, take place in the banking book, with most or all positions measured using amortised cost accounting or fair value through other comprehensive income. The largest component of LABs that give rise to risk are often bonds. The price of these instruments is sometimes more volatile than that of other LAB components, and bond holdings can be a material fraction of the total LAB. Even though this price volatility does not typically flow through firms' profit and loss accounts, it nevertheless represents a risk.[19] Thus, LAB management involves market risk taking, with interest rate risk, foreign exchange risk, and the risk of declines in fundamental credit quality often important. Counterparty credit risk and operational risk may also be significant.

Bond holdings in LABs are typically very high quality. This means that these assets are unlikely to suffer large changes in value. However, LABs are sometimes large, and even high quality bonds can occasionally be subject to significant and persistent price falls. One reason for this is interest rate risk, so this risk is often hedged,[20] but price changes can happen for other reasons too, such as changes in market perception of the issuer's creditworthiness. Therefore, while LABs are important to protect firms against the risk that they do not have sufficient liquidity, holdings in them can sometimes create material profits or losses for firms despite typically being high quality assets.

19 Most bond holdings in LABs are measured using fair value through other comprehensive income. This means that changes in their fair value affect the bank's equity account, and hence its capital ratio.

20 Bonds held in bank LABs are often insulated from interest rate risk using an asset swap: a form of interest rate swap where the fixed cash flows due on the bond are swapped for a floating rate payment stream. This process can however introduce counterparty credit risk.

## 3.4 Own-account hedging activity

Banks can suffer losses, whether caused by items measured using fair value through the P/L, or from increased provisions, or for other reasons. They can suffer if their equity is eroded, so items measured using fair value through other comprehensive income can be problematic too. Finally, as discussed in the previous chapter, net interest income can fall due to changes in interest rates or FX rates. In order to mitigate these and other risks, banks hedge.

Hedging is rarely a completely straightforward process. The risk being hedged might not be known precisely, for instance because it arises from the collective behaviour of customers. Often, the risk can be predicted to some degree, but not precisely. Moreover, even if the risk is precisely known, an exact hedge instrument may not be available or, if it is available, it might not be very liquid. Thus hedging requires a judgement of the benefits of reducing exposure versus the costs of hedging and any additional risks created in the process.[21]

Financial risks arise in many areas of banks' businesses, so there are many different types of hedging. Tables 4 and 5 list some large own-account hedging activities in a typical large UK bank. Examples of 'structural hedges' of positions in the banking book are shown in table 4, while table 5 gives examples of trading book hedges.

**Table 4**: Some examples of own-account hedging: Structural hedges

| **Activity creating risk** | **Risk being hedged** | **Typical risk mitigation/ hedging instruments** |
|---|---|---|
| Non maturity deposits and fixed rate residential and commercial mortgages | Interest rate risk in the banking book | Interest rate swaps |
| Investments in foreign branches and subsidiaries | Foreign exchange risk | FX forwards and swaps |
| Assets in a different currency to the equity supporting them | Foreign exchange risk to capital ratio (aka 'structural FX') | FX forwards and swaps |
| Investment of liquidity | Credit spread and interest rate risk of fixed rate bonds | Interest rate and asset swaps |

**Table 5**: Some examples of own-account hedging: Trading book hedges

| **Activity creating risk** | **Risk being hedged** | **Typical risk mitigation/ hedging instruments** |
|---|---|---|
| Market making and other forms of client facilitation | Market risks | Securities, commodities, derivatives, and securities financing transactions |
| Market making and other forms of client facilitation | Counterparty credit risks | Collateral, guarantees, letters of credit, credit default swaps |
| Derivatives and securities financing transactions | Credit valuation adjustment risk | Credit default swaps, forwards and swaps on market risk factors |

The organisation of hedging activities varies from firm to firm. In some cases, some risks are hedged where they are originated; in others, risks are pooled in one or more central desks within the firm

[21] An issue that often arises in hedging is the risk that the cheapest and/or most liquid hedge instruments refer to something related to but not precisely the same as the instrument being hedged. For example, the relevant interest rate for deposits might be the bank base rate (BBR), but the most liquid hedge instruments might reference the Sterling Overnight Index Average (SONIA). BBR and SONIA tend over time to move together, but the spread between them can change, so a hedge to a BBR liability using a swap referencing SONIA is not perfect.

and the net position hedged. In addition, some banks sometimes have 'management' hedges that act as an overlay to the banks' overall risk profile.

## 3.5 Operational risks associated with proprietary trading activity

A range of operational risks are associated with many forms of trading activity, including proprietary trading. One way to organise these is to consider the following questions:

- Does the firm know about its true position?
- Did the firm intend to have that position?
- What else can go wrong?

The true position question is associated with the risk that the firm does not correctly record its position, either due to error or malicious intent (the latter being one form of rogue trader risk).[22] Knowledge of the position also includes its value, which might be incorrectly recorded, and the key information associated with it, such as its contribution to the firm's overall risk or capital. There may also be legal risks here, for instance if contracts are not enforceable or the firm's trading gives rise to conduct risk.

The intent question speaks to risk governance. Firms should have a clearly defined risk appetite and controls in place to ensure that their trading activity stays within it. If this is not the case, positions can be correctly recorded, valued, and so on, but still give rise to more risk than the firm intended to take. Transactions that are characterised as hedges but which can, in some circumstances, lead to large risks that do not offset movements in the position supposedly being hedged are a particular issue here. The trading loss popularly known as the London Whale incident is a good example of how activity characterised as hedging can go wrong: this is discussed in Box 6.

### Box 6: The London Whale incident

In 2012, JPMorgan Chase & Co. suffered large trading losses in the firm's chief investment office (CIO) due to transactions booked in its London branch. The bank's CIO was responsible for hedging the firm's investment of surplus liquidity. This investment was partly in credit-risky instruments so, to hedge the resulting risk, the bank entered into credit default swaps. The resulting 'hedge' was initially profitable. (That in itself was perhaps a warning sign, in that if a hedge is profitable but there is not a matching loss on the item being hedged, then that may indicate that the hedge is not always risk reducing.)

Over time the position was restructured, becoming larger and in some ways riskier. As the name of the incident hints, the position became substantial compared to the available market liquidity. When the market turned against the firm and details of the position became widely known among market participants, it was impossible to exit the position quickly and without further adverse market impact. The firm suffered losses as a result.

The key aspects of the incident that the firm identified[23] were that CIO management did not fully understand and monitor the strategy adopted, did not ensure that the firm's control functions provided effective oversight, and did not appreciate the increases in the position's size, complexity, and riskiness as it evolved. The firm also identified risk management and financial control deficiencies in its review.

22 The rogue trader incidents caused by Nick Leeson at Barings Bank, Toshihide Iguchi at Daiwa Bank and Jérôme Kerviel at Société Générale are examples of unauthorised position taking where the firm was not aware of its true position for an extended period of time.

23 See 'Report of JPMorgan Chase & Co. Management Task Force Regarding 2012 CIO Losses', 16 January 2013.

There are many other things that can go wrong in trading. For example, the firm's systems can be compromised by cyber[24] or other risks, or assets can be lost. This emphasises the importance of operational resilience, sufficient capital for operational risk, and a robust recovery plan if risks crystallise.

It is clear from the discussion above that various market, counterparty credit, operational, and other risks can be important in proprietary trading, with the balance between them varying depending on various factors, including the nature of the activity itself, the controls around it, and the accounting measurement model used for it.

[24] The 2016 loss by the central bank of Bangladesh, Bangladesh Bank, due to a compromised payment system is one example of cyber risk.

# 4 Motivations and tools for restricting proprietary trading

This section discusses the motivations for restricting classic proprietary trading by authorised persons and the two main classes of tool that might be used to do this. These tools are bans on proprietary trading and the structural separation of proprietary trading activities from lending to the real economy. International experiences of applying these approaches is then discussed, focusing on the United States, Belgium, France, and Germany.

The United States bans certain entities from proprietary trading under the Volcker Rule.[25] Belgium monitors indicators of the size of banks' proprietary trading and imposes capital surcharges if thresholds are exceeded, while France requires that banks conducting significant amounts of proprietary trading activity do so in a separate entity. Finally, Germany bans large banking institutions from engaging in classic proprietary trading, and has the power to extend this prohibition to smaller firms. The experience of this set of countries therefore gives insight into the behaviour of the different tools.

## 4.1 Motivations for restricting proprietary trading

Proprietary trading involves taking risk, so it can lead to losses. These losses can sometimes be destabilising for firms, threatening their safety and soundness, hence the motivation for restricting proprietary trading within the banking sector. If there is a potential for a firm's distress to endanger its provision of economically useful functions, and especially if it might lead to the need for an injection of taxpayer funds, then this motivation is particularly compelling.

Another motivation follows from the observation that if an institution conducts proprietary trading, then this activity requires resources including capital, liquidity, and management attention. If proprietary trading is restricted, then it is less likely to use resources that firms should be deploying for other, more productive activity. Essentially, the concern is that proprietary trading might crowd out the provision of services to the real economy.[26]

Some resources that regulated firms have may be particularly cheap as a result of their systemic importance. For instance, a bank may have access to funding from deposits at a price below its wholesale cost of funds. Governments have often supported troubled banks if their failure would damage the wider economy. The expectation of such bailouts in future could amount to free insurance for those who have lent money to these 'too big to fail' banks.[27] There has been significant progress in addressing the issue of too big to fail, but some measure of implicit subsidy may still persist.[28] Another motivation for restricting proprietary trading is therefore that it is unfair for banks that benefit from subsidies arising from their systemic importance[29] to use those subsidies to materially increase shareholder profits.[30]

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25 For a further discussion, see this account from two of the architects of the US regulation: Merkley, J. and Levin, C. (2011) 'The Dodd-Frank Act restrictions on proprietary trading and conflicts of interest: New tools to address evolving threats', *Harvard Journal on Legislation*, 48 (2), pp. 515–553.

26 Evidence that this does take place can be found in: Kurz, M. and Kleimeier, S. (2019) *Credit Supply: Are there negative spillovers from banks' proprietary trading?* De NederlandscheBank Working Paper 657. Using a global sample of 132 major banks from 2003 to 2016, they find that banks' securities trading is indeed associated with decreased loan supply.

27 For a discussion of the progress made in ending too big to fail, see: Cunliffe, J. (2016) 'Ending too-big-to-fail: How best to deal with large failed banks'. Available at: https://www.bankofengland.co.uk/article/2016/ending-too-big-to-fail-how-best-to-deal-with-failed-large-banks.

28 For a further discussion of the too big to fail subsidy before some of the reforms had been implemented see: Sowerbutts, R. and Zimmerman, P. (2015) 'Who benefits from the implicit subsidy to 'too big to fail' banks?' Available at: https://bankunderground.co.uk/2015/07/08/who-benefits-from-the-implicit-subsidy-to-too-big-to-fail-banks/.

29 Federal Reserve Chairman Volcker, in testimony to Congress concerning the rule that bears his name, explained that 'there has been, and remains, a strong public interest in providing a 'safety net' – in particular, deposit insurance and the provision of liquidity in emergencies – for commercial banks carrying out essential services. There is not, however, a similar rationale for public funds – taxpayer funds – protecting and supporting essentially proprietary and speculative activities. Hedge funds, private equity funds, and trading activities unrelated to customer needs and continuing banking relationships should stand on their own, without the subsidies implied by public support for depository institutions'. See: 'Statement of Paul A. Volcker before the Committee on Banking, Housing and Urban Affairs of the United States Senate, Washington, DC, February 2 2010'. Available at: https://www.banking.senate.gov/imo/media/doc/VolckerTestimony2210.pdf.

30 An analysis of the profits of banks in the United States before the 2008 crisis provides some evidence that proprietary trading profits were significant. One estimate is that in 2004, net operating revenues from proprietary trading were less than 15% of the total, but this increased to nearly 30% at the start of the crisis. This suggests that this activity had become an important source of revenue to these institutions.

There has been no suggestion that banks should not seek to serve their clients' needs to manage their risks and gain access to credit. However, as a result of doing this, banks gain information about customer positions, activities, and risk appetites. A potential conflict of interests arises if banks can trade on their own account, as they can use information on customer activity for their own profit. At its most blatant, for instance through front-running customer trades, this could constitute market abuse. However, there are other ways for banks to profit from their knowledge of customers, and there has been discussion of the desirability of restricting this.[31]

There is also a cultural argument for restricting proprietary trading. This activity has its own particular culture that is rather different from that of commercial and retail banking. The cultures of the activities conducted in a firm contribute to how decisions are made within it. It has been argued that the culture of proprietary trading is incompatible with the safe provision of core banking activities.[32]

Finally, proprietary trading can add complexity to a firm. This may impede the ability of the firm to recover itself after distress, or the ability of the authorities to resolve the firm if recovery proves ineffective. Simplifying trading activity, for instance by restricting proprietary trading, may therefore make it easier to wind down a firm and hence aid resolvability.

## 4.2 International experiences: Prohibitions

There are two broad classes of tool in use internationally that are specifically designed to control proprietary trading within the banking sector. The first, as exemplified by the Volcker Rule in the United States,[33] is a ban on particular activities for all banks (rather than just, as in the UK, for RFBs).

The Volcker Rule went into effect on 1 April 2014, with full compliance required by 21 July 2015. It prohibits banks from engaging in the short-term trading of certain securities, derivatives, commodity futures, and options on these instruments, for their own account. The rule also limits banks' investments in, and other relationships with, hedge funds or private equity funds. Certain activities, including market making, underwriting, hedging, and trading in US government obligations are exempted. Given the implementation date, US authorities have gained substantial experience of the effects of the original Volcker Rule. Based on this, the rule was revised in November 2019 to, among other things, simplify compliance for firms without significant trading activities and to clarify exactly which activities are permitted.[34]

The Volcker Rule was, in the view of the US authorities, successful at eliminating covered activities from deposit-taking banks. However, it is important to understand the differences between activities covered under the Volcker Rule and the statutory definition of proprietary trading in the UK. The Volcker Rule (especially as revised) focuses on short-term own-account activity in the trading book, where short-term typically means 'less than 60 days'. Thus, it does not include longer term own-account investments or most banking book activity. It also contains exemptions for risk mitigating hedging and for liquidity management, both of which are captured by the UK definition. Finally, the Volcker Rule uses the notion of reasonably expected near term demand from customers (RENTD) to separate out market making as a permitted form of proprietary trading. Essentially, if a firm can prove that a position can be justified by RENTD, then it is permitted in the US, while it would still be captured by the statutory definition for the purposes of this

31 Senators Merkley and Levin quote the example of a firm selling a security, in this instance a collateralized debt obligation, to clients. It was claimed that this sale was motivated by the firm's desire to have a proprietary short position rather than because the security was best suited to the clients' needs.

32 This point was made in hearings before legislators in both the UK and the US. For example, see the testimony of John Reed (retired Chairman, Citigroup) in 'Implications of the "Volcker Rules" for financial stability' *Hearing before the Committee on Banking, Housing and Urban Affairs of the United States Senate* (2010). Available at: https://www.govinfo.gov/content/pkg/CHRG-111shrg61651/pdf/CHRG-111shrg61651.pdf.

33 The Volcker Rule refers to Section 619 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. It restricts 'banking entities' from making certain kinds of speculative investments that are not for the direct benefit of their customers.

34 The revisions are in the Federal Register, Vol. 84, No. 220 (November 2019). In addition to simplifying compliance for entities with smaller trading activities, defined as those with less than $20 billion of consolidated gross trading assets and liabilities, the new rule exempts the purchase or sale of any financial instrument that does not meet the definition of a trading asset or liability, clarifies which liquidity management activities are permitted, and (among other things) exempts certain other positions, including matched derivatives and hedges of mortgage servicing rights.

review. The revision to the rule published in 2019 permitted Volcker-covered banking entities to rely on internal risk limits that are established pursuant to RENTD.

The Volcker Rule should be seen in the light of a long tradition in United States regulation of 'bright line' bans on certain activities. The Glass-Steagall Act, which banned deposit takers from engaging in many forms of investment banking activity, is a well-known example. Also relevant are US rules limiting exposures between banks and their affiliates, as these constrain exposures between Volcker-covered banks and their affiliates.[35]

Another example of the use of a ban is in Belgium. Here a law of 2014 established a prohibition on banks trading for their own account,[36] but, similarly to the United States, with a number of possible exemptions. Five types of trading activities are allowed: trading for clients, market making activities, trading for the bank's own investment portfolio, trading in the context of the bank's own liquidity management, and asset liability management (as well as hedging related to any of these five categories).

The permitted trading activities in Belgium are subject to both qualitative and quantitative requirements. The qualitative requirements describe the governance and risk management rules for each category of the allowed transactions. The Belgian regulation is intended to ensure that banks do not rebuild their trading activities to the undesirably high levels they had before the 2008 financial crisis, and the quantitative requirements are intended to address this. Specifically, a dissuasive capital surcharge is imposed on financial institutions if trading assets exceed 15% of the total assets, or the sum of the capital requirements for market risk exceeds 10% of the total capital requirements. Belgian banks are currently far below these thresholds.[37]

## 4.3 International experiences: Structural separation

The second class of tool used to control proprietary trading within the banking sector is the separation of the provision of core services, such as deposit taking, payments, and the provision of overdrafts, from activities which are undesirable in the same entity. As noted previously, this is sometimes known as 'ring fencing', as the bank providing core banking services (taking deposits, making payments and providing overdrafts for UK retail customers and small businesses) is ring-fenced from the broader group which contains it. The UK has adopted the approach of requiring that large banks legally separate the entity conducting certain core banking services from other parts of the group. Some activities can only take place in the RFB, while others may take place either inside or outside of it. In particular, most trading in capital markets cannot take place in the RFB.

Other jurisdictions took slightly different approaches. For instance, in order to strengthen the stability and resilience of the EU banking system, the European Commission proposed a regulation to stop the largest and most complex banks from engaging in the risky activity of proprietary trading. However, within the EU, mandatory structural separation requirements were introduced at the national level in certain member states. In July 2018, the European Commission decided to withdraw the 2014 proposal on structural reform. The Commission has stated that the aims of this proposal had in the meantime, to a large extent, been achieved by other measures.[38]

The review team discussed the issue of proprietary trading in regulated firms with the European Central Bank's supervisory arm, ECB Banking Supervision. At the level of the Euro Area, the ECB's supervisory work

35 Federal banking regulation W, which sets limits on exposures between banks and their affiliates and requires collateral for some forms of transaction, is important in this context.

36 See Bank Law of 25 April 2014, paragraphs 117–133.

37 See National Bank of Belgium Regulation of 1 April 2014 on own account trading activity for details. Available at: https://www.nbb.be/nl/artikels/koninklijk-besluit-van-25-april-2014-tot-goedkeuring-van-het-reglement-van-1-april-2014-v-0. In addition, the regulation also imposes a risk limit threshold where the 1 day trading value at risk measure is required to be below 0.25% of Common Equity Tier 1 capital.

38 The proposal built on the recommendations of the Liikanen report, presented in October 2012 by the high-level expert group on reforming the structure of the EU banking sector, and was withdrawn in July 2018. For a further discussion, see: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/managing-risks-banks-and-financial-institutions/structural-reform-eu-banking-sector_en.

on trading risk and asset valuations includes the assessment of the business model of those banks that are most involved in capital markets activities.

Various policies were adopted by EU nations. The approach in Belgium was discussed in the previous section. In France, in contrast, banks whose trading book activities exceed a certain threshold have been required since 2014 to set up a dedicated and separately capitalised subsidiary to conduct proprietary trading activities.[39] The French experience has been that a small number of separate subsidiaries were created in response to the law. The performance of these classic proprietary trading entities was poor, and by the end of 2019 all of them had been closed down.

The approach in Germany uses elements of the two classes of tool considered above. Large banks, defined as those that either meet an absolute balance sheet size threshold or a threshold of the percentage of total assets, both devoted to trading, are banned from classic proprietary trading, with similar exemptions for hedging as found in other regimes. The authorities also have discretion to restrict proprietary trading activity in smaller firms. One difference between the German approach and some others is that violation of the prohibition is a criminal offence in Germany. This means that a clear, legally enforceable definition of what is banned is particularly important, and as a result the authorities have issued clarification of the scope of the law.[40] As in France, German banks and banking groups are permitted to separately capitalise a subsidiary to conduct classic proprietary trading. However, at the time of writing, no German banking group had done so.

## 4.4 The impact of regulation on the evolution of classic proprietary trading

For the purposes of this review, the PRA has surveyed the largest UK banks and those international banks with large PRA-authorised entities regarding their proprietary trading activities. Of those, the large majority were bound by the Volcker Rule,[41] and had no proprietary trading activity as defined by it. Of those banks which were not bound by the Volcker Rule, most chose to use a Volcker-like definition of classic proprietary trading, and had no activity under this definition. One international firm surveyed had one proprietary trader in London, but other than this no evidence of proprietary trading teams was found.

Those firms that did engage in Volcker-compliant trading activity had limits governing this activity. Typically, these were structured as a high-level limit governing the whole trading book and expressing the firm's overall risk appetite, then a cascading series of smaller and more detailed limits. Firms reported that risk appetites were smaller as a result of the Volcker Rule (and in particular its RENTD-related requirements). Moreover, even firms with a relatively large level of market risk compared to their peers nevertheless have small 'stressed loss' limits compared to their Common Equity Tier 1 capital. This suggests that, assuming that the limit is indeed a good measure of potential losses in severe stress, market risk losses in the trading book are likely to be small compared to the firm's capital.

## 4.5 Motivations for not taking specific action against proprietary trading

There are a number of arguments against taking action to restrict proprietary trading by all banks. Perhaps the most compelling is that it is difficult to define proprietary trading sufficiently precisely so that activities with undesirable characteristics are prohibited, but those that support lending to the real economy, market making, and other beneficial functions are permitted. One problem is that intent-based definitions are hard to police: if proprietary trades are defined as ones taken by a firm with the intent of short-term profit, how can these positions be unambiguously separated from similar positions taken with other intents? The mere

39 The requirement is in the Loi de séparation et de régulation des activités bancaires. This requires banks with trading activity that occupies 10% or more of the total balance sheet to create a subsidiary to house proprietary trading.

40 See Federal Financial Supervisory Authority (BaFin), 'Interpretative Guidance on the Bank Separation Act'. Available at: https://www.bafin.de/dok/8700360. BaFin is working on an updated version, which has already been consulted upon (Consultation 20/2018 – Draft updated version of the interpretative guidance on Article 2 of the Bank Separation Act. Available at: https://www.bafin.de/dok/11988998.

41 The Volcker Rule does not apply to activity which is 'totally outside the US'. However, this exemption relies, among other things, on the entity engaging as principal in the transaction or its hedges, and the entity that makes the trading decision (if different) not being located in or organised under the laws of the US. These conditions are sometimes not met, so the Volcker Rule has some extra-territorial effects.

presence of a financial instrument held as principal for a short time is not necessarily an indication, as it may be a hedge or bought with the intent of servicing future client demand.

Another issue is the administrative difficulty in separating positions arising from 'useful' market making or hedging activities[42] from those arising from classic proprietary trading. Some industry comment on the Volcker Rule in this context has focused on the high costs of demonstrating RENTD compliance. As with any bright line regulation, the issue is defining the line, the risk of inadvertent capture of unintended activities, and the costs of demonstrating whether a given activity falls on one side of it or the other. Essentially, the question is one of proportionality: given compliance costs, is the policy a proportional response to the risks posed?

If a ban is difficult to define and enforce, structural separation of proprietary trading activity alone is almost as problematic. First, it is still necessary to define what is to be separated, and, second, significant risks remain in the bank, as some activities, such as the investment of liquidity and structural hedging, are necessary to support retail banking.

Given this, the decision as to whether a ban on classic proprietary trading by banks, or a structural separation of it from core banking activities, is a proportional response, must be considered carefully. The answer will depend on the risks it poses, or plausibly might pose, to the UK financial system, given the mitigations in place and the tools available.

[42] 'Hedging' is also difficult to define. The definition in international accounting standards relies on (among other things) the designation and documentation of the hedging relationship and the hedge at its inception, so again intent is a key part of the definition.

# 5 Tools for mitigating proprietary trading risks

This chapter sets out the broad classes of tools the PRA has available in the supervision of PRA-authorised firms. The tools that apply to all or many of firms' activities are described first. These form the key elements of the PRA's supervisory approach, sitting alongside the statutory framework.[43] Then, the tools specifically relevant to proprietary trading are discussed.

## 5.1 Tools in general

The PRA conducts supervision of deposit takers and designated investment firms to further its primary statutory objective to promote the safety and soundness of the firms it regulates. The PRA has a range of formal powers and supervisory tools to address risks in regulated firms. This includes the making of rules as set out in the PRA Rulebook, the exercise of powers, and the use of tools in the conduct of supervision, as outlined in the PRA's approach to banking supervision.[44] These are described further in the following sections.

## 5.2 Threshold conditions and certification requirements

The PRA's statutory Threshold Conditions[45] are the minimum requirements that firms must meet at all times in order to be permitted to carry on the regulated activities in which they engage. They are designed to ensure that firms conduct their business in a prudent manner, including having an appropriate amount of resources, being managed by persons with adequate skills, experience, and probity, and being effectively supervised by the PRA.

Another aspect of firms' fitness to carry out regulated activities is the Senior Managers and Certification Regime (SMCR).[46] This is a policy whereby individuals who perform key roles at regulated firms need PRA or FCA approval before starting their roles, and are then subject to ongoing requirements concerning their fitness and propriety, individual conduct, accountability for their prescribed responsibilities, and remuneration. This is described further in Box 7. Each senior manager must also have a statement of responsibilities which sets out what they are accountable for, and these individual statements must be mapped by the institution to ensure that they are collectively consistent and complete.

### Box 7: Senior Managers and Certification Regime (SMCR)

The SMCR, introduced in March 2016, is intended to support a change in culture at all levels in the banking and insurance industries. It establishes the link between seniority and accountability, strengthens individual accountability, and reinforces collective responsibility. The regime requires that the most senior decision makers, or 'Senior Managers', at the firm are assessed as fit and proper, have clearly defined responsibilities, and are subject to enhanced conduct requirements, including the duty to take reasonable steps in fulfilling their responsibilities.

In addition, for key risk-taking employees below senior management, firms must determine upon appointment that the person is fit and proper to undertake their role. All financial services staff are subject to minimum conduct standards requiring, among other things, that they act with integrity and due skill, care, and diligence. There are also requirements to exchange regulatory references as part of the hiring process of senior decision makers and key risk taking employees.

Both senior managers and certified role holders are subject to an annual 'fit and proper' re-certification by the firm.

43 This includes capital and liquidity regulation as discussed elsewhere in the report.
44 For further details of the PRA's approach, see 'The PRA's approach to banking supervision', October 2018: https://www.bankofengland.co.uk/prudential-regulation/publication/2018/pra-approach-documents-2018.
45 For further information on Threshold Conditions, see: http://www.legislation.gov.uk/uksi/2013/555/pdfs/uksi_20130555_en.pdf.
46 The SMCR came into force in March 2016, replacing the Approved Persons regime, further to the recommendations of the Parliamentary Commission on Banking Standards. It promotes improvements in culture, governance, and accountability in banks, building societies, credit unions, and PRA-designated investment firms and insurers.

## 5.3 Remuneration policy

In order to better align rewards to outcomes and to the long-term performance of the firm, key risk-taking employees in firms, including those with significant trading mandates, are subject to the potential deferral of variable pay and ex-post adjustment to awards. In addition, the size of awards to key employees must be determined by a balanced suite of metrics, and be paid at least 50% in non-cash instruments. These policies together reflect an increased focus on firms' cultures and decision-making processes, and on the alignment of individual incentives with prudential objectives.

## 5.4 Fundamental rules and regulatory principles

The rules made and enforced by the PRA under its statutory powers are contained in the PRA Rulebook.[47] Fundamental Rules are high-level rules that collectively act as an expression of the PRA's general objective of promoting the safety and soundness of regulated firms. Firms must ensure they are compliant with all applicable PRA rules, including the Fundamental Rules, as set out in the PRA Rulebook.

The requirements in the PRA Rulebook are complemented by other elements of the policy framework that set out expectations or provide guidance to firms. One example of such non-rule elements is Supervisory Statements. They typically focus on the PRA's expectations as to how a firm might comply with rules and regulations, and are aimed at facilitating firm and supervisory judgement in determining whether they meet those expectations.

## 5.5 Risk assessment framework

The PRA's supervisory approach follows three key principles: it is judgement-based, forward-looking, and focused on key risks. The PRA takes a structured approach to forming its judgements, set out in its risk assessment framework. The four principal steps in the framework are:

(i) to consider the potential impact a firm could have on financial stability, and then how the external context and business risk it faces might affect the firm's viability. This forms the assessment of gross risk;
(ii) to consider operational mitigation, covering a firm's management and governance and its risk management and controls;
(iii) to consider financial mitigation and the firm's financial strength, in particularly capital and liquidity; and
(iv) to consider structural mitigations and the firm's resolvability.

An assessment of three aspects of risk mitigation, including in the context of proprietary trading, is provided in the following three sections.

## 5.6 Operational mitigation

The assessment of firms' operational mitigation includes the evaluation of their governance, risk management, and controls. This includes consideration of whether:

- boards and senior management understand the kind of behaviour that will deliver an acceptable level of safety and soundness from the perspective of the financial system and act accordingly;
- the firm is sufficiently diverse so as to avoid groupthink, and has a culture that supports prudent management;
- those managing the firm's affairs are competent and 'fit and proper';
- the firm has in place clear structures of accountability and delegation of responsibilities for individuals and committees, including checks and balances to prevent dominance by an individual; and
- the firm has robust frameworks for risk management, including for financial and operational risks.

[47] These powers are conferred by the Financial Services and Markets Act 2000. The rulebook is available at http://www.prarulebook.co.uk/.

In particular, for trading risks, the PRA expects that firms have a control framework encompassing the processes, delegated authorities, and limits, which together comprehensively cover all classes of risk the firm is exposed to, are commensurate with the nature, scale, and complexity of the firm's risk taking, and deliver a properly controlled operating environment.

## 5.7 Financial mitigation

The PRA expects firms to maintain appropriate financial resources, both in terms of quantity and quality, consistent with their safety and soundness, and which take into account the risks to which they are exposed. Sufficient capital is particularly important for deposit takers and investment firms, given that their liabilities are often of shorter maturity than their assets. In addition, where a firm is owned by private shareholders, having more shareholder equity, the highest quality form of capital, gives owners a greater interest in the firm being run prudently.

The UK banking capital framework has three main elements: pillar 1 requirements, pillar 2A requirements, and capital buffers.

- 'Pillar 1' requirements are minimum capital requirements that apply to all firms. They provide protection against credit, market, and operational risk, for which firms follow internationally agreed methods of calculation and calibration.
- 'Pillar 2A' requirements are additional requirements imposed by the PRA, reflecting estimates of risks either not addressed or only partially addressed by the international standards in Pillar 1.
- Capital buffers allow firms to absorb losses without breaching minimum capital requirements. There are several components here, including buffers to reflect current economic conditions (the 'countercyclical capital buffer'), and to reflect firm-specific risks not covered elsewhere or which might arise in stress ('the PRA buffer'). There are also additional buffers for systemically important firms, reflecting the extra risks that they bring to the financial system due to their size.

Pillars 1 and 2A together represent what the PRA regards as the minimum level of regulatory capital a firm should maintain at all times to cover adequately the risks to which it is exposed and to comply with the overall financial adequacy rule. In ordinary conditions, bank capital levels will typically be substantially higher than the minimum requirements.

The various risks associated with proprietary trading are treated in different parts of the capital framework, as discussed in subsequent Chapters. This partly reflects the diversity of measurement models. Trading book items measured using fair value through the P/L, for instance, are sensitive to day-to-day changes in market prices, whereas banking book items, typically measured using amortised cost, are not exposed to the same income volatility. These risks and their mitigations are discussed further in Chapters 6 and 7.

## 5.8 Structural mitigation: Resolvability, recovery planning, and solvent wind-down

Interruption to the critical economic functions provided by firms to their customers is one of the key channels through which the failure of firms can adversely affect financial stability. To mitigate this risk, firms are expected to undertake recovery planning so that they are ready for periods of financial stress and they can recover from losses.

If recovery is not successful, the failure of any firm should be orderly. In other words, it should be feasible and credible for the firm to fail without excessive disruption to the financial system, interruption to the provision of critical functions, or exposing public funds to losses. Orderly failure for smaller firms can typically be achieved through an insolvency process, whereby the firm's business is wound up after covered depositors have either been paid by the Financial Services Compensation Scheme (FSCS), or had their account transferred by the liquidator to another institution. Where this is not possible, for example in the case of larger, more complex firms, managing the failure may require the use of statutory powers by the Bank of England. The Bank of England sets a resolution strategy for every firm to provide assurance around the ability to manage the firm's failure in an orderly manner. More detail on this is set out in the Bank of

England's approach document on resolution, which also discusses additional financial resources for resolution, so-called 'gone concern' capital.[48]

A firm's capability to wind-down its trading book (known as 'solvent wind down') is an important part of recovery and resolution planning, as it may represent a recovery option or post-stabilisation restructuring option for firms with derivative or other trading book businesses. The PRA (together with the Bank of England as Resolution Authority) is developing proposals for firms to enhance their capability to execute a solvent wind-down, including through exercises with a number of systemically important UK banks and non-UK firms with UK operations.

## 5.9 Supervisory engagement in practice

The PRA supervises a wide range of entities of different sizes, with different business models, and posing different degrees of risk to the financial system. It tailors its application of the supervisory assessment framework to take account of this diversity.

The approach for banks and PRA-designated investment firms, among others, includes gathering and analysing information relevant to the PRA's objectives from firms on a continuous cycle. This is achieved through, for example:

- analysis of regulatory returns, other information submitted to the PRA, and information in the public domain, for example firms' annual reports and disclosures;
- participation in regular meetings with a firm's staff at a senior and working level;
- in-depth inspections of a particular area, including on-site testing. Such activities typically involve discussions with staff, reviews of internal documents, and analysis of data. Examples of such in-depth reviews are the Supervisory Review and Evaluation Process[49] and the Concurrent Stress Testing exercise;
- use of the PRA's statutory powers; in particular, its information gathering power and its powers to commission reports by Skilled Persons on specific areas of interest where the PRA seeks additional information, analysis, or assurance on a particular subject; and
- regular engagement with external auditors and other regulators.

Using this information the PRA forms judgements on the key prudential risks to which a firm is exposed, and formulates a supervisory strategy for the firm concerned. It communicates to the firm its view of the key risks, and any actions the firm is required to take to address these risks.

## 5.10 Use of formal powers

The PRA has a variety of formal powers that it can use, if deemed necessary, to reduce risks. The powers fall broadly into two categories: supervisory and enforcement.

Supervisory powers include the power of direct intervention in a firm's business, for instance, through varying a firm's permission or imposing a requirement to prevent or curtail a firm undertaking certain regulated activities. Legislation[50] also confers a number of powers with respect to group restructuring, where the PRA may enforce a restructuring of a RFB group or its unregulated UK-incorporated holding company. The PRA may also use its powers to require information from firms.

Enforcement powers allow the PRA to take action, such as a fine or public censure if a firm or individual fails to comply with relevant requirements. This sends a clear signal to the firm, individual, or wider regulated community about the activity the PRA considers unacceptable.

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48 See 'The Bank of England's approach to resolution', October 2017: https://www.bankofengland.co.uk/paper/2017/the-bank-of-england-approach-to-resolution.

49 For discussions of banks' processes and the PRA's review of them, see Supervisory Statement 31/15 'The Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP)', July 2015: https://www.bankofengland.co.uk/prudential-regulation/publication/2013/the-internal-capital-adequacy-assessment-process-and-supervisory-review-ss.

50 Specifically, the Financial Services (Banking Reform) Act 2013.

## 5.11 Application to the risks arising from proprietary trading

The tools discussed above can be applied to various aspects of proprietary trading.

The PRA's Fundamental Rules have a direct application. The requirements that firms conduct their business with integrity and with due skill, care, and diligence (Rules 1 and 2), and that they act in a prudent manner (Rule 3), frame how this activity, like all others, is conducted. Rule 4, which requires firms to maintain adequate financial resources, seeks to ensure that if the risks assumed in trading crystallise, then sufficient capital and liquidity are available to mitigate them. Rules 5 and 6 which require firms to have effective risk strategies and risk management systems, and to organise and control their affairs responsibly and effectively, seek (among other things) to ensure that firms know what risks they have, control them in an effective manner, and that decisions are taken at an appropriate level within a firm.

As part of the PRA's risk assessment, the magnitude of the risks taken by firms are assessed, together with the control and risk management structures used to manage them, the financial resources which support them, and the organisation and governance of the firm's risk taking. A key part of this is business model analysis, whereby the PRA seeks to understand the most important drivers of firms' current earnings and their strategy, including their assumptions about risks and returns in future. To inform its risk assessment, the PRA collects and reviews information related to various trading activities on a regular basis as part of its supervisory assurance programme.

Firms' risk management and controls, including those for financial and operational risks, should be commensurate both with their current risks and with their strategy. A clearly articulated risk appetite that is consistent with these objectives is an important component here, as is a clear focus on controls that are necessary to promote the firm's safety and soundness, given this appetite. Firms should also understand the circumstances in which they might fail, so the PRA expects firms to examine their strategy and risk taking in order to understand potential vulnerabilities.

An important part of the PRA's expectations about controls around risk taking is the need for decision making at an appropriate level. Firms should have a control structure which ensures that senior management understands the risks being taken, and acts to manage them promptly within the firm's overall risk appetite. The processes for and delegation of authority and appropriate limit structures at each level of decision making are important elements of this.

Another key element is the separation of independent risk and control functions from trading. The PRA expects that key risk control, valuation, and operational activities are independent, and that they have sufficient authority to challenge business decisions. The validation and audit of key processes and controls, including the use of models, is another important control.

Firms should ensure that their arrangements are operationally resilient and, where applicable, that their operational arrangements facilitate effective recovery and resolution planning.

Finally, the PRA expects firms to undertake recovery planning so that they are ready for periods of financial stress, including that caused by risk taking, so that they can recover from financial losses. One element of recovery planning will therefore include an assessment of capital and liquidity needs if risks, including financial and operational risks, manifest, and how the firm will recover in these situations.

# 6 Market risks and their mitigation since 2008

The previous chapter set out the broad elements of the PRA supervision framework. This chapter turns to market risk specifically, as this is usually one of the most material risk classes arising from classic proprietary trading and market making. Specifically, it reviews the trend in aggregate market risk levels within the banking sector since the 2008 financial crisis. It also sets out how capital levels and other mitigations to market risk have evolved. The next chapter then considers risks arising from the second pair of proprietary trading activities, liquidity investment and banking book hedging.

## 6.1 Overall market risk levels in large banks and banking groups

Many banks provide information on aggregate market risk levels on a regular basis. In particular, 'value at risk' (VAR) estimates are often disclosed for various risk categories. To distinguish this from regulatory measures, it will be termed 'management VAR'. Like any risk measure, management VAR alone does not give a complete picture, but it is a convenient way of summarising aggregate risk levels.[51] Chart 1 shows the trend in management VAR since the end of 2008.

This shows a declining level of market risk over time once the immediate post-crisis period is over.[52] Management VAR is particularly interesting because it contains contributions to market risk from classic proprietary trading, market making, and other sources. As such, it avoids the problem that different banks may use different internal definitions of classic proprietary trading and hence that their measures of it are not directly comparable.

This picture excludes a number of features. Principal investments are not typically included in value at risk measures, as the firm's intent is to hold them for an extended period. Underwriting commitments may not be included either, at least until the securities are issued. Also, it is possible for a bank to have very low net market risk but substantial counterparty credit risk, for instance if it has two offsetting positions with different counterparties. The post-crisis reforms have substantially reduced banks' ability to enter into positions like this,[53] but this form of risk can still be significant, so it is discussed further in Chapter 8.

Evidence of a substantial amount of classic proprietary trading conducted by PRA-authorised persons has not been discovered based on the data that firms provided us for the purposes of this report, market intelligence, and regulatory returns. This assessment is supported by analysis of the trends in market risk levels reported in this chapter.

## 6.2 Market risk levels in ring-fenced banks

Ring-fenced banks are prohibited from or restricted in conducting many of the activities that fall under proprietary trading.[54] The effectiveness of this can be seen in the overall trading VAR for the large RFBs. This is on average less than 0.6% of the total trading VAR for the groups they are part of. In addition, based on our review, there is no evidence that classic proprietary trading is being conducted in RFBs.

## 6.3 Market risk levels in smaller firms

In order to provide assurance regarding the coverage of the analysis above, the total capital requirements for market risks of the largest UK and international banks in the scope of the review was compared to the system wide total, using regulatory data. As of December 2019, they represent over 90% of the total, so there is good evidence that the in-scope firms specifically surveyed represent the overwhelming majority of market risk in the banking system, as measured by the PRA.

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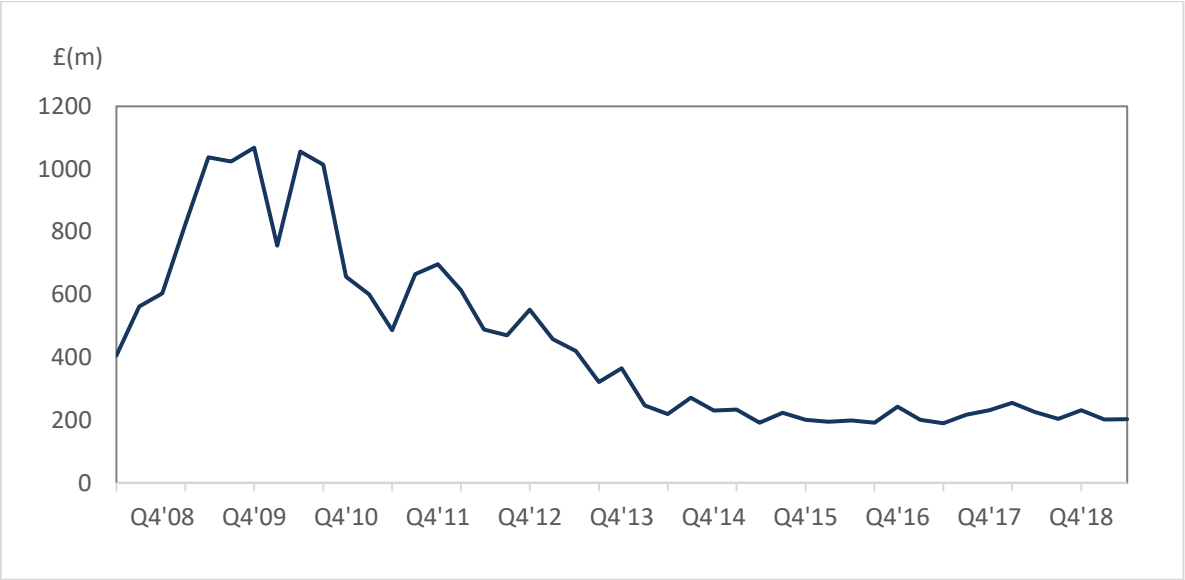
51 Firm practice here is somewhat variable. All include market risks in their VAR estimates, but with different methodologies. Where firms disclosed a breakdown of trading and banking book (or structural) VAR, only the former has been included.

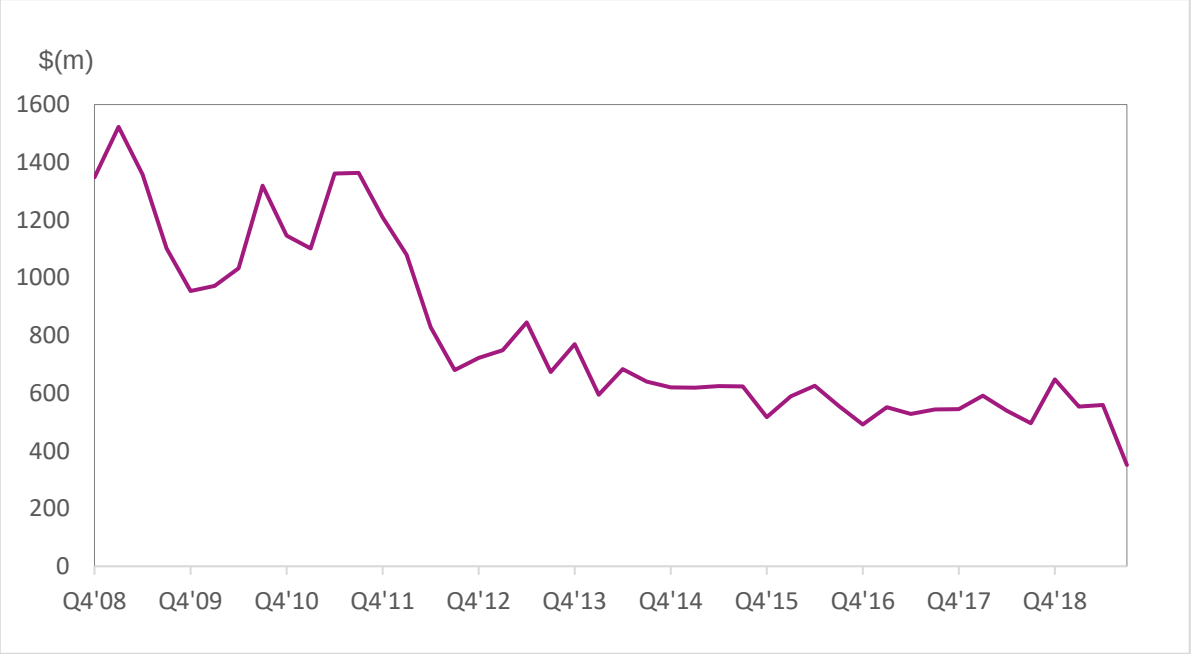
52 VAR measures change due to both the levels of inventory and the volatility of market factors. One factor leading to an increase in the measures in 2009 and 2010 is therefore due to the increased volatility of the market in the preceding period.

53 The relevant reforms here include the mandatory clearing of standardised over-the-counter (OTC) derivatives and the requirements for margin on non-cleared derivatives.

54 Broadly, these prohibited activities include dealing in financial instruments or commodities as principal, unless for hedging purposes. Dealings with central banks and market making in a narrow range of simple instruments, including the simplest derivatives, is permitted. There are also constraining limitations on exposures to other financial institutions, both within the RFB's group and outside it. See Part 2 of the Financial Service and Markets Act 2000 (Excluded Activities and Prohibitions) Order 2014 for details.

**Chart 1**: Total management VAR from market risk over time for the largest UK banks (top), and for the UK subsidiaries of the largest international banks (bottom[55])




## 6.4 Regulatory capital for market risk

One of the key components of regulatory capital is a requirement for market risk. This obliges firms to set aside capital based on regulators' assessment of the amount of market risk they are running. Until the end of 2011, these requirements for some predominantly large banks were based on VAR. After that, the package of reforms known as Basel 2.5[56] implemented key changes to these requirements,[57] introducing charges for additional risks. VAR tended to under-estimate risk in placid market conditions, leading to the

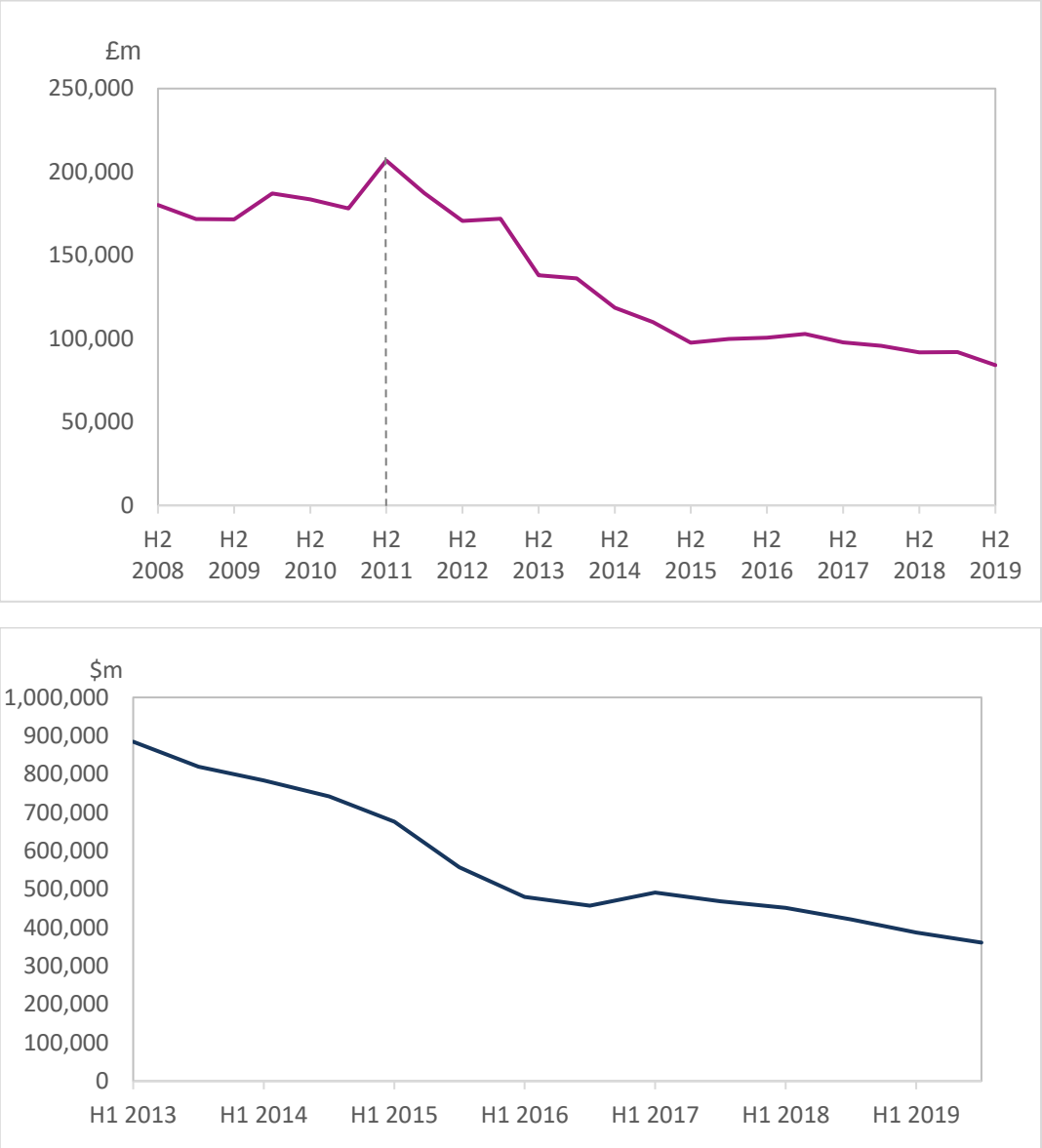
55 The source of data for the charts is questionnaire responses and Bank calculations. The charts show management VAR for trading risk. Firm VAR estimates have been scaled to a common standard of 99% confidence level and 10-day holding period. The UK bank data is the total for the four largest UK headquartered banks at the group consolidated level. The international bank total is for the UK subsidiaries of seven large international banks. For international banks, a small number of firms were not able to provide data for the period 2008–2012, so the total is likely to be under-estimated for that period.

56 See Basel Committee on Banking Supervision (2010) 'Revisions to the Basel II market risk framework'. Available at: https://www.bis.org/publ/bcbs193.pdf. This package imposed charges for default and credit migration risk in the trading book, and modified the capital framework for securitisations and correlation trading.

57 In the EU, these rules were implemented in the third Capital Requirements Directive (CRD III) of November 2010, which came into force on 31 December 2011.

danger that there was too little capital if markets became stressed. Basel 2.5 therefore supplemented it with a measure of risk in stressed market conditions: 'Stressed VAR'. Reflecting the fact that the trading book was an important source of losses during the 2008 crisis,[58] these reforms together increased market risk capital requirements by, on average, a factor of over two.[59] Finally, supervisors became more alert to the need for market risk models, such as VAR, to only be used where they were suitable, and for risks not in VAR to be properly captured. The PRA addressed this by restricting the scope of VAR models, requiring that the standardised approach for market risk was used for other portfolios, and by adding additional capital charges for risks not in VAR.

**Chart 2**: Total regulatory exposure (RWAs) for market risk over time for the largest UK banks (top) and for the largest international banks (bottom)[60]




58 For details of the sources of losses to authorised persons during the crisis, see Financial Services Authority (2010) 'The prudential regime for trading activities – a fundamental review'. Discussion Paper DP10/4.

59 The average increase was 224% and the median, 102%. See Basel Committee on Banking Supervision (2009) 'Analysis of the trading book quantitative impact study'. Available at: https://www.bis.org/publ/bcbs163.pdf.

60 The source of data for these charts is S&P Capital IQ, banks' public disclosures, regulatory returns, and Bank calculations. The data for the large international banks in the lower panel comes from public disclosures at the group level. These are not available pre-2013 for sufficiently many banks for the cohort to be meaningful, so only results from 2013 to the most recent available point are presented.

Table 6 shows the relative contributions of these different components of market risk capital requirements for the largest UK banks.

**Table 6**: The relative contributions of the different components of market risk capital requirements for the largest UK Banks[61]

| VAR-related (VAR, Stressed VAR, risks not in VAR) | Default risk in the trading book | Standardised approach |
|---|---|---|
| 52.9% | 13.5% | 33.6% |

The Basel 2.5 reforms generated an increase in the robustness of bank capital requirements for market risk and for credit risks in the trading book. Since market risk is one of the most important classes of risk for classic proprietary trading and market making activities, it resulted in substantially more capital supporting these activities. This, in turn, is likely to have contributed to firms' decisions to reduce their overall market risk levels, a finding confirmed by conversations with firms.

Chart 2 illustrates the aggregate level of market risk exposure (as measured by risk-weighted assets, or RWAs) for the banks with the largest trading books in the UK financial system.[62] The implementation date of Basel 2.5 is shown as a grey dashed line.

The increase in the market risk exposure measure following the implementation of Basel 2.5 can clearly be seen. However, after that date, there is a steady decrease in exposure for large UK banks, reflecting a decrease in overall market risk levels.

Chart 3 shows the trend in total market risk capital requirements across the largest UK subsidiaries of international banks. This shows one measure of the contribution to the market risk of the UK financial system from these firms. However, care is needed in interpreting this information. First, as noted above, capital requirements for market risk were amended to include additional charges, so the increase in the aggregate in H2 2011 is partly driven by this regulatory change. Second, most international banks have entities in a number of jurisdictions other than the UK. They may, based on business, regulatory, legal, and other factors, change where particular businesses are booked. If businesses that were booked outside the UK move to a UK subsidiary, this tends to increase the measure, while businesses moving out of the UK tends to decrease it. Thus, trends in the aggregate do not necessarily reflect changes in the total market risk taking by the relevant groups. Finally, as noted in footnote 52, changes in market risk capital requirements are partly driven by changes in market conditions, rather than the size of positions.

## 6.5 Other market risk mitigants

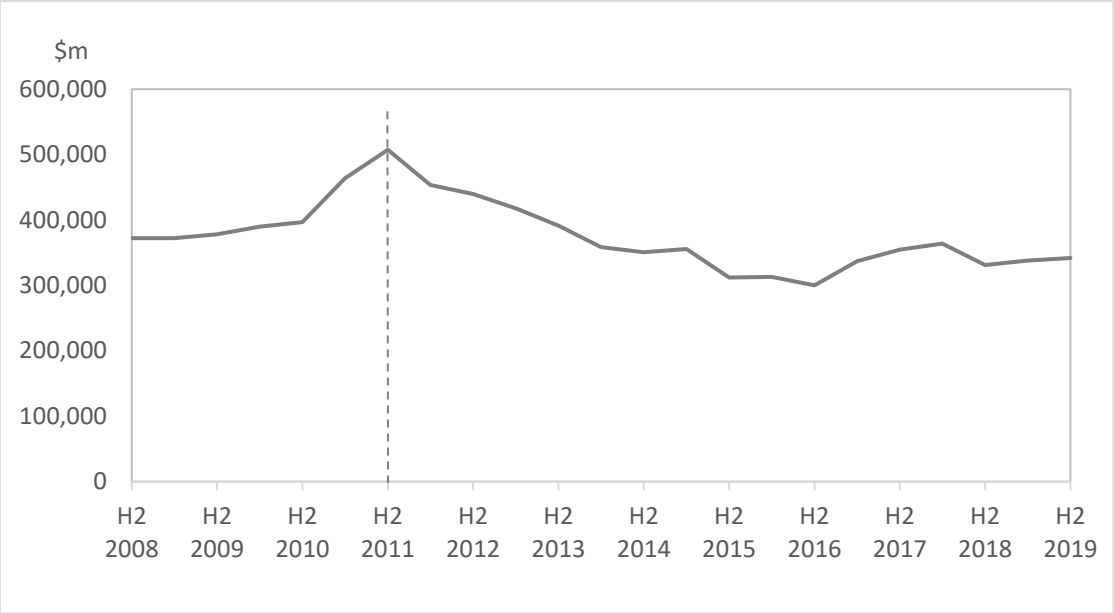
As noted in Chapter 5, the PRA places particular importance on firms' risk management frameworks and controls. These should ensure that firms have an articulated appetite for risk, know what risks they are taking, and can take mitigating steps quickly and effectively if risks crystallise. The PRA reviews these mitigants, consistent with its broader risk-based approach to supervision. In particular, for market risk, this review focuses on risk appetite definition, the measurement and reporting of risks, controls around risk taking, the appropriate delegation of authority, position valuation, and the use of internal models. Business model analysis is an important control too, as it reveals which business lines firms are putting more or less resources into, where profits and losses are coming from, and the assumptions underlying future expectations of profitability.

The 'Fundamental review of the trading book' is an important mitigant to market risk in banks and will be implemented in coming years. This is a planned revision to the market risk capital framework,[63] which will modify Pillar 1 capital requirements for market risk, enhancing the capture of market risks in the capital

61 Source: Regulatory returns and Bank calculations.
62 Capital requirements for market risk cover trading book activity, including classic proprietary trading, secondary market making/client facilitation, and primary market making in securities.
63 See Basel Committee on Banking Supervision (2019) 'Minimum capital requirements for market risk'. Available at: https://www.bis.org/bcbs/publ/d457.pdf.

framework. The key features of the fundamental review are a shift from VAR to expected shortfall, better capturing tail risks; a more risk-sensitive treatment of illiquid market risks; a revision to the scope of the internal models approach requiring evidence that they work well for all the trading desks to which models are applied; and a stricter definition of the trading book, giving banks less discretion about whether to attribute positions to the trading or banking book.

**Chart 3**: Total regulatory exposure for market risk over time for the largest UK subsidiaries of international banks[64]




64 Source: S&P Capital IQ, banks' public disclosures, regulatory returns, and Bank calculations.

# 7 The evolution of other aspects of banking regulation relevant to proprietary trading

This chapter summarises the evolution of banks' capital and capital ratios since the 2008 crisis. It also briefly introduces two aspects of prudential regulation that have developed significantly in recent years: liquidity policy and the leverage ratio. Reflecting the focus of this chapter on the second pair of proprietary trading activities, the investment of liquidity and banking book hedges, the capital requirements for banking book positions is discussed. The evolution of the PRA's supervisory practice for these risks is summarised. Finally, the effect of the UK's structural separation regime known as ring fencing is set out.

## 7.1 Overview of the evolution of available capital since the 2008 crisis

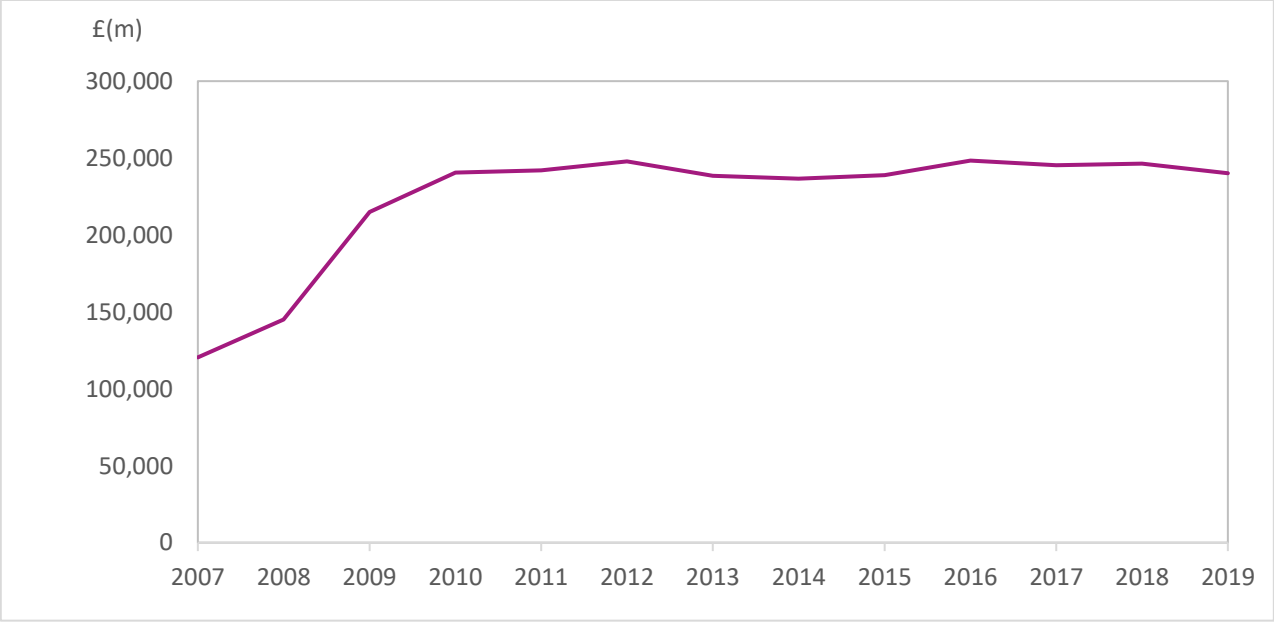
Banks issue a range of loss absorbing instruments or 'bank capital'. This can be divided into two main categories:

- 'Going concern' resources can absorb losses during business-as-usual, allowing the bank to continue to provide services to the economy; while
- 'Gone concern' resources can be used when a bank has failed, to ensure that the failure is orderly, does not result in further damage to the economy, and that the taxpayer is not forced to bail out the bank.

Going concern capital instruments are perpetual, payments on them are wholly at the discretion of the issuer, and they are subordinated to other instruments, while gone concern capital instruments are often dated subordinated debt with no discretion to cancel coupon payments.

Since the 2008 crisis, authorities in the UK, and at international levels, have worked to establish much higher standards for banks' going concern and gone concern resources. In particular, because common equity and retained earnings form the highest quality of going concern capital, authorities have focused attention on raising the amount of this form of bank capital, increasing the resilience of the financial system. A bank's Common Equity Tier 1 capital (CET1) is a measure of this form of highest quality loss absorbing capital resources. CET1 includes ordinary shares and retained earnings. Chart 4 shows how the aggregate amount of CET1 capital based on the definitions in force at a given point has evolved for the largest UK banks.

**Chart 4**: Total CET1 capital over time for the largest UK banks[65]




65 Source: Public disclosures.

Other forms of going concern capital include Additional Tier 1, which converts into ordinary shares or is written-down when capital ratios fall below a pre-specified trigger level. A bank's total going concern capital consists of its Tier 1 and Additional Tier 1 capital instruments.[66] In addition, banks are required to hold gone concern capital.

Another important regulatory change since the 2008 crisis concerns adjustments to regulatory capital. Before the crisis, adjustments to capital resources to reflect assets of questionable quality (such as goodwill) were applied to different tiers of capital. The regulatory reform known as Basel 3 applied such adjustments to CET1 capital in most cases. For instance, deferred tax assets rely on the future profitability of the bank to be realised, and thus prudence suggests that they should be deducted from capital. This policy change has further enhanced the loss absorbency of bank capital.

One of the indicators of the extent of bank proprietary trading monitored, for instance, by Belgian regulators is the ratio of the management VAR for market risk to banks' CET1 capital. They set dissuasive capital charges if this threshold exceeds 0.25%, as discussed in Chapter 4. Using the data from the last chapter, the ratio for large UK banks was calculated: the average was less than 0.1%, and the maximum for any one large bank did not exceed 0.15%. The Basel 3 adjustments to the definition of CET1 capital make this a more robust measure than hitherto.

## 7.2 Overview of the evolution of capital requirements

A key regulatory requirement for many years has been the requirement that banks have sufficient going concern resources to meet authorities' estimates of the risks that they are running. The regulatory framework defines a measure known as risk-weighted assets, which assigns weights to banks' positions to reflect their risk of incurring loss. The risk-weighted capital ratio for a bank is the ratio of a given measure of bank capital to RWAs. Thus, the CET1 risk-weighted capital ratio is the ratio of CET1 to RWAs.

Regulation sets minimum values for various ratios in two principal ways:

- 'Pillar 1' or minimum capital requirements apply to all banks, as discussed in Chapter 5. There is a requirement that CET1 must be at least 4.5% of RWAs at all times, and that total capital must be at least 8% of RWAs. There are also additional capital requirements in some situations. For instance, systemically important banks are required to hold higher capital buffers.
- 'Pillar 2' requirements are in addition to those in Pillar 1, and reflect risks to individual institutions not fully captured in Pillar 1.[67] Of particular relevance to proprietary trading is the treatment of market risk (including the risk of illiquid, concentrated, and one-way positions), counterparty credit risk, and interest rate risk in the banking book.

It is important to distinguish between regulatory requirements which bind at all times and those which establish buffers that can be used in times of stress. For instance, in addition to the 4.5% risk-weighted capital requirement, regulation requires an additional 2.5% of RWAs as a 'capital conservation buffer'. This is available to absorb losses without the hard minimum requirement being breached. An important consideration in buffer-setting is the capital adequacy of the sub-groups containing RFBs; an additional contribution to buffer requirements based on this 'RFB group risk' may also be imposed.

66 The current internationally agreed definition of capital is available at https://www.bis.org/basel_framework/standard/CAP.htm

67 The Pillar 2A charge also considers, among other risks, the risk to capital ratio caused if the numerator and denominator are in different currencies. For further details of the Pillar 2 framework see Statement of Policy, 'The PRA's methodologies for setting Pillar 2 capital', February 2020: https://www.bankofengland.co.uk/-/ media/boe/files/prudential-regulation/statement-of-policy/2020/the-pras-methodologies-for-setting-pillar-2a-capital-update-february-2020.pdf.

**Chart 5**: The CET1 risk-weighted capital ratio in aggregate for the largest UK banks, 2008 to 2019 on a consistent Basel 3 basis

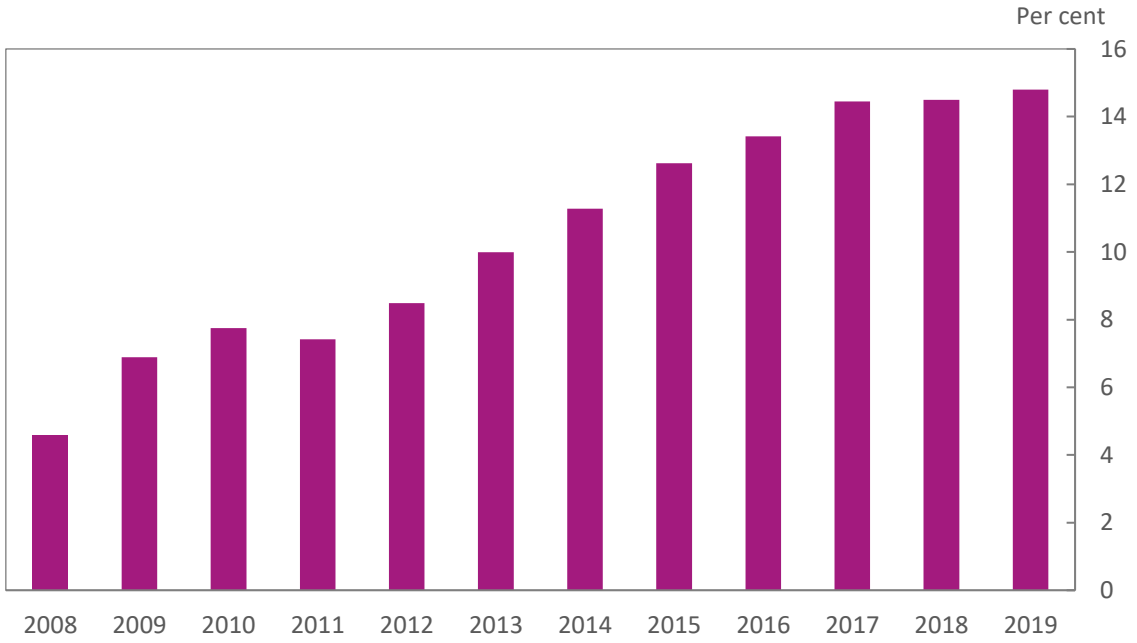



Chart 5 illustrates the evolution of the weighted average capital ratio of the largest UK banks.[68] The Bank of England's Financial Policy Committee considers that the appropriate level of Tier 1 requirements should be in aggregate 13.5% of risk weighted assets based on existing measures. This would be supplemented by additional time varying buffers to reflect changes in the aggregate risks that banks face, and by firm-specific buffers set by the PRA to address micro-prudential, idiosyncratic risks.[69] It can be seen that the measures taken since the 2008 crisis have significantly increased loss-absorbing capacity, including the capacity to absorb losses from proprietary trading (however defined).

Capital ratios in RFBs are at comparable levels. For instance, as at Q4 2019, the average CET1 ratio in UK RFBs was in excess of 14%.

The inference discussed in Chapter 6, that market risk taking has declined since the crisis across the largest UK banks, is supported by the breakdown of RWAs. Chart 6 shows a high-level split over time.

## 7.3 Liquidity regulation and liquidity portfolios

The 2008 financial crisis drove home the importance of liquidity to the proper functioning of financial markets and the banking sector. Prior to the crisis, asset markets were buoyant and funding was readily and cheaply available. Then, starting in 2007, some banks – despite meeting the existing capital requirements – experienced difficulties because they did not prudently manage their liquidity and funding. This episode showed how quickly liquidity can dry up and also how long it can take to come back. As a result, banks are, in general, more alert to market and funding liquidity risk than they were pre-crisis, and these risks are better mitigated.[70]

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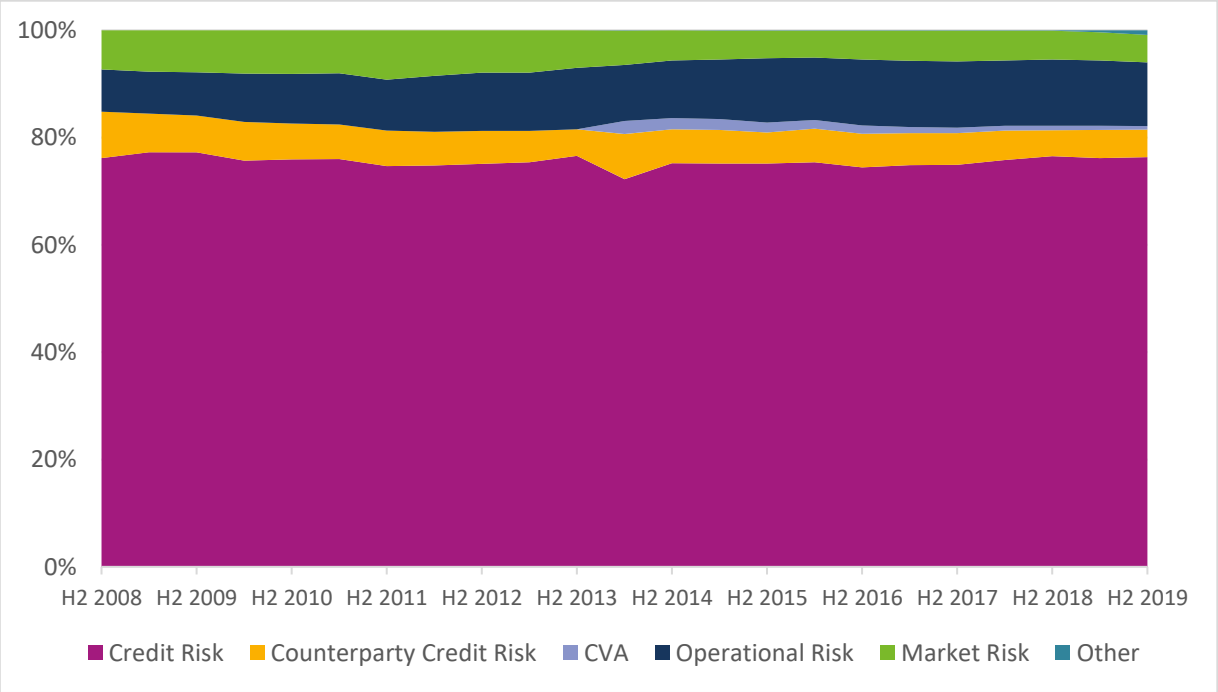
68 Since 2008, as summarised elsewhere in this report, both capital requirements and the definition of capital have changed materially. Therefore previous CET1 ratios are not directly comparable to current ones. The chart shown is adjusted for this effect: it shows average inferred CET1 ratios on a Basel 3 consistent basis.

69 For further details of historic trends in capitalisation and a discussion of methodology, see 'Financial Stability Report – July 2019'. Available at https://www.bankofengland.co.uk/financial-stability-report/2019/july-2019.. The time-varying (countercyclical buffer) component and the target capital ratio are discussed in the 'Financial Stability Report – December 2019'. Available at: https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2019/december-2019.pdf.

70 (Market) liquidity risk is the risk that a firm may not be able to sell an asset at close to the current market price. Funding liquidity risk is the risk that firms may be unable to meet their debts as they become due. These two risks are closely related, in that one way to raise cash to meet debts is to sell assets. Thus regulation has, among other things, focused on firms having a sufficient stock of assets that are not subject to market liquidity risk.

**Chart 6**: The aggregate makeup of capital requirements for the largest UK banks over time




Two regulatory developments buttress this. The liquidity coverage ratio (LCR) is a standard that requires banks to have a stock of unencumbered liquid assets that are cash or can be converted into cash quickly and at little or no loss of value.[71] This stock of assets is known as the bank's liquid asset buffer (LAB), as noted in previous chapters.

The LAB is calibrated based on liquidity needs over a 30 day period of stress. It should provide liquidity to meet outflows, giving time for appropriate corrective actions to be taken by management and supervisors, or so that the bank can be resolved in an orderly way.

Banks typically hold more liquid assets than the LCR requires. They may want to maintain 'headroom' above the requirement to ensure that their LCR remains above 100%. For some institutions, excess deposits above the demand for loans and other client-driven assets may mean that the LAB could be even larger than the institution would otherwise choose. For all these reasons, LABs are substantial for large institutions. As at December 2019, the total of the LABs for the largest UK banks exceeded £1 trillion.

Regulation requires that banks' securities holdings in LABs are high quality, liquid and diversified.[72] Firms should have in place appropriate internal limits and controls to ensure that they appropriately diversify LABs. In particular, they should be able to demonstrate that they can monetise LABs quickly, and that a significant loss of value cannot occur due to exposure to a common risk factor. These rules help to reduce the risk that LABs, despite their size, could be significantly affected by market movements.

The other major regulatory development in this area is the net stable funding ratio (NSFR). The NSFR requires banks to maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities. A sustainable funding structure is intended to reduce the likelihood that disruptions to a bank's regular sources of funding will erode its liquidity position in a way that would increase the risk of its failure and potentially lead to broader systemic stress. The NSFR limits over-reliance on short-term wholesale funding, a phenomenon that facilitated rapid balance sheet growth in banks before the crisis. The NSFR is not yet binding; the UK is in the process of implementation.

71 For further information on the LCR standard, see Basel Committee on Banking Supervision (2013) 'Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools'. Available at: https://www.bis.org/publ/bcbs238.pdf.

72 For further details, see Supervisory Statement 24/15 'The PRA's approach to supervising liquidity and funding risks', June 2015: https://www.bankofengland.co.uk/prudential-regulation/publication/2015/the-pras-approach-to-supervising-liquidity-and-funding-risks-ss.

The LCR has an impact on proprietary trading by banks. It sets a minimum size for banks' LABs in ordinary conditions. LAB assets that are held for the bank's own account count as proprietary trading positions under the statutory definition. These assets are, however, typically very high quality, both because banks need to be able to monetise them quickly and with high certainty of value, and because the LCR sets stringent requirements on which assets qualify for meeting the regulatory requirement. The highest quality instruments are known as 'Level 1 assets'. Table 7, setting out the composition of large UK bank LABs, is illustrative of the typical quality mix.

**Table 7**: LAB contents across large UK banks and RFBs as at December 2019

| Asset | Consolidated LAB | RFB LAB |
|---|---|---|
| Cash and CB reserves (£b) | 522 | 180 |
| Level 1 government bonds (£b) | 742 | 169 |
| Level 1 assets (cash + securities) as a percentage of total LAB | 95% | 99% |

## 7.4 Other long-term investments

Before the 2008 crisis, some banks had significant direct holdings in long-term or principal investments, notably in private equity. Much of this was reduced between 2010 and 2013. However, some UK firms do retain a private equity investment business line, and some firms maintain stakes in key partners or service providers.

One concern about private equity investments (and some other large positions) is their illiquidity. Therefore, the review requested information on significant principal investments. These were typically relatively small compared with banks' capital bases.

## 7.5 Trading book assets and the leverage ratio

Leverage is a measure of the ratio between an institution's assets and its equity. An underlying cause of the 2008 financial crisis was the build-up of excessive on- and off-balance sheet leverage in the banking system. In some cases, banks built up excessive leverage while apparently maintaining strong risk-based capital ratios. The assets accumulated made small contributions to capital requirements, allowing large amounts of them to be acquired. At the height of the crisis, market pressures forced the banking sector to reduce its leverage in a manner that amplified downward pressures on asset prices. This deleveraging process exacerbated the feedback loop between losses, falling bank capital and shrinking credit availability. As a result, regulators have introduced a leverage ratio for the most systemic firms, limiting the total stock of assets, as defined by regulators, to a fixed multiple of the bank's capital.[73]

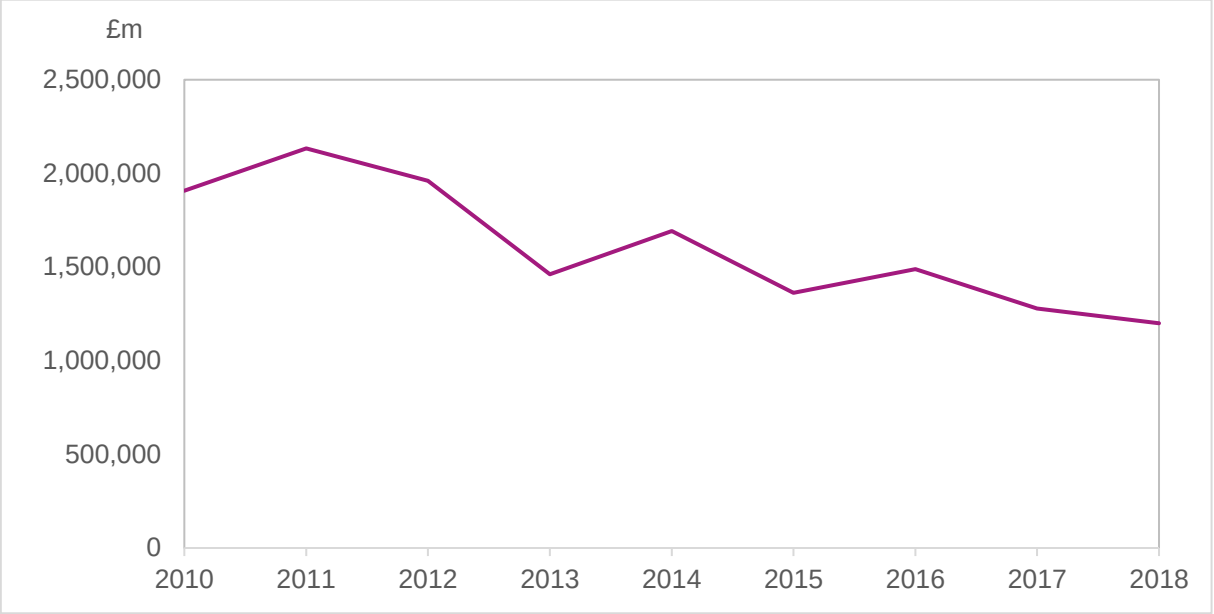
The leverage ratio is deliberately a risk-insensitive measure. It therefore acts as a backstop to the risk-based capital rules, guarding against the growth of assets on bank balance sheets that have small risk-based capital requirements but which might pose risk to the financial system.

In order to gain insight into the trading book, inspired by the same motivation as the leverage ratio exposure measure, the aggregate level of trading book assets for the largest UK banks was reviewed. Chart 7 shows the results. Like the risk-based measures discussed in the previous chapter, this shows a downwards trend.[74]

[73] For a discussion of the rationale for the leverage ratio, and the UK framework, see Policy Statement 'The Financial Policy Committee's powers over leverage ratio tools', July 2015: https://www.bankofengland.co.uk/statement/2015/the-financial-policy-committees-powers-over-leverage-ratio-tools.

[74] Trading book assets contain derivatives receivables, which change as risk factors move. Another large component for some banks is securities financing transactions. Like derivatives, these do not represent inventory owned outright. Thus, total trading book assets is a measure that blends contributions from various business lines.

**Chart 7**: Total trading book assets for market risk over time for the largest UK banks[75]




## 7.6 Risk-mitigating hedges and banking book capital requirements

A typical large retail bank, including a ring-fenced bank, would have a number of desks hedging risks arising from its client-facing activities. The biggest gross risk arising from these activities is usually interest rate risk in the banking book, largely coming from a mismatch between asset and liability durations. There are also risks arising from the management of the entity's LAB. In some cases, there may be material foreign currency assets or liabilities, or both, in the banking book, so there may be a need to manage cross-currency risks. Other risk types arise from banks' activities too, and these are often managed.

While hedging reduces some risks, it can also introduce others. There are a number of mitigants to these hedging-related risks. The first line of defence is the firm's own control framework for articulating its risk appetite, monitoring and managing risk, and reviewing the outcomes of hedging activity.

Another defence is the bank capital framework. Residual FX and interest rate risk after hedging are captured here. FX risk is capitalised under Pillar 1, while the PRA captures interest rate risk in the banking book in its Pillar 2 framework, as discussed in the next section.

## 7.7 Hedging interest rate risk in the banking book

The largest banks, almost by definition, have large banking books. In particular, they have substantial amounts of deposits and loans. Partly because many of the former pay rates of interest which can be thought of as linked to the Bank of England Base Rate, and many of the latter entitle the bank to receiving fixed payments, interest rate risk naturally arises.

The nature of interest rate risk in the banking book ('IRRBB') varies significantly from bank to bank due to differences in their assets and liabilities. Reflecting this diversity, firm practices in this area are not uniform either. There are differences in risk management practices, in delegated authority to hedging desks, and in information on the use of discretion and the performance of hedging being gathered and reviewed by senior management.

The PRA's approach to IRRBB, as to other risks, is to expect firms to manage their risks according to their board-approved risk appetite. International regulatory standards for IRRBB have developed relatively recently, and as part of its implementation of the EU Capital Requirements Directive 'CRDV' the PRA is planning to consult in autumn 2020 on supervisory requirements to measure, monitor, and control interest

75 Source: Regulatory returns and questionnaire responses.

rate risk in the banking book.[76] The PRA will also continue to review firms' practices, and will consider if further action is needed in this area using the tools available to it under Pillar 2 and the SMCR.

## 7.8 The evolution of supervisory practice

Bank supervision has evolved substantially since the 2008 crisis. One important step was the launch of the Supervisory Enhancement Program by the Financial Services Authority in 2008. This was followed by the government's overhaul of UK financial regulation, which included the formation of the PRA within the Bank of England. The PRA is responsible for the prudential supervision of deposit takers, insurers, and designated investment firms. The supervisory approach evolved further as the PRA developed, but the core of the approach – judgement-based, forward looking supervision, focused on key risks – remained constant.[77] In addition, as noted in Chapter 2, the evolution of system-wide risks within the banking sector and the wider financial sector as a whole is considered by the Financial Policy Committee of the Bank of England.

Supervisory approach documents issued by the PRA since its creation describe how it supervises firms and reflect how this has evolved over time. Changes include developments in the risk-based capital regime, liquidity regulation, and the introduction of the leverage ratio, as discussed in Chapter 5. Another key change is the introduction of a Bank of England-designed stress test to measure the resilience of banks to adverse scenarios like severe recessions. These help the authorities to understand individual and systemic vulnerabilities, including those created by proprietary trading. The results of them are used to inform the PRA in determining banks' capital levels. These developments are supported by enhanced regulatory reporting, giving the PRA additional information about banks' risks.

## 7.9 Structural separation in the UK

The UK bank ring-fencing regime commenced on 1 January 2019. By this date the largest UK banks had separated core banking services from other functions such as investment banking. Banking groups have had some discretion when deciding how to comply with these ring-fencing requirements, as there are some activities which can sit either side of the ring-fence. As a result, some groups have restructured so that the vast majority of their business will sit within their ring-fence, with only a small amount of prohibited activity sitting outside, while others have chosen to place a significant amount of activity outside their ring-fence.

This diversity of approach is however constrained by legislation. In particular, ring-fenced banks are prohibited from carrying on 'excluded activities'.[78] Specific prohibitions include some activities falling within the statutory definition of proprietary trading, such as dealing in investments or commodities as principal. This prohibition is subject to certain exemptions. The most material relate to the issues discussed elsewhere in this report: hedging and LABs. There is also an exemption relating to the use of collateral by RFBs.

Throughout ring-fencing implementation, the PRA has reviewed RFBs' use of exceptions, including detailed reviews of RFBs' exceptions policies. In the PRA's view, the hedging exceptions are important, as they allow RFBs to manage the financial risks on their balance sheet prudently, and hence they are expected to enhance safety and soundness. In particular, the vast majority of the hedging exceptions used by RFBs were those relating to hedging changes in interest rates and hedging changes in exchange rates, supporting the view that these exceptions are primarily used to hedge core retail banking activity. Consistent with the discussion elsewhere in this report, RFBs also use the liquid asset exception, which allows them to hold liquid assets and manage their liquidity.[79]

The legislation also provides exceptions to the excluded activities and prohibitions to permit RFBs to provide certain services to its customers that it would otherwise be prevented from providing, for example,

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76 See Consultation Paper 'Capital Requirements Directive V (CRD V)', July 2020: https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/consultation-paper/2020/cp1220.pdf

77 More details on the PRA supervisory approach are set out in the PRA's 'Approach to banking supervision': https://www.bankofengland.co.uk/prudential-regulation/publication/2018/pra-approach-documents-2018.

78 See The Financial Services and Markets Act 2000 (Excluded Activities and Prohibitions) Order 2014.

79 RFBs also used the exceptions available to them that permit dealing in investments for the purpose of providing collateral in connection with a transaction or transactions, the sole or main purpose of which is to hedge risks. These exceptions were most commonly used by RFBs to hold collateral associated with derivatives transactions and, in particular, derivatives transactions used for the purpose of hedging changes in interest rates and changes in exchange rates.

market making in simple derivatives. Not all RFBs utilise these exceptions. Where an RFB is making use of the exceptions to make markets in simple derivatives, this activity is restricted by the firm's risk appetite and by volume and risk limits defined in the ring-fencing legislation.

Broadly, then, ring-fencing has resulted in a structural separation in banking groups, with core banking functions carried out in a separate entity to other functions, including investment banking. There is activity falling within the statutory definition of proprietary trading within the RFB, but it is not classic proprietary trading. Rather, it is hedging activity, LAB holding, and some market making in simple instruments. Therefore, on balance, we believe that proprietary trading does not pose a material threat to the safety and soundness of RFBs. Table 8 compares the UK's ring-fencing approach with the policies from four other countries, as discussed in Chapter 4 of this report.

**Table 8**: Summary of some post-crisis policy measures relating to proprietary trading by banks

| Measure | Example of a country using this measure | Summary/Comments |
|---|---|---|
| Ban on classic proprietary trading | USA (Volcker Rule), Germany | In the U.S., RENTD separates market making from classic proprietary trading; exemptions permit treasury functions and hedging activity. In Germany, classic proprietary trading is banned for large banks with supervisory discretion for smaller banks |
| Structural separation of classic proprietary trading | France | Relatively narrow scope of activities separated; treasury functions and hedging remain in the main banking entity |
| Monitoring of indicators of proprietary trading with disincentives | Belgium | High level indicators (eg trading book assets/total assets, trading VAR/CET1 capital) used to monitor extent of proprietary trading with capital surcharges if thresholds are exceeded |
| Structural separation of retail banking | UK – ring-fencing | Retail banking separated from investment banking; retail bank manages its own hedging and treasury functions, and can engage in limited market making |

# 8 Other consequences of the evolution of proprietary trading

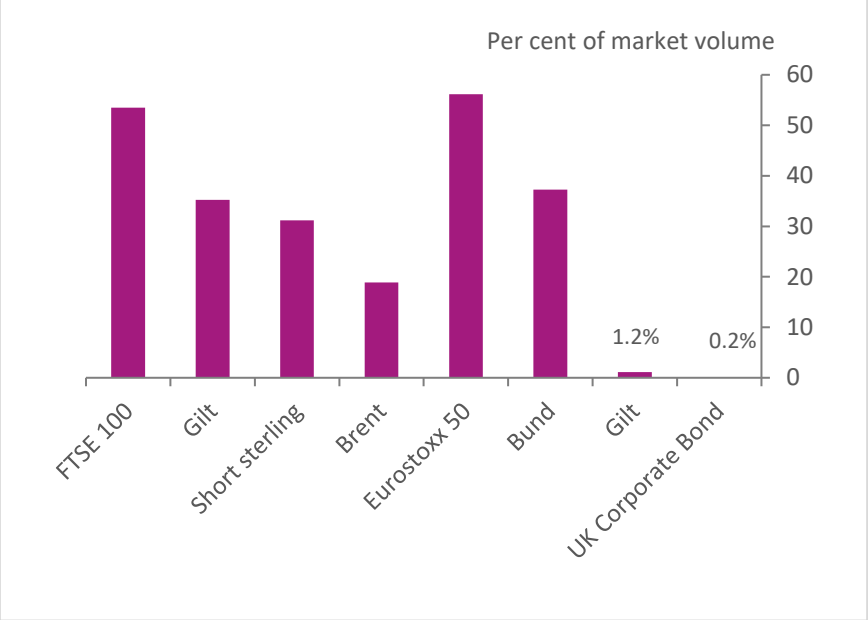
This chapter discusses some of the consequences of the reduction of classic proprietary trading in the banking system. Some aspects of risk which were not discussed in prior chapters are also considered here.

## 8.1 Market making and classic proprietary trading by non-banks

There is good evidence that some of the classic proprietary trading activities which, before the crisis, were conducted in banks, are now largely conducted within the non-bank financial sector, often by hedge funds and principal trading firms. This is supported both by market intelligence and by the growth of hedge fund assets under management.

Relatedly, Principal Trading Firms (PTFs) are becoming increasingly prevalent participants in some markets, especially those which trade electronically. PTFs are a diverse set of smaller, non-bank firms that typically deploy automated trading strategies on electronic trading venues, often at much faster speeds than market participants who do not use these techniques. PTFs have become substantial short-term liquidity providers in many markets, as Chart 8 illustrates.[80]

**Chart 8**: Principal trading firms' share of market volume in different markets[81]




Although the trends highlighted in previous chapters have reduced the direct exposure of the UK banking sector to classic proprietary trading risks, as the Bank of England's Financial Policy Committee has highlighted, the changing nature of market-based finance, and in particular market liquidity provision, exposes the financial system as a whole to new risks. These include evolving market dynamics, potentially including a larger risk of sudden or 'flash' events and risks arising from the concentration of liquidity and service provision in a smaller number of players, as well as other risks discussed further below.[82]

80 The hedge fund association reports a growth of hedge fund assets under management from less than $1.5 trillion in 2008 to over $3 trillion in 2017. While the set of asset managers termed 'hedge funds' is not precisely fixed, other sources agree with this general trend, for example Barclayhedge quotes $1.45 trillion at the end 2008 and $3.05 trillion in Q3 2019.

81 Source: DTCC Derivatives Repository Ltd., ICE Trade Vault Europe Ltd., UnaVista Limited, and Regis-TR S.A. Trade Repositories; Bloomberg; FCA transaction data; and Bank calculations. Data shows the average share of total market volume for October and November 2018, except gilt futures, which use the period 1 October 2018 to 23 November 2018 to avoid the futures roll. The first six items are futures in the asset shown: the last two are the bonds themselves.

82 For a further discussion of the role of PTFs and the analysis supporting Chart 8, see the resilience of market-based finance section of 'Financial Stability Report – July 2019. Available at https://www.bankofengland.co.uk/financial-stability-report/2019/july-2019.

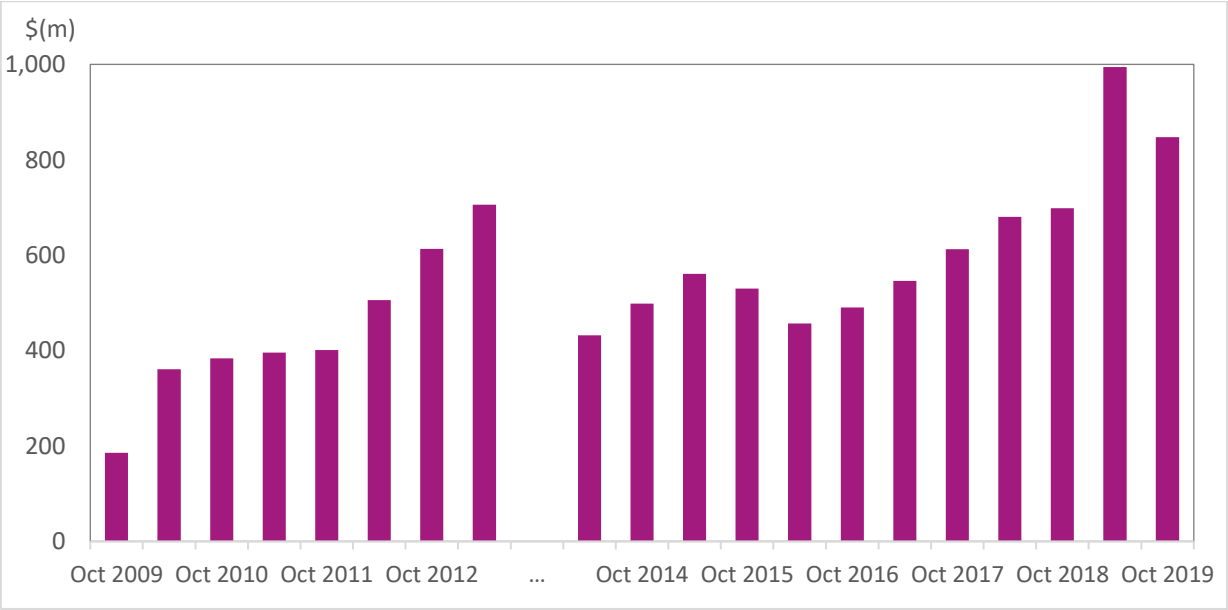
## 8.2 Arbitrage opportunities and market quality

One of the consequences of the migration of proprietary trading activity from banks to hedge funds has been decreased direct market risk taking within the banking sector. However there are also other consequences, notably for market dynamics.

It is important to note in this context that hedge fund strategies often rely on leverage. This leverage is typically provided by a bank as part of a prime brokerage relationship, as discussed in Chapter 2. Therefore, many hedge funds' ability to arbitrage markets depends on the price and availability of leverage. To see this in a concrete situation, consider the arbitrage between government bonds and futures contracts on those bonds. Suppose futures are expensive compared to the price expected, given where the bonds are trading and the level of interest rates. In order to exploit this opportunity, a hedge fund will want to sell the futures and buy the bonds. However, in order to earn an acceptable return, it would typically want to employ leverage, using the bond repurchase (or 'repo') market to borrow more bonds than the capital available to support the strategy. This in turn depends on the funds' prime brokers' willingness to provide repo capacity for the duration of the trade at a cost that makes the trade profitable.

Given some hedge funds use of repo for leverage, the volume of bank leverage-creating repo activity is another indicator of the growth of hedge fund activity. Chart 9 illustrates the levels of leverage-creating repos (known as 'reverse repos') with hedge funds as reported by banking groups in voluntary surveys.

**Chart 9**: Amounts of bank reverse repos with hedge funds[83]




The willingness of market participants to engage in arbitrage activities helps to support efficient market functioning. The hedge fund engaging in bond futures arbitrage discussed above would, for instance, help to keep the relationship between the price of the bond and that of the future within a channel around the expected relationship. The width of the channel would depend on the costs of entering into and exiting the arbitrage trade and the funds' target return on capital.

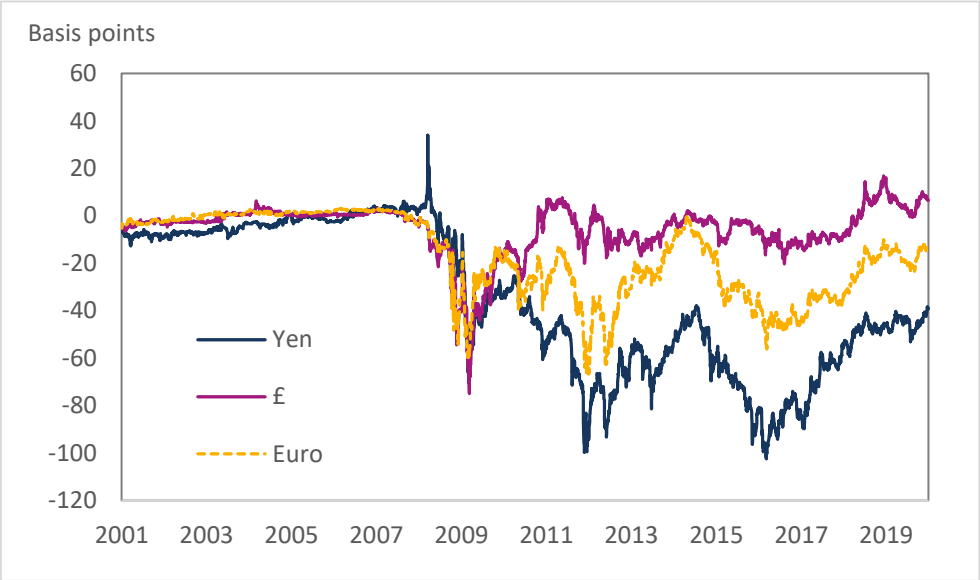
Since the 2008 crisis, there has been a growing understanding of the true economics of arbitrage trades and their risks, including liquidity and funding risks. Before the crisis, for instance, a market participant might have entered into the bond futures arbitrage discussed above without considering repo cost and availability, and a bank proprietary trading desk would typically not have been dependent on repo funding in the way that most hedge funds are. Hedge funds also tend to be more aware of the need for each trade to achieve a target return on equity deployed than some bank proprietary trading desks were pre-crisis.

83 Source: Calculation based on the hedge fund as counterparty survey data. No data is available for October 2013.

The increased role of hedge funds, the way arbitrage trades are now analysed, and hedge fund dependence on funding markets all have consequences for market relationships. In general, arbitrages have to be more profitable before they are exploited than was the case pre-crisis.

In some circumstances, the amount of risk capital available to exploit an arbitrage is not sufficient to keep the relationship between financial variables close to the expected one. A good example can be found in the pricing of cross-currency swaps. A cross-currency swap is an agreement in which two parties borrow from each other in different currencies. They are typically used to raise foreign currencies, so that for instance a corporate that naturally borrows in Sterling might lend those pounds to a financial institution in exchange for US Dollars.

**Chart 10**: Cross-currency basis swap spreads[84]




Theory suggests that the prices of cross-currency swaps depend on forward FX rates and the interest rates in the two currencies. However, in practice there is a spread between the expected price and the market price. Since the 2008 crisis, this spread for various currencies against the US Dollar has been economically significant and material, as Chart 10 illustrates.[85]

The detailed reasons for this deviation are complex and outside the scope of this report, but as with any arbitrage, the overall picture is that typically individual market participants will decide how much risk capital to commit to an arbitrage based on which trades are within their legal mandate and operational capacity, the attractiveness of the arbitrage given the expected period for profits to be realised, and competing opportunities. Against this is the flow of funds from market participants who are engaging in activities that widen the arbitrage, for instance trading one or other leg of it. If the (leveraged) risk capital available to narrow the arbitrage is small compared with the flow of funds which acts to widen it, then the arbitrage may not close. This has been the case for the cross-currency basis, where the flows of parties seeking to borrow US Dollars against Yen, Sterling and Euros has been large compared to the risk capital of those willing and able to close the cross-currency basis. This lack of exploitation of the arbitrage in turn has consequences for those seeking to borrow US Dollars: the existence of an economically material cross-currency basis means that those firms needing to borrow US Dollars pay a premium to do so.

The evidence of the effects of post-crisis regulation on market liquidity is mixed, and market dependent. In some cases, more binding regulatory constraints 'appear to have had a negative impact on market and

84 Source: Bloomberg data and Bank calculations.
85 For a discussion of the theoretical relationship and the magnitude and causes of the deviations of the actual relationship over time, see Borio, C., McCauley, R.N., McGuire, P. and Sushko, V. (2016) 'Covered interest parity lost: understanding the cross-currency basis'. *BIS Quarterly Review*. Available at: https://www.bis.org/publ/qtrpdf/r_qt1609e.htm.

funding liquidity and liquidity creation',[86] while in others 'regulatory intervention does not appear to have produced structural deteriorations in market liquidity'.[87]

A particular concern is the quality of market liquidity during stress, as this is when the impact of poor market quality is likely to be greatest.[88] Therefore, it does seem likely that market liquidity in some areas has declined, perhaps partly as a result of regulatory intervention discouraging trading activity within banks, and that this may have an impact on market quality.

## 8.3 Counterparty credit risks arising from exposures to firms engaging in proprietary trading

Like market risk, the counterparty credit risk that arises in banks' derivatives or securities financing transactions attracts capital requirements. The amount of regulatory capital that banks are required to hold against this risk reflects both the volatility of the underlying market risk factors and the credit risk of the counterparty. These requirements have been strengthened significantly since the crisis in a number of steps. Therefore, while counterparty credit risk capital requirements are a measure of banks' exposure to their counterparties, their evolution over time reflects changes in policy as well as changes in the underlying risks. Currently, counterparty credit risk and CVA capital requirements together are typically of the same order of magnitude as market risk capital requirements for large UK banks. Data showing the breakdown as at the end of the second quarter of 2019 is presented in Table 9, while Chart 11 shows the evolution.

**Table 9**: The fraction of total regulatory exposure (as measured by RWAs) from market, counterparty credit and CVA risk for large UK banks[89]

| Measure | Fraction of Total Regulatory Exposure |
|---|---|
| Market risk | 5% |
| Counterparty credit risk | 5% |
| CVA risk | 1% |

The fact that classic proprietary trading strategies are now mostly conducted within the non-bank financial sector is broadly positive for banks' safety and soundness, as it means that the exposure of banks to the direct risks of classic proprietary trading is much reduced. However, there is an indirect channel of exposure. This occurs via collateralised lending as part of prime brokerage relationships, as discussed in the previous section.[90] This means that banks have some exposure to classic proprietary trading via their lending to hedge funds engaging in this strategy. Since this lending is typically well-collateralised, this channel is not as concerning as direct exposure would be, but nevertheless it can lead to losses.[91] Even where leverage is not provided, banks may nevertheless have exposure to hedge funds, for instance through the provision of clearing and settlement services.

86 Crump, R.K. and Santos, J.A.C. (2018) 'Review of New York Fed Studies on the Effects of Post-Crisis Banking Reforms'. *Federal Reserve Bank of New York Economic Policy Review*, 24(2), pp.71–90.

87 Trebbi, F. and Xiao, K. (2017) 'Regulation and market liquidity'. *Management Science*, 65(5).

88 See Bao, J., O'Hara, M., and Zhou, X(A) (2018) 'The Volcker Rule and corporate bond market making in times of stress'. *Journal of Financial Economics*, 130(1), pp. 95–113. The authors find that the illiquidity of stressed bonds has increased since the advent of the Volcker Rule in the United States. Note however that there are various dimensions to market quality, including the size of bid/offer spreads, the price impact of a trade, and market depth. Different measures may react differently to periods of stress, making general statements about changes in market quality problematic.

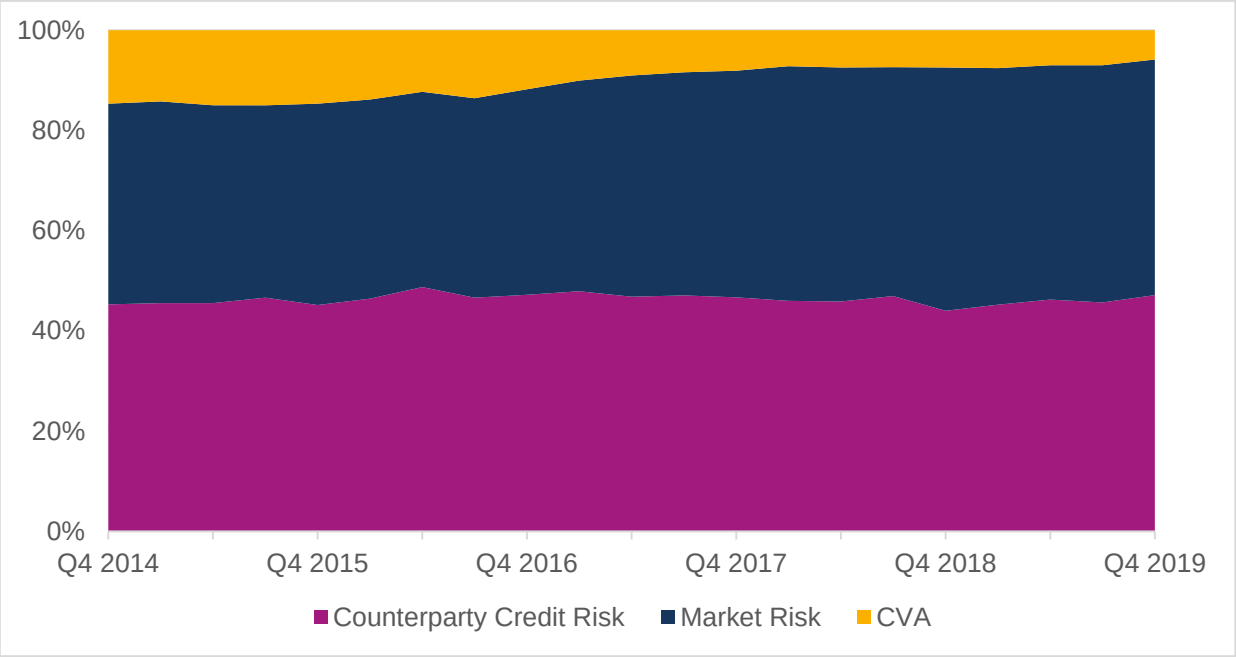
89 Source: Regulatory returns.

90 For supervisory work on the adequacy of collateral in this area, see Financial Stability Board (2013*)* 'Oversight and Regulation of Shadow Banking: Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos'. Available at: https://www.fsb.org/wp-content/uploads/r_130829c.pdf

91 A well-known example of the risks of exposures to hedge funds is the near-failure of Long-term Capital Management (LTCM). This was a large and highly leveraged hedge fund that became stressed in 1998 during a period of market turmoil following the 1997 Asian financial crisis and the default of Russia in early 1998. The fund was bailed out in a rescue organised by the Federal Reserve Bank of New York which involved contributions from fourteen large banks, all with exposure to the hedge fund, and many of whom were also involved with managing the firm's portfolio during its recovery. The ultimate losses of $4.6 billion were very close to LTCM's capital of $4.7 billion, indicating the extent of the leverage employed.

Relatedly, although on a smaller scale, banks are also short-term funding providers for private equity funds. Like prime brokerage, this is typically substantially less risky than a direct exposure to the fund, but it does entail some risk.

**Chart 11**: The relative sizes of market risk, counterparty credit risk, and CVA risk exposures over time for the largest UK banks[92]




## 8.4 Other aspects

There are various aspects of risks that can arise in proprietary trading that are typically less prominent than the conventional market, counterparty credit, and operational risks discussed in previous chapters, but which can be important.

A good example is intra-day risk. This is not strictly a new risk, but rather a way that risk manifests itself through time. Firms can acquire significant trading positions during the day. These can possibly be in excess of their risk appetite, since firms' risk monitoring systems are not fully real time, so these risks can be less well monitored than those that are present at the end of the trading day.

A particular case of this arises in algorithmic trading. In this form of trading, a program is directly connected to an electronic market, and executes transactions with limited human oversight. In this setting, errors in algorithms can lead to a firm having a position which it did not intend to have, and this can lead to significant losses, especially if liquidity is poor when the position is liquidated.[93]

The PRA has set expectations for PRA-authorised persons around algorithmic trading risk oversight and management. It has conducted a number of firm and cross-firm reviews, followed by the issuance of Supervisory Statement 5/18 'Algorithmic Trading' in June 2018. The latter sets out the PRA's expectations in the areas of algorithm governance, approval, testing and deployment processes, inventories, documentation, risk management, and other systems and controls functions. A key issue for both algorithmic and other forms of intra-day risk taking is the visibility of these risks to firms' control functions. The PRA continues to monitor progress both within and across firms in mitigating the risks arising from these activities.

92 Source: Bank public disclosures, regulatory returns, and Bank calculations.
93 Errors in algorithmic trading systems can cause large losses, as demonstrated by Knight Capital's experience in 2012. Here failure to correctly update all of the firm's servers resulted in millions of unintended trades over the course of 45 minutes, leading to a $440 million loss for the firm.

## 8.5 Covid-19-related observations

As noted in Chapter 1, much of the work presented in this report is based on data pre-March 2020. This section reports observations from the period after this, which will be referred to in short as 'Covid-related'.

There were significant market moves in the Covid-related period. There included stock market and commodity price falls, cancellations of dividends, increases in credit spreads, and declines in market liquidity. These moves sometimes generated significant profits and losses for banks. A number of phenomena were observed:

(i) *Market dislocations and declines in market quality leading to large profits and losses on hedged positions*. Relationships between market variables that were usually sustained by arbitrage activity sometimes failed. A good example was in the gold market. The relationship between physical gold referencing the London Bullion Market convention of 400oz bars and gold futures traded on the Comex Exchange in New York, and referencing 100oz bars is usually kept in check by the ability to smelt the larger bars into smaller ones and deliver them in New York. The suspension of flights and reduced smelting capacity meant that this was no longer possible. The two prices diverged with gold futures on Comex trading at the highest premium to the London spot price in over 40 years in late March 2020. This in turn led to significant profits and losses for some market participants whose hedges relied on the usual relationship between the spot and futures prices continuing to hold.

(ii) Another financial instrument that showed significant dislocations was the benchmark West Texas Intermediate (WTI) oil future. Here the spread between shortest dated future (the 'front month') and the next future reached unprecedented levels. The front month traded below zero for a short period. This led to significant profits and losses on positions which relied on the usual relationship between the front month WTI future and other WTI-related financial instruments. Certain exchange traded products, whose value could not fall below zero, were also affected.

(iii) *Under-hedged risk factors*. Some client activity involves taking positions that are difficult to hedge. In other cases, banks decide not to fully hedge risks even though it is possible to do so, as taking them is within their risk appetite, the cost of hedging is large, or the risk of large changes in the relevant risk factors is judged to be small. Market stresses can challenge this approach.

This was the case in Covid-related markets with dividend risk. Many banks trade in structured equity investments, either selling them directly to their clients or providing hedges to other banks that do. These instruments typically involve exposure to the level of the dividend yield on one or more indices. The average dividend level of an index tends to move slowly. It can be hedged for some indices, but not for others. Banks' structured equity derivative hedge strategies take these factors into account, and thus can be challenged by large, sudden moves in expectations of future dividends, by cancellations of announced dividends, or by failures of dividend hedges to track actual exposures. All of these things happened in Covid-related markets, and as a result there were significant losses in some banks' structured equity derivatives books.

(iv) *Increases in counterparty credit risk*. Some banks had substantial exposures to firms that were particularly exposed to Covid-related conditions. The credit spread of many of these firms increased materially, and their underlying credit quality declined. This created losses both due to increasing provisions and due to remarking of exposures, including CVA.

(v) *The role of leveraged investors*. The system of market-based finance relies on a series of connections between market participants. The system relies on these connections continuing to function, even in stress. However, as noted earlier in this chapter, some important non-bank participants in some markets are leveraged, and thus connections involving them can be

challenged by a withdrawal of leverage. Some withdrawals were observed in the early stage of the Covid-related stress during an episode known as the 'dash for cash', as substantial precautionary cash holding was observed and repo funding became challenging. In response, major central banks eased policy. The Bank of England took various steps, including providing liquidity backstops to mitigate the effects of strains on the supply of credit to households and businesses.[94] Together, these interventions were effective in stabilising the financial system.

(vi) *Profits from market making and other forms of client servicing during volatile conditions*. Many banks have reported unusually high trading revenues during the Covid-related period as a result of market volatility and high client demand.

These observations further support the view discussed in earlier chapters that, notwithstanding the reduction in proprietary trading activity by banks, various forms of customer facilitation involve taking risks, and that hedging these perfectly is often impossible or impractical, so significant profits or losses are possible at banks, especially in volatile market conditions. Moreover, while the changing nature of banks' participation in market-based finance markets has resulted in lower market risk (as measured by VAR, for instance), it has changed the nature and risks of these markets.

[94] For more details, see the following Bank of England press releases: 'Coordinated central bank action to further enhance the provision of global US dollar liquidity' (20 March 2020); and 'Bank of England announces supervisory and prudential policy measures to address the challenges of Covid-19' (20 March 2020).

# 9 Analysis and conclusions

This chapter sets out the PRA's conclusions in relation to the issues that this report is required to address under the 2013 Act. On the fundamental question of whether further restrictions on proprietary trading by banks ought to be imposed, it is concluded that, at this time, the evidence suggests that they should not.

## 9.1 The extent to which relevant authorised persons engage in proprietary trading

Evidence of a substantial amount of classic proprietary trading conducted by relevant authorised persons has not been discovered. This is partly because bank shareholders value stable revenues, and classic proprietary trading sometimes does not reliably generate these. Moreover, post-crisis banking regulation has substantially increased the capital required to support classic proprietary trading, further reducing its attractiveness as an activity for firms subject to capital regulation.

There is evidence that other activities falling within the statutory definition of proprietary trading are substantial for some firms, but these activities arise in the context of the wider business needs of the firms concerned. Many firms, especially larger firms, continue to serve their clients through market making and related activities. Firms' liquid asset buffers (LABs) hold material amounts of financial instruments, although these are largely cash, central bank reserves, or low risk government bonds, and interest rate risk in the LAB is often largely hedged. Furthermore, firms hedge the risks arising from serving clients in both trading and banking books through own-account positions in financial instruments and commodities.

## 9.2 Does proprietary trading give rise to any risks to safety and soundness?

As discussed in Chapter 3, the various forms of proprietary trading give rise to risks, including market risk, counterparty credit risk, and operational risk. The relative sizes of the risks generated depend on the precise nature of firms' activities. These risks are mitigated by capital and liquidity requirements and by firms' controls, among other things. For both large UK-headquartered banking groups and RFBs, regulatory capital requirements for each of these risks are small contributors to total capital requirements, reflecting their relative unimportance for these firms.

## 9.3 Are any kinds of proprietary trading particularly likely to give rise to risks?

Classic proprietary trading and market making both give rise to similar risks, including market risk and often counterparty credit risk. Analysis of firms' risk reporting and the capital requirements for these risks does not suggest that they are large enough to pose substantial risks to the safety and soundness of banks. Moreover, supporting the view that own-account risk taking in the trading book does not fit well with most banks' current business models, these risks have declined within the banking sector since the 2008 crisis. Ring-fencing means that, where own-account investment banking activity does take place, it does not endanger the provision of core banking services.

The operational risks arising from classic proprietary trading and market making do not always vary with the extent of market or credit risk taking in firms. For instance, as soon as trading infrastructure is available, there is the operational risk that a firm may acquire a position that it did not intend to take and that falls outside its risk appetite. Operational risks are partially mitigated by firms' controls and capital requirements, but history suggests that when operational risks crystallise in trading businesses, the resulting losses can be significant.

Firms' hedging activities and liquidity investments are substantial and have not declined in the way that market risk has. These activities are intended to reduce rather than to increase risk, and there is good evidence from both regulatory and firms' own risk measures that they typically do so. However, the sheer size of some of these activities in some banks means that, while they usually offer a net benefit in risk reduction to the firm conducting them, if they were to go awry, the impact on the firm could be material. The London Whale Incident, discussed in Box 6, is an example of how losses can arise here.

## 9.4 Steps taken by the PRA to minimise the risks to safety and soundness arising from proprietary trading and the difficulties faced

As discussed in previous chapters, the PRA has a range of supervisory and prudential tools to address the risks arising from proprietary trading within the UK banking sector. There has been substantial change in these areas since the 2008 crisis, including higher expectations of firms' governance, controls, and risk management; closer, more risk-based supervision; and higher capital and liquidity requirements. Different tools take more or less prominent roles depending on the risk here. For instance, relatively easy to quantify financial risks such as market risk are often suited to financial mitigation through capital requirements, although of course supervisory tools are needed too, to mitigate the risk that the firm is not measuring the risk correctly.

Sound controls should ensure that firms know their proprietary positions, however they arise, and that the risk estimates reported to the firm's management and used for regulatory capital calculation are accurate. There is a clear expectation that the management is responsible for the articulation of the firm's risk appetite and for the management of risks within that appetite. In particular, prudent management of capital and liquidity should ensure that the firm's positions can be carried for as long as necessary and that unexpected losses can be absorbed without decreasing the firm's ability to provide critical economic services.

Many of the financial risks considered important by the PRA are treated in Pillar 1 under internationally standardised bank capital rules. However this is not the case for all risks. Interest rate risk in the banking book is a good example. This does not attract a Pillar 1 charge under the Basel Accords, and instead is addressed by the PRA in Pillar 2. Pillar 2 is, of necessity, less standardised and less frequently calculated than Pillar 1. Therefore, while the PRA has tools available to tailor capital requirements to particular situations, the application of these tools varies somewhat across risk classes.[95]

Finally, the PRA also monitors a number of indicators that could indicate a growth in the risks arising from proprietary trading activity by relevant authorised persons. Individual firm supervisors review these indicators for concerning changes, and investigate where necessary. In addition, there are processes for identifying, monitoring, and acting on broader risks within the financial system which are directed by the Bank of England's Financial Policy Committee. These include risks emanating from beyond the core banking sector in general and market-based finance in particular.

In something as innovative and rapidly changing as the global financial system there is always the potential for new risks to emerge, and it may take some time before a standard regulatory treatment of these risks is agreed. Intra-day risks are an example here, notably those created by algorithmic trading. The PRA undertakes a number of measures to identify and monitor evolving risks and emerging threats, and employs supervisory discretion to address particular 'hot spots' while uniform treatments are being developed.

## 9.5 The adequacy of the PRA's powers

The PRA already has substantial powers which, if necessary, can be used to mitigate the risks created by banks' proprietary trading in its various forms. In addition, the evidence in this report suggests that the level of classic proprietary trading has fallen within banks since 2008. As a result, the PRA's view is that there is no compelling need for further powers. Evidence has not been found to suggest that classic proprietary trading is a significant fraction of all proprietary trading activity or of it taking place in ring-fenced banks. This suggests that further restrictions on own-account position taking in the trading books is not a necessary nor proportionate response.[96] This was recognised in the original discussion of proprietary

[95] Capital buffers are sized based on Pillar 1, so even if a risk is captured in Pillar 2, it does not create the same incentive structure for the firm to manage it as if it were in Pillar 1.

[96] Academic research also support this conclusion. For instance, Krahnen et al. find that a ban on proprietary trading does not necessarily reduce risk taking and that it is likely to crowd out desired trading activities, thereby possibly affecting financial stability negatively. They also find that a trading separation into legally distinct or ring-fenced entities within the existing banking organisations, as suggested by the UK's ring-fencing proposal or the Belgium banking law, is a more effective solution. See Krahnen, J.P., Noth, F., and Schüwer, U. (2017) 'Structural reforms in banking: The role of trading'. *Journal of Financial Regulation*, 3(1), pp. 66–88.

trading before the passage of the 2013 Act, with some commentators suggesting that while proprietary trading could be banned, that ban would distract from more important tasks such as policing the ring-fence. Our evidence suggests that this is even more true today than in 2013. The difficulty of separating classic proprietary trading from market making without introducing a substantial compliance burden adds to the weight of this argument.

Given that restrictions on a narrow range of activities would not have a large effect on the risks in the system, consideration could also be given to the desirability of restrictions on a wider range of activities falling within the statutory definition of proprietary trading. However, these activities are important for bank risk mitigation. When controls are adequate, they contribute to safety and soundness. For instance, while hedging interest rate risk in the banking book requires own-account position taking, if conducted diligently, it reduces banks' earnings volatility and supports lending to the real economy.

The PRA has a secondary objective to act, where possible, to facilitate effective competition when it makes policies to advance its primary safety and soundness objective. In markets where PRA-authorised firms operate alongside other market participants, restricting the proper use of hedging by PRA-authorised firms could impede effective competition. The PRA will continue to monitor these activities, to mitigate the risk that classic proprietary trading is conducted under the guise of them.

## 9.6 Forward-looking measures

Some policy measures in the implementation phase will improve the treatment of some proprietary trading risks within banks. Prominently, the fundamental review of the trading book, being implemented as part of the Basel 3.1 package, will clarify the boundary between banks' trading and banking books, and will improve the capitalisation of trading book risks.

There is some risk that conditions may change so as to make proprietary trading, including classic proprietary trading, more attractive for firms within the banking sector once again. While this seems currently unlikely, it is possible. In order to remain vigilant, the PRA will continue to monitor a number of indicators that could indicate a growth in the risks arising from proprietary trading activity by relevant authorised persons, and will investigate if these show a substantially higher trend.

## Glossary of main terms, acronyms and abbreviations

| Term | Definition |
|---|---|
| **BCBS** | Basel Committee on Banking Supervision |
| **CET1** | Common Equity Tier 1, a measure of the highest quality bank capital |
| **CVA** | Credit Valuation Adjustment, an adjustment to the value of derivatives or securities financing transactions for counterparty credit risk |
| **FPC** | Financial Policy Committee |
| **FSA** | Financial Services Authority, the predecessor of the PRA |
| **FSCS** | Financial Services Compensation Scheme |
| **FX** | Foreign Exchange |
| **IRRBB** | Interest Rate Risk in the Banking Book |
| **LAB** | Liquid Asset Buffer |
| **LCR** | Liquidity Coverage Ratio, a form of regulation of short-term liquidity risk in banks |
| **NSFR** | Net Stable Funding Ratio, a form of regulation of long-term liquidity risk in banks |
| **Pillar 1** | Internationally standardised minimum capital requirements for banks |
| **Pillar 2** | Additional minimum capital requirements based on individual bank risks |
| **PRA** | Prudential Regulatory Authority |
| **RFB** | Ring-fenced bank |
| **RWA** | Risk weighted assets, a measure of risk exposure |
| **SMCR** | Senior Managers and Certification Regime |
| **VAR** | Value At Risk, a measure of aggregate risk |