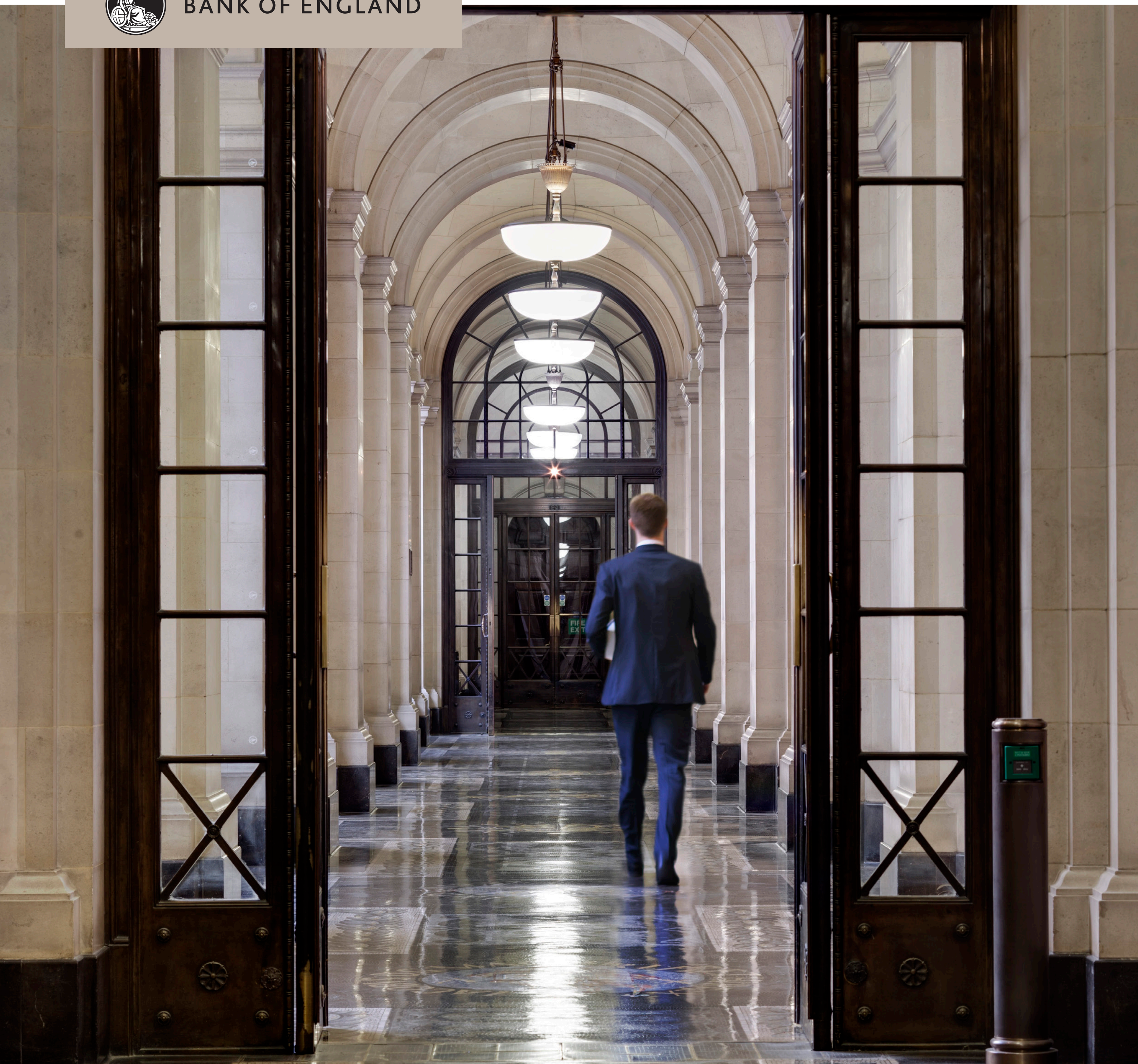
Independent
Evaluation
Office

Evaluation of the Bank of England's approach to financial market infrastructure supervision

February 2017

BANK OF ENGLAND



BANK OF ENGLAND

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Independent Evaluation Office, Bank of England

Foreword from the Chairman of Court

Financial market infrastructures (FMIs) such as payment systems and clearing houses are crucial to the effective functioning of both the financial system and the UK economy. The Bank of England gained significant new supervisory responsibilities in respect of FMIs following the 2007–09 financial crisis, and the Court of Directors (the Bank's Board) has agreed the importance of ensuring that these duties are appropriately discharged.

In early 2016, Court commissioned its Independent Evaluation Office (IEO) to examine the Bank's approach to FMI supervision, with a particular remit to evaluate whether the investments made at the time of the 2014 Strategic Plan had been effective. Court additionally emphasised the need for the Bank to keep pace with the fast-changing nature of the FMI industry, and an important aspect of the IEO's evaluation was to examine whether the Bank's supervisory approach was appropriately forward looking and flexible.

This report details the findings and recommendations of the IEO's work, the bulk of which was carried out between May and November 2016. As the report sets out, there is clear positive evidence of the advances made by the Bank in this area in recent years, including that the investments in FMI supervision at around the time of the Strategic Plan have had the desired effect.

The Bank is now an acknowledged world leader in the FMI field, and Court would like to see this position maintained in the light of ongoing structural change in the industry. To support this, the IEO has made a series of recommendations aimed at building on recent gains.

I welcome the fact that the Bank has accepted, and indeed is to a large extent already implementing, the recommendations for change contained in this report. These come under the headings of clarifying the objectives of FMI supervision (including its link with the Bank's broader responsibilities), leveraging the wider Bank as effectively as possible (including the expertise of the PRA) and strengthening governance (including the addition of independent advisors to decision-making committees).

Court will continue to monitor closely the implementation of the IEO proposals, as part of its wider duties to provide robust and effective oversight of the full range of the Bank's activities.

Anthony Habgood, Chairman of Court
February 2017

The Bank of England's Independent Evaluation Office can be contacted at independentevaluation@bankofengland.co.uk

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Executive summary

In February 2016, the Bank of England's Court of Directors commissioned its Independent Evaluation Office (IEO) to assess the Bank's approach to the supervision of financial market infrastructures (FMIs). Court's interest stemmed from the significant statutory responsibilities that the Bank has gained in this area, as well as ongoing shifts in the FMI landscape (such as regulatory change and technological innovation; Section 1).

As with previous IEO evaluations, this assessment was carried out by a dedicated project team, reporting directly to the Chairman of Court. The IEO also appointed an external Senior Advisor — Alexander Justham, former Chief Executive of the London Stock Exchange plc and former Director of Markets at the Financial Services Authority — to provide the IEO team with independent expertise and challenge. Mr Justham has reviewed and endorsed the findings and recommendations in this report.(1)

The IEO's evaluation — which covered the period mid-2014 to mid-2016 — was carried out against a backdrop of significant investments in the area made by the Bank at around the time of its 2014 Strategic Plan. Those investments were made in response to the increased importance of FMIs that resulted from the G20 Leaders' agreement in 2009 to increase the use of central clearing of certain financial products. The Bank's changes to its approach to FMI supervision included an overhaul in governance, increases in staffing and a strengthening of supervisory capability. At the request of Court, our evaluation had a particular focus on whether these changes were on course to achieve the step change in supervision that had been intended.

Our view is that the investments made by the Bank in recent years have had the desired effect. The Bank is an acknowledged world leader in the field of FMIs(2) and the framework put in place for supervision has dealt effectively with the risks of the past few years. There has been a strengthening in the supervisory approach, improvements in governance and an increased awareness of FMI issues across the institution. International engagement is strong, with the Bank making effective use of the various arrangements it has in place for cross-border collaboration. Third-party reviews have also recognised the progress that has been made.(3)

Looking ahead to the likely challenges in the FMI landscape, our work identified scope to continue to build on these gains. Our recommendations, set out more fully on page 7, fall into three main categories: articulating more fully the objectives and responsibilities of FMI supervision at the Bank; ensuring that the Bank has the right resourcing model for future challenges, including that FMI supervisors are supported by the wider Bank as effectively as possible; and continuing to strengthen governance, including by revisiting the question of third-party challenge.

On objectives and responsibilities, FMI supervision at the Bank is rooted in the institution's financial stability objective, and we found a clear and consistent understanding of this overarching framework at all levels (Section 3). We note, however, that UK legislation is less explicit about the required supervisory objectives and approach for FMI supervision than it is about the supervision of banks and insurers carried out by the Prudential Regulation Authority (PRA). This broad and high-level statutory framework affords the Bank's leadership a degree of discretion and flexibility, thereby facilitating its ability to adapt over time to the fast-changing FMI landscape. But the scope for discretion also means that it is important that the Bank articulates its preferred approach fully. In our view, the institution would benefit from a more extensive articulation of its strategy and objectives, including of the links between FMI supervision and the Bank's other

(1) The evaluation was conducted by an IEO team of Lea Paterson (IEO Director), Daniel Curtis and Anne Wetherilt. Supplementary analytical and administrative support was provided by other IEO team members, including Ed Dew, Amber Evans, George Holbrow-Wilshaw and Rachel Savage. The analysis contained in this report, together with any errors herein, is the sole responsibility of the IEO, and not the wider Bank.
(2) For example, the IMF 2016 UK Financial Sector Assessment programme noted that: 'Supervision of financial market infrastructures (FMIs) in the United Kingdom has significantly strengthened in recent years; the Bank of England is one of the leaders worldwide in shaping reforms in this area'.
(3) See also Box 6 in Section 6.2.

responsibilities, and of the institution's tolerance for FMI-related risk. The latter should encompass operational resilience as well as financial risk.

In terms of the Bank's supervisory approach (Section 4), our view is that the Bank is delivering effective, risk-based and forward-looking supervision in respect of FMIs. Our work found that FMI supervisors had adapted effectively the approach used by their counterparts in the PRA, and had appropriate processes in place to scan for emerging risks. We also noted the significant commitment that the Bank has made to cross-border collaboration, as well as the positive feedback that it has received in this regard. We make some recommendations aimed at incremental supervisory improvements. And we also note the importance of FMI supervisors continuing to work with colleagues — both internally and in the international arena — in developing a supervisory approach and toolkit in the area of operational resilience, given its importance for many FMIs.

Our evaluation looked closely at the question of resourcing (Section 5). We observe that the Bank has chosen to employ a specialist model for its FMI supervision. To an extent, the Bank's FMI Directorate can be thought of as a quasi-standalone regulator, responsible for supervision and related functions such as policy and research. This specialist model has advantages (dedicated resources, specialist knowledge, agility), but also has potential drawbacks (loss of scale, capacity constraints, key person risk). And while the FMI Directorate was able to deliver on its core supervisory responsibilities during the review period, we note that the landscape is evolving rapidly. We therefore recommend that the Bank revisits aspects of its resourcing approach to meet the challenges ahead.

Of primary importance, in our view, is to ensure that the wider organisation is supporting the Bank's FMI work as effectively as possible. This should enable the Bank to make the most of the advantages of its specialist approach to FMI supervision, while mitigating the disadvantages. We recommend that the Bank revisits the current informal arrangements between the FMI Directorate and the PRA concerning access to specialist resources, particularly in the priority area of operational resilience. We also question whether the Bank's current approach to funding FMI supervision — which is funded by the Cash Ratio Deposit (CRD) scheme, rather than by levying fees on FMIs — acts as a barrier to a more flexible resourcing approach. We recommend that the Bank considers its position with respect to levying fees for FMI supervision once the current CRD arrangements come to an end in 2018.

Our final set of recommendations relates to governance. As a standalone supervisory entity, the FMI Directorate has its own governance structure (Section 6). Changes were made to this in 2014, and we find that these have generally been successful. Given the wider developments in the FMI landscape, however, our view is that it is an opportune time for the Bank to take stock of its FMI governance framework.

In particular, we recommend that the Bank considers introducing more formal third-party challenge into the relevant decision-making fora. We also make some suggestions for further enhancements in the assurance framework for FMI supervision; in that regard, we welcome the Bank's decision to bring FMI supervision within the purview of the PRA's Supervisory Oversight Function,(1) and would encourage its timely implementation. We also note scope for some strengthening of Court's oversight of FMI activities.

This report was approved for publication by the Chairman of Court at the February 2017 Court meeting. By putting this report into the public domain, we hope to facilitate external debate and comment on the work of the IEO, and of the Bank of England more broadly. We welcome feedback.(2)

(1) A 'second line of defence' function that provides firm-level assurance to the PRA Board and PRA management about the quality and effectiveness of supervision.
(2) The Bank's Independent Evaluation Office can be contacted at independentevaluation@bankofengland.co.uk.

Summary of recommendations

Clarify objectives and responsibilities of FMI supervision at the Bank more fully.	**1 Ensure a clear and shared understanding of strategy, objectives and risk tolerance**	• The **Governors**, supported as appropriate by the Bank's policy committees, to re-articulate the Bank's strategy to protect and enhance financial stability through supervision of FMIs. This should include an articulation of the links between FMI supervision and the Bank's other responsibilities. • The **Governors** to agree the Bank's tolerance for risks arising from FMIs. This should include both financial risk and operational resilience. • **FMI Directorate** to explain what the concept of 'systemic risk manager' means for each type of FMI, building on the forthcoming Code of Practice for Payment Systems. • Following from the above, **FMI Directorate** to revise the Bank of England's 2013 Supervisory Approach document, working closely with other relevant stakeholders.
	2 Further improve supervisory practices	• **FMI Directorate** to further align its supervisory model and practices to reflect the Bank's overall financial stability objective and the relative significance of operational resilience.
Support the specialist unit that is the FMI Directorate by leveraging the wider Bank as effectively as possible.	**3 Ensure FMI Directorate is a priority customer for Bank-wide work on operational resilience** **4 Wider Bank to invest more fully in FMI Directorate engagement** **5 Design a workforce model that is flexible, encourages the development of deep FMI expertise and enables FMI Directorate to respond to future change in the FMI environment**	• **FMI Directorate** and **PRA** to continue to develop jointly an approach to supervising operational resilience at FMIs, as part of Bank-wide work on the topic. • **FMI Directorate** to articulate its desired future resourcing model, dependent on the outcome of other recommendations and the skills requirements arising from the changing FMI environment. • **FMI Directorate** and **PRA** to agree a more formal approach for the use of specialist PRA resources. • **FMI Directorate** and **PRA** to co-ordinate talent management and succession planning to support the development of an experienced cadre of FMI supervisors. • **Governors** and **Court** to reconsider the Bank's position on levying fees for FMI supervision as part of any wider discussions on the Bank's medium-term funding structure.
Continue to **strengthen** governance, including by revisiting the question of third-party challenge	**6 Continue to strengthen governance and develop a comprehensive approach to assurance**	• The **Governors** to review the responsibilities of the internal governance committees for FMI supervision. • The **Governors** to review membership of the FMI Board in order to ensure optimal use of resources. • The **Governors** to consider the role of third-party challenge in the internal governance structure for FMI supervision to increase opportunities for independent challenge. • **Court** to augment its annual discussion of FMI supervision, including via a structured survey of FMI Board members. • The **FMI Directorate** to enhance its assurance framework with a particular focus on assessing how well the Bank is meeting its supervisory objectives for FMIs. • The **FMI Directorate** and **PRA** to agree an approach for using the PRA's Supervisory Oversight Function in order to bolster the assurance framework for FMI supervision.

1 Financial market infrastructures: landscape and the Bank's responsibilities

Financial market infrastructures (FMIs) lie at the heart of the global and UK financial system. They provide the infrastructure that allows the financial system to function in an orderly manner. They also support the smooth functioning of the economy, including the purchases of goods and services, and the payment of employees. Thus well-functioning FMIs are crucial to the Bank of England's monetary and financial stability objectives.

The Bank has responsibility for supervising three classes of FMIs — central counterparties, securities settlement systems and payment systems. These responsibilities have been carried out amid a background of change, including post-crisis regulatory reform and technological innovation. A number of UK-based FMIs operate in global markets, and are systemically important in a number of jurisdictions. Therefore, the Bank has also placed a premium on playing a leading role in the development of international regulatory frameworks for FMIs and on co-operation with other authorities.

This section provides an overview of key changes in the FMI landscape (Section 1.1), before outlining the Bank of England's supervisory responsibilities and regulatory framework (Section 1.2).

1.1 The FMI landscape

FMIs play a critical role in the financial system, by providing vital services, and by managing risks that arise from transactions between financial market participants. Specifically:

- payment systems enable payments to be transferred and settled;
- securities settlement systems enable securities to be transferred and settled; and
- central counterparties manage counterparty credit risk arising from financial market transactions by interposing themselves between counterparties and guaranteeing the obligations agreed between the two parties.

As well as contributing to financial stability, FMIs have the potential to be a source of instability. A key feature of FMIs is that they are centralised entities: in many cases, they are the sole providers of their services and market participants would find it difficult to find alternatives. Failure to provide services could lead to significant market disruption and, in extreme scenarios, contribute to the failure of individual financial institutions. And linkages between FMIs — eg between payment and securities settlement systems — mean that failure at one FMI may have widespread implications.

Because of their central role, some FMIs concentrate a considerable amount of risk. This is particularly the case for central counterparties, who as buyer to every seller, and seller to every buyer, are exposed to counterparty credit risk, ie the risk that one party does not meet its contractual obligations. Indeed, an important pillar of the global post-crisis regulatory reform agenda has been to concentrate more risk from over-the-counter (OTC) derivative markets into central counterparties, where the risk can be better, and more transparently, managed. The failure of a material counterparty would leave the central counterparties with an unmatched book and significant exposure to price movements, particularly in volatile market conditions. As a result, central counterparties are required to hold significant financial resources to mitigate this risk.

Recognising the risks and the vital role that they play in the financial system, FMIs are expected to deliver very high standards of risk management. As will be explained in Section 3, following international reforms and recognising the increasing importance of FMIs, the Bank is of the view that FMIs themselves should take into account their systemic role and manage their risks with regard to the financial system as a whole.

(i) Regulatory reform and the strengthening of international standards

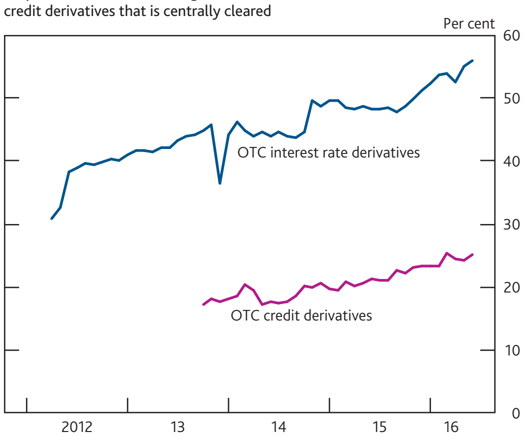
International regulatory reform has been a key driver for the recent growth of FMIs, and central counterparties in particular. Following the financial crisis of 2007–09, G20 leaders agreed to reform the global OTC derivatives market by increasing the use of central clearing, alongside other measures to enhance transparency (for an overview of changes, see Rahman (2015)). **Charts 1.1–1.3** illustrate the growth of this market:

- Central clearing has increased following the crisis. For example, around 55% of outstanding interest rate OTC derivatives are now centrally cleared. Central clearing of OTC derivatives is expected to increase further, as jurisdictions implement the G20 central clearing obligation; in the EU, this implementation started in June 2016.

- Global OTC derivatives activity, as measured by gross notional value (which measures the size of the market by adding the notional values of all outstanding contracts), increased markedly up to 2008. It has eased back since, however, in part driven by trade compression (an industry-based initiative to reduce the notional amount of outstanding contracts).

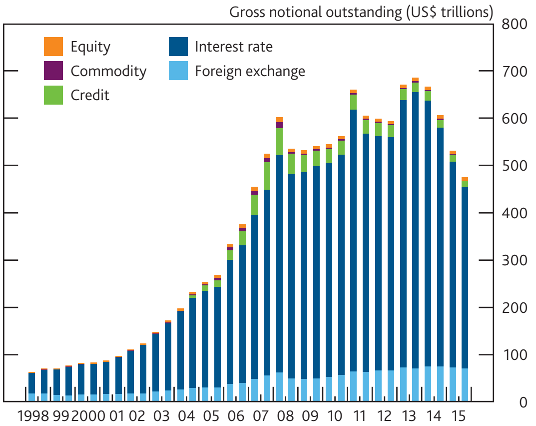
Chart 1.1 Centrally cleared OTC derivatives trades

Proportion of the outstanding stock of OTC interest rate and credit derivatives that is centrally cleared



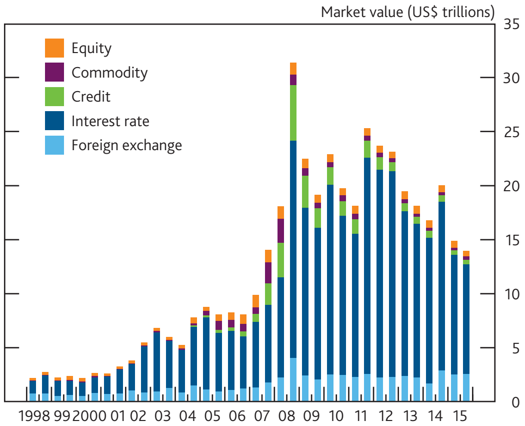
Sources: Depository Trust & Clearing Corporation Global Trade Repository and Trade Information Warehouse, and Bank calculations.

Chart 1.2 Size of the OTC derivatives market by outstanding gross notional value of contracts



Source: Bank for International Settlements.

Chart 1.3 Size of the OTC derivatives market by outstanding market value of contracts



Source: Bank for International Settlements.

- Market value of OTC derivative activity (the cost of replacing all outstanding contracts at prevailing market prices), and a better measure of risk, shows a similar profile.

As part of the post-crisis regulatory reform programme, in 2012 regulators agreed new international standards for financial market infrastructures, the 'Principles for financial market infrastructures.'(1) These set enhanced minimum standards covering a wide range of risks, including financial risk management, business and operational risk management, as well as access and transparency. The European Market Infrastructure Regulation (EMIR) and Central Securities Depository Regulation (CSDR) incorporate the Principles into EU law for central counterparties and securities settlement systems respectively. International work — led by the Financial Stability Board — is also underway to strengthen arrangements for the recovery and resolution of central counterparties.

As the FMI industry adjusts to the new regulatory requirements, changes in business models are to be expected. For example, central counterparties are developing new clearing products and expanding their participation so that clients can meet clearing obligations. Central counterparties also need to meet EU requirements relating to model approvals and procyclicality in margin requirements. Meanwhile, some payment systems have made changes in order to meet global regulatory standards, eg with regards to tiering (the arrangement whereby direct participants in a system provide services to other institutions, thereby allowing them system access).

(ii) Further change and FinTech innovations

Technological change is spreading to the FMI landscape. New payment providers are challenging the established order, by building innovations on existing payments infrastructure and by introducing new technologies and business models. Some of these new entrants are offering payment services without relying on the services of banks that currently operate in this space (for further discussion of technological innovation in financial services, see Carney (2016)).

There is also considerable interest amongst market participants in using distributed-ledger technology to transform the settlement process. FinTech has the potential to deliver more resilient financial infrastructure and more effective trade and settlement. This could offer shorter, speedier transaction chains, greater capital efficiency and stronger operational resilience.

Over time, however, technological innovation and new entrants may create new systemic risks, for example, if the market shares of new entrants rise to such an extent that a failure would have a system-wide impact, in turn affecting financial stability. Although the speed of innovation is unknown, as firms or activities become systemic and risks to the real economy grow, they are likely to come within the purview of the Bank's responsibilities for the stability of the financial system as a whole.

1.2 The Bank of England's supervisory responsibilities, regulatory framework and co-operation with other authorities

The Bank has had formal statutory responsibility for the oversight of certain payment systems since 2009, and for the supervision of central counterparties and securities settlement systems since 2013. Responsibility for supervising central counterparties and securities settlement systems was transferred from the Financial Services Authority (FSA), as part of a broader set of regulatory changes that resulted in the creation of the Prudential Regulation Authority (PRA) and the Financial Policy Committee (FPC) (for more detail, see Murphy and Senior (2013)).

The Bank's approach to FMI supervision is rooted in its broad financial stability objective, which underpins all FMI supervisory work, policy and research (Bank of England (2013)). In addition, the FPC may, as part of its overall responsibility for reducing risks to the UK financial system, make recommendations in relation to the Bank's supervision of FMIs.

(1) These Principles were published in April 2012 and were developed by central banks and securities markets regulators, working together through the Committee on Payments and Market Infrastructures and the Technical Committee of the International Organization of Securities Commissions (IOSCO). See BIS (2012); www.bis.org/cpmi/publ/d101a.pdf.

The Bank's financial stability objective also informs the PRA's supervision of deposit-takers and insurers. But the legislation is more explicit about the PRA's supervisory approach and responsibilities than it is about those for FMI supervision. Specifically:

- For PRA-regulated institutions, the PRA has *inter alia* a general objective: to promote the safety and soundness of individual firms (for further detail, see Bank of England (2016a, b)). There is no directly equivalent statutory responsibility for the Bank's supervision of individual FMIs; the supervisory framework is instead defined by a number of separate pieces of sectoral legislation, as explained below.

- For PRA-regulated institutions, there is an explicit statutory role for the Financial Conduct Authority (FCA) in conduct supervision. That contrasts with individual FMIs supervised by the Bank, for which there is no clear statutory role for the FCA.(1)

At a more granular level, the Bank's supervisory responsibilities for FMIs stem from three separate pieces of domestic legislation, as well as European legislation and international standards (see **Table 1.A**). Together, these determine: which FMIs the Bank supervises; what powers the Bank has with respect of the FMIs it supervises; and how it works with other authorities.

Table 1.A Legislative frameworks(a)

	Recognised payment systems	Central counterparties	Securities settlement system
Domestic	Banking Act 2009 (Part 5)	Financial Services and Markets Act 2000 (FSMA)	FSMA and Uncertificated Securities Regulations 2001
European	–	European Market Infrastructure Regulation (EMIR)	Central Securities Depositories Regulation (CSDR)

(a) In addition, the Bank of England is the United Kingdom's designating authority for the EU directive on Settlement Finality in Payment and Securities Settlement Systems.

(i) The Bank's supervisory responsibilities with respect to FMIs

The Bank of England has statutory supervisory responsibilities and powers in respect of eleven FMIs. It currently has formal supervisory responsibility for:

- Five UK payment systems and Continuous Linked Settlement (CLS)(2) under the Banking Act 2009. Payment systems meeting certain criteria relating to their importance to the financial system and the economy as a whole may be recognised by HM Treasury. The average daily value settled by Bank-supervised payment systems in the year to July 2016 was in excess of £300 billion (excluding CLS).

- Four central counterparties. These are regulated under the Financial Services and Markets Act 2000 as recognised central counterparties and under the European Market Infrastructure Regulation (EMIR). The embedded payment systems of LCH.Clearnet Ltd (LCH) and ICE Clear Europe are also recognised payment systems under the Banking Act 2009. At the end of 2016, LCH alone had more than US$250 trillion notional of interest rate swaps outstanding.

- One securities settlement system. Euroclear UK and Ireland Limited operates the UK securities settlement system (CREST), which is also a recognised embedded payment system. In the year to July 2016, securities with an average value of £285 billion a day were settled through CREST.

Framed by its broader financial stability objective, the Bank exercises its supervisory powers for FMIs within a number of pieces of domestic legislation. In addition, its supervisory approach implements the internationally agreed Principles for financial market infrastructures, as well as — in the case of central counterparties and

(1) The Payment Systems Regulator, a subsidiary of the FCA, has three objectives in relation to payment systems in the United Kingdom: to promote competition; innovation; and the interests of service-users (the people and businesses that use them).
(2) CLS operates the world's largest multi-currency cash settlement system for foreign exchange transactions in 18 currencies, including sterling.

securities settlement systems — European legislation. In practice, there is significant overlap between the globally set standards and EU legislation.

(ii) The Bank's co-operation with other authorities

FMIs are deeply embedded in the heart of the financial system. This requires the Bank to work closely with other regulatory authorities. In the United Kingdom:

- The Payments Systems Regulator (PSR) is responsible for promoting competition, innovation and the interests of users in payment systems.

- The Financial Conduct Authority (FCA) is, *inter alia*, responsible for regulating standards of conduct in retail and wholesale financial markets, as well as for supervising trading infrastructures that support those markets.

- The Prudential Regulation Authority (PRA) is, at the time of writing,(1) a wholly owned subsidiary of the Bank of England and is responsible for the prudential regulation and supervision of banks, building societies, credit unions, insurers and major investment firms.

The Bank's co-operation with these authorities is set out in Memoranda of Understanding,(2) which clarify the responsibilities of each authority and describe how they intend to co-operate.

Internationally, the Bank works closely with other regulators. Many FMIs operate across national borders, by offering services to overseas members and by supporting overseas markets. For certain FMIs, supervisors from different countries meet in a 'college' — periodic meetings where supervisors can share information and discuss issues of mutual interest. Colleges are also required under certain EU legislation in order to take specific actions, such as authorising central counterparties and approving risk models.

(iii) Organisational changes at the Bank

Reflecting the growing importance of FMIs since the financial crisis, a number of changes were made to the way FMI supervision is carried out as part of the Bank of England's 2014 Strategic Plan (for more detail regarding the broader Strategic Plan, see Carney (2014)). These included:

- the creation of a separate Directorate — the Financial Market Infrastructure Directorate — bringing together FMI supervision, policy and research, and an upgrade in management to Director;

- a revised governance structure, with a widening of membership of the supervisory committees and changes to the allocation of decision-making responsibilities; and

- some resourcing enhancements and organisational changes, aimed at strengthening the FMI Directorate's supervisory capacity and at promoting co-operation with other supervisory teams in the Bank.

As discussed in the next section, the IEO evaluation has had a particular focus on assessing whether these and other investments made in FMI supervision around the time of the Strategic Plan are on track to deliver the step change that was intended.

(1) The enactment of the Bank of England and Financial Services Act 2016 will bring the PRA into the Bank, with statutory responsibilities for microprudential regulation conferred on the Prudential Regulation Committee (PRC) (a new committee of the Bank on the same statutory footing as the MPC and FPC).
(2) www.bankofengland.co.uk/about/Documents/mous/statutory/moupsr.pdf and www.bankofengland.co.uk/about/Documents/mous/statutory/moumarket.pdf.

2 Approach to the evaluation

The IEO's evaluation of the Bank's supervision of financial market infrastructures (FMIs) follows established evaluation principles drawn from the wider public policy field (as set out more fully in Ashley and Paterson (2016)).

Specifically, we defined the purpose and remit of the project at the outset; set our evaluation criteria in the early stages of the work; determined our methodologies and data sources, drawing on a variety of approaches; and agreed the timeline, resourcing and governance of the project. This section sets out the details of the approach used. The evaluation itself is detailed in Sections 3, 4, 5 and 6.

2.1 Purpose and remit of the evaluation

At its February 2016 meeting, the Bank's Court of Directors (the Bank's Board) commissioned an evaluation of the Bank's approach to FMI supervision.(1) Court's interest stemmed from the significant new statutory responsibilities for FMI supervision that the Bank has gained in recent years, as well as ongoing change to the wider FMI landscape, including post-crisis regulatory reform and technological innovation (Section 1). More generally, the FMI supervision project satisfied the criteria agreed by Court for in-depth evaluations conducted by the IEO(2) in that it potentially represented material reputational or balance sheet risk for the Bank, and was a relatively new statutory duty.

Specifically, Court endorsed a proposal by the IEO to evaluate the Bank's approach to FMI supervision with reference to inputs, supporting infrastructure and internal governance. Court also requested that the IEO's evaluation included an assessment of whether the investments made in FMI supervision around the time of the Bank's 2014 Strategic Plan were on course to deliver the step change in supervision that was intended.

Reflecting this mandate, as well as the broader context outlined in Section 1, we assessed the Bank's strategy, objectives, approach, resourcing and governance in respect of FMIs. We had a particular focus on those FMIs directly supervised by the Bank, but, given that FMIs supervised by other jurisdictions have the ability to affect financial stability in the United Kingdom, we also looked at the Bank's activities with respect to the broader FMI sector.

Although the focus of our evaluation was on supervisory activities, where appropriate we looked at the policy and research processes supporting the supervisory function. These included the FMI Directorate's inputs into internal policy discussions related to broader financial stability issues (for example, market liquidity), as well as the Bank's contributions to the international FMI-related policy agenda.

A founding principle for the IEO is that live policy lies outside of its remit, given the importance of not inadvertently compromising the independence of policy formulation by the Bank.(3) So, in line with previous IEO evaluations, this project did not seek to provide comment or judgement on individual supervisory or policy decisions. While we did review case studies of individual FMIs as part of our work, these were considered from the perspective of our five evaluation criteria (see below), rather than the perspective of providing firm-level assurance on supervisory decisions.

In addition, two further FMI-related topics were out of scope for the evaluation:

(1) See the minutes of the February 2016 Court, available at www.bankofengland.co.uk/publications/minutes/Pages/court/default.aspx.
(2) See the minutes of the December 2015 Court. In-depth projects conducted by the IEO are one way in which Court carries out its statutory duties, as set out in the Bank of England Act 1998 (as amended by the Bank of England and Financial Services Act 2016), to keep the performance of the Bank under review.
(3) As set out in the IEO's published terms of reference (www.bankofengland.co.uk/about/Pages/ieo/default.aspx) and Ashley and Paterson (2016).

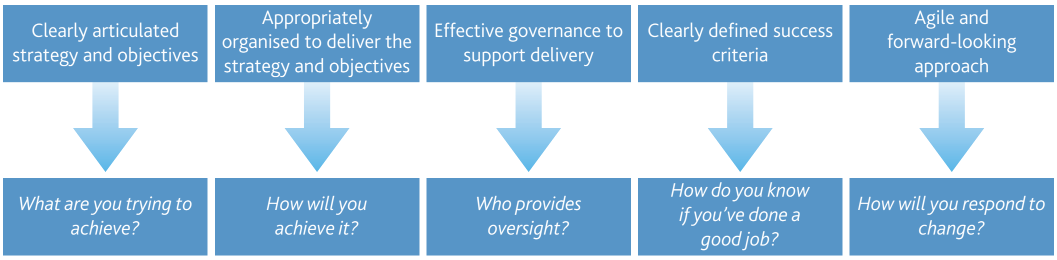
- The Bank's Real Time Gross Settlement System (RTGS). RTGS is the platform for providing sterling central bank reserves — the electronic counterpart to banknotes, and the ultimate risk-free means of final payment. RTGS transactions span, or back, almost every payment in the UK economy. The Bank previously commissioned a review (Deloitte (2015)) following the disruption to RTGS on 20 October 2014 and, more recently, has established a Strategy Review (see Shafik (2016)) to agree a blueprint for the next generation of RTGS. Court regularly considers issues related to RTGS as part of its oversight activities, as detailed in the published Court minutes.

- The Bank's approach to FMI resolution. This function is the responsibility of the Bank's Resolution Directorate. Further international work to develop global standards on central counterparty resolution is under way, as part of the Financial Stability Board (FSB)'s CCP work programme. Given that international discussions on this issue are continuing and will inevitably have a bearing on the Bank's approach in the coming years, the IEO took the view that it was appropriate to take the topic out of scope of this evaluation.

2.2 Evaluation criteria: what does good look like?

Before starting out the evaluation, and in line with the approach taken in previous IEO reports, we developed a set of five *ex ante* criteria against which the effectiveness of the Bank's approach to FMI supervision could be judged. Our evaluation criteria are summarised in **Figure 2.1**.

Figure 2.1 Evaluation criteria



We first asked to what extent the Bank has set out a clearly articulated strategy and objectives for FMI supervision. Clearly articulated strategy and objectives enable the Bank's management to make an informed allocation of responsibilities, budget and resources for FMI supervision, and to prioritise work appropriately. They also enable FMI supervisors to exercise judgement and use supervisory tools effectively.

Questions we looked at under this first criterion included: how the Bank has defined the risks that FMIs present to financial stability; the nature of the Bank's tolerance for risks arising from FMIs; and how the supervision of individual FMIs is expected to contribute to the Bank's financial stability objective.

Second, we evaluated how the Bank has organised itself to deliver its agreed strategy and objectives. We examined how individual supervisory priorities are set, and considered: the location of FMI supervision within the overall Bank; the staffing model within the FMI Directorate (both current and preferred); the provision of specialist resource from the wider Bank (including PRA specialists); and interactions with other supervisory teams. We also considered how the Bank's FMI Directorate balances its time between mandated work, reactive supervision, and proactive or thematic work.

Third, we considered whether the Bank exerts effective governance of FMI supervision to support the delivery of the strategy and objectives. We surveyed matters brought to bodies with responsibility for the consideration of FMI matters: Court; the Bank's Governors; the FMI Board (the main decision-making forum for FMI supervision at the Bank); and the FMI Executive Committee (an executive committee established by the FMI Board) (see also **Table 6.A** in Section 6.1). We also asked whether decisions are taken in the right forum and at the right level, and whether the right information is provided to support decision-making.

Fourth, we assessed the extent to which the Bank has established clearly-defined success criteria, the delivery of which can be clearly linked back to the overall strategy and objectives for the supervision of FMIs. Such criteria are important to help the FMI Board (and ultimately Court as the Bank's Board) to monitor performance and gain assurance over the FMI Directorate's supervisory approach. We assessed whether existing performance criteria measure inputs, processes and/or expected outcomes, consistent with the objectives set as part of the strategy.

Finally, we assessed how well the Bank's FMI supervision is placed to identify and respond to new developments, that is, the extent to which it has an agile and forward-looking approach to supervision, resourcing, and engagement with HMT in respect of future legislative changes. Changes in the FMI landscape come from a range of sources, including regulatory requirements such as the move to mandate more central clearing for certain financial products and innovation from technology companies moving into the financial arena. Looking ahead, the United Kingdom's vote to leave the European Union will place new demands on the Bank's FMI Directorate.

2.3 Methodology and data sources

In line with good practice in the broader evaluation field, we combined a number of different approaches and techniques within our evaluation. Combining insights from different approaches to research questions recognises that any individual approach has its drawbacks; looking for common themes across different approaches should improve the robustness of evaluation results (see, for example, HM Treasury (2011) for further discussion).

The review team received full and unrestricted access to all FMI supervisory analysis, policy and research. We also had unrestricted access to papers and minutes for the supervisory committees, and to papers and minutes of FMI-related discussions by Governors. We were able to interview without restriction staff within the FMI Directorate and all members of the supervisory committees.

We observed meetings of the main internal supervisory committees, namely: the FMI Board; the FMI Executive Committee; and the FMI Risk Forum (an internal Bank-wide group for discussing risks arising between FMIs, PRA-regulated firms and the wider financial system).

We undertook a survey of all staff in the FMI Directorate as well as members of the internal supervisory committees. The survey provided us with standardised data on a range of topics and qualitative remarks on specific issues. We complemented the survey with structured interviews of a range of stakeholders, including supervisory managers and committee members.

A key part of our analysis was a desktop document review. We sampled extensively from the agendas of the internal supervisory committees, reviewing agendas, papers and minutes since the inception of the two committees in 2013. We reviewed externally published documents, including the Bank of England's Supervisory Approach 2013 (Bank of England (2013)) and annual reports of FMI supervision at the Bank. We also reviewed key internal documents such as guidance for supervisors and the most recent annual internal supervisory stock-take for each FMI that the Bank supervises.

Our analysis included a number of broad thematic reviews and focused case studies. We considered the supervisory process in general, and selected some specific pieces of work such as cyber penetration testing (using the Bank's CBEST[(1)] framework), central counterparties' risk committees, and the operation of global supervisory colleges. Beyond direct supervision, we examined the FMI Directorate's policy and research agendas. We also looked at specific examples of how the Bank's governance of FMI supervision operates through various supervisory committees, including the operation of the newly formed FMI Risk Forum.

We considered existing third-party reviews, including the outcome of the IMF's recent Financial Sector Assessment Program for the United Kingdom (IMF (2016)), recent Bank of England Internal Audit reports and reports by the global standard-setters for FMI supervision (the Committee on Payments and Market

(1) www.bankofengland.co.uk/financialstability/fsc/Pages/cbest.aspx.

Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO)). Section 6.2 provides more detail on external reviews of the Bank's FMI work.

Third-party reviews also supported our consideration of peer comparisons, and we supplemented published reviews with conversations with a number of international regulators of FMIs. We should acknowledge, however, that although peer comparisons are of some use in this area, variations across jurisdictions in both legislative frameworks and supervisory approach limit their applicability to the Bank.

We sought to compare, where appropriate, the Bank's supervision of FMIs with the PRA's supervision of authorised deposit-takers and insurers. We recognise, however, that although comparisons of this nature can be informative, their value is limited by the differences in the types of firm supervised, and in the relevant statutory frameworks and powers.

2.4 Timing, project team and governance

Our analysis primarily focused on the period from July 2014 (the date when the Bank formally reorganised FMI supervision into its own Directorate) to June 2016. This period includes investments made as part of the Bank's 2014 Strategic Plan. We took a flexible approach, however, and considered relevant information from before and after these dates where appropriate.

This evaluation, as with previous IEO assessments, drew on internal Bank of England secondees as well as external expertise. Internal Bank secondees were not drawn directly from the business areas under review. In addition, the project team has benefited from the support of an externally appointed senior advisor, Alexander Justham,(1) former CEO of the London Stock Exchange plc and former Director of Markets at the FSA. Mr Justham was appointed by the IEO with a remit to provide independent challenge and support to the project team. He has reviewed and endorsed the findings and recommendations of this IEO report.

In line with established practice in the evaluation field, we set up an advisory group comprising senior internal Bank stakeholders as well as third-party expertise.(2) The group provided us with quality assurance and challenge throughout the project, and was a useful forum for the exchange of ideas as our analysis and evaluation developed. This group was constituted on a purely advisory basis. A founding principle of the Bank's IEO is its independence: its work is conducted at arm's length from local business areas, and it reports directly to the independent Chairman of Court. Analysis and recommendations contained in this report are the sole responsibility of the IEO.

(1) Mr Justham was engaged by the Independent Evaluation Office from May 2016 to November 2016. He was remunerated at the Bank's standard daily rate for senior external advisors. During his time of employment, Mr Justham complied fully with the requirements of 'Our Code', the Bank's conduct and ethics policy, including its provisions on information security.

(2) Members were: David Bailey (Director, Financial Market Infrastructures, Bank of England); Victoria Cleland (Chief Cashier, Bank of England); Sir Jon Cunliffe (Deputy Governor for Financial Stability); Lyndon Nelson (Deputy Chief Executive, PRA); Tim Frost (Non-Executive Director, Court of Directors); Alexander Justham (External Advisor, IEO); Theresa Kelly (Head of Legal, Financial Stability and Market Infrastructure); Lea Paterson (IEO Director and Advisory Group Chair).

3 Evaluation: strategy and objectives

A clear and well-understood statement of the Bank's strategy and objectives in respect of FMIs is the foundation for all connected activities. It enables the proper allocation of resources; provides confidence and consistency in decisions about when and how to exercise regulatory powers over FMIs; guides policy and research; and acts as a benchmark against which stakeholders can judge the success of FMI supervision.

This section assesses the degree to which the Bank has a clearly stated strategy underpinning its supervision and other activities in relation to FMIs, and the extent to which this strategy is supported by a common and consistent staff understanding. We tackle this question both from the perspective of individual FMIs supervised by the Bank (Section 3.1) and from the perspective of how the FMI sector as a whole links to the Bank's other activities, including the supervision of PRA-regulated firms (Section 3.2). Section 3.3 concludes.

The evidence set out in this section of our *Report* is particularly relevant to the first of our evaluation criteria: the extent to which the Bank has set out a clearly articulated strategy and objectives for FMI supervision. This part of our evaluation draws on the following components of our evidence base: published materials and internal documents on FMI strategy and objectives; outputs from individual supervisory programmes; surveys; structured discussions with Bank staff; recent statements from the FPC; and the FPC's *Financial Stability Reports*.

3.1 The Bank's approach to formulating strategy and objectives for individual FMIs

The Bank's approach to FMI supervision is rooted in its broad financial stability objective, which underpins all FMI supervisory work, policy and research. Whereas the PRA has a specific statutory objective to promote the safety and soundness of individual firms, the Bank has no such statutory objective for FMIs (Section 1).

This broad and high-level statutory framework for FMI supervision in the United Kingdom affords the Bank's leadership discretion in their strategy and approach, as well as the flexibility to adapt over time in order to meet the evolving structure and risks of this fast-moving landscape. But the considerable scope for discretion means that it is important that the Bank articulates its preferred approach fully, and ensures that there is a clear and consistent understanding of this approach at all levels of the organisation.

For this part of our evaluation, we assessed the articulation and the understanding of key aspects of the Bank's strategy and objectives for FMI supervision:

(i) the degree to which there was a shared understanding that FMI supervision at the Bank is rooted in financial stability;

(ii) the approach to the formulation of supervisory objectives for individual FMIs; and

(iii) the approach to the formulation of risk tolerance for individual FMIs, including the tolerance for risk with respect to 'quality of service' considerations.

(i) The overarching framework for FMI supervision

A shared and consistent understanding of the overarching financial stability framework is, in our view, essential as it informs many other aspects of the Bank's strategy and objectives with respect to FMI supervision. We found clear positive evidence, from multiple sources, in this regard, including from our structured discussions with a variety of Bank staff.

Evidence of a widely understood overarching framework was also apparent in external documents, which state clearly that FMI supervision should have a systemic focus and aim to support financial stability. See, for example: Bank of England (2013), which states that the Bank '*undertakes its supervision of FMIs with a view to protecting and enhancing the stability of the financial system*'; and Bank of England (2016c), which states that '*the Bank's role as supervisor is to ensure that FMIs are managed in a manner that is consistent with the public interest including reducing systemic risk*'.

(ii) Setting supervisory objectives for individual FMIs

Having established that there was a clear and consistent understanding of the overarching framework for FMI supervision at the Bank, we then turned to the way in which this had been transposed into supervisory objectives for individual FMIs.

Typically, there are two components to the supervisory objectives set for individual institutions:

- first, that FMIs should be encouraged to act as 'systemic risk managers'; and
- second, that each FMI should deliver a robust and resilient system.

In respect of the first component, and in accordance with international standards, FMI supervisors expect that each FMI should act as a 'systemic risk manager'. In the Bank's 2013 Approach document, this concept is described as '*taking full responsibility for managing the infrastructure in a manner that protects the stability of the FMI and with regard to the financial system as a whole*.'(1) This objective is not formally set out in statute, although we observe that the concept is fully consistent with the Bank's overarching financial stability objective, as well as with the international Principles for financial market infrastructures.

To a degree, the concept of 'systemic risk manager' has been developed in external and internal documents. For example, the Bank's 2013 Approach document describes a number of elements of systemic risk management. These include: managing procyclicality; promoting risk management standards; and having adequate procedures to minimise disruption in the markets that FMIs serve. Nevertheless, our evaluation suggested that there remained a need to define this concept more clearly. For payment systems, we understand that the FMI Directorate, as part of its forthcoming Code of Practice,(2) intends to explain more clearly its expectations in this area. In our view, this would be a good step towards a fuller articulation of this concept for all FMIs.

In respect of the second component, in our view it is appropriate for supervisory objectives to focus on operational resilience. This is because, by their very nature, the financial stability consequences of an operational disruption to an FMI's key services could be significant. We consider this further in Section 4, when we look at the supervisory approach.

We also note that, as set out in Section 1, the regulatory framework for 'quality of service' issues in FMIs — including operational resilience — is different to that for PRA-regulated institutions. For PRA-regulated deposit-takers and insurers, the FCA would typically take the lead in 'quality of service' considerations, unless there were implications for financial stability. For FMIs, although there are conduct aspects of the EU legislation governing central counterparties and securities settlement systems, there is no analogous statutory role for the FCA (see Section 1.2). This is not an area that has been addressed in depth in external communications, and we observed variations in understanding about the boundaries of the Bank's responsibilities in this area.

(iii) FMIs and the Bank's tolerance for risk

For a supervisory strategy to be effective, it should be grounded in an understanding of the Bank's tolerance for risk. We note that the Bank has acknowledged that '*no matter how strict the Principles and regulations, or how good an FMI's risk management, the possibility of the FMI's own financial distress, or failure, cannot be entirely excluded*' (Bank of England (2013)). At the same time, the Bank has not explicitly stated its tolerance for risks

(1) Bank of England (2013), page 4. See also BIS (2012).
(2) The Bank of England (2016d) published a consultation paper on the Code of Practice on 29 September 2016, which was outside of our review period. www.bankofengland.co.uk/financialstability/Documents/fmi/governance_rps.pdf.

from FMIs. This is in contrast to the PRA, which has said that it does not operate a zero-failure regime (Bank of England (2016a, b)). And, while we observed a clear understanding within the Bank of the overall financial stability objective for FMI supervision, our evaluation suggested a need to define more clearly the Bank's tolerance for risks arising from FMIs.

In our view, in stating its tolerance for FMI risks, the Bank could usefully distinguish between operational resilience and financial risk, given the critical importance for financial stability of operationally resilient FMIs. For example, the Bank might usefully consider its tolerance for an outage at a consumer-facing system.

A fuller articulation of the Bank's tolerance for risks would, in our view, support the delivery of supervisory objectives (Section 4) as well as assist the appropriate allocation of the FMI Directorate's resources (Section 5).

3.2 Links to the Bank's broader activities

(i) The FMI sector and financial stability

Given that the Bank's objective with respect to FMIs is financial stability, the Bank is also concerned with reducing the risks to the UK financial system that may arise from the FMI sector as a whole. A number of UK-based FMIs operate in global markets and are systemically important in a number of jurisdictions. Therefore the Bank places a premium on international work to identify and mitigate risk to the broader financial system. And, consistent with this overarching financial stability framework, we found clear, positive evidence that the Bank's FMI supervisory-related activities were not limited to narrow, individual institution focused, objectives. For example:

- Staff in the Bank's FMI Directorate work on a variety of projects that have broader scope than the narrow concern of risks at individual FMIs. Policy and research teams cover topics relating to broader systemic risk, including issues such as procyclicality arising from risk management practices in central counterparties and liquidity in over-the-counter derivatives markets (see Box 2 in Section 5.1).

- The FMI Directorate also maintains a Risk Register, which summarises risks to and from FMIs and as such captures the linkages between FMIs and other financial institutions (see Section 6.2 for more detail). This Risk Register serves as an input into staff papers prepared for the Bank's Financial Policy Committee.

- The FMI Directorate contributes to international risk assessment and policy work related to FMIs, for example, by playing a leading role in a number of the workstreams that underpin the Financial Stability Board's published workplan on central counterparties(1) and within other international and EU-based committees and authorities.

- The FMI Board has a broad remit, which includes the promotion of the safety and soundness of FMIs; the taking of specific regulatory, policy and risk decisions; and reviewing policy and risk issues relating to FMI on a forward-looking basis (see Section 6.1 for more detail).

In addition, the FPC has taken an interest in a selected number of FMI-related issues, including the financial market infrastructure underpinning the global over-the-counter derivatives market, and the mitigation of cyber risk in the UK FMI sector. In supporting the FPC, staff from the Bank's FMI Directorate work closely with other colleagues in the Bank's Financial Stability area, and will typically lead on FMI-related topics. In addition, there are mechanisms in place for staff in the FMI Directorate to raise FMI-related issues that may be of interest to the FPC.

We also considered co-ordination of micro and macroprudential objectives relating to the role FMIs play in the broader financial system. We found that such discussions take place in the Bank's internal committees. But staff noted that there was scope to clarify the FMI Directorate's precise responsibilities in this space, and its expected contribution to the broader aims of the institution. Our recommendation is therefore that the Bank articulates the links between FMI supervision and macroprudential policy in relation to the risks arising from FMIs more fully.

(1) Financial Stability Board (2015), '2015 CCP Workplan', April; www.fsb.org/wp-content/uploads/Joint-CCP-Workplan-for-2015-For-Publication.pdf.

(ii) Links with the microprudential supervision of PRA-regulated firms

Many PRA-regulated firms are members or customers of the FMIs that the Bank supervises. There is therefore an opportunity for the Bank to consider how and when it may be appropriate for PRA supervisors to help deliver FMI supervisory priorities. We discuss this further in Section 5.2, where we note the existence of well-developed formal and informal channels of communication between the supervisors of FMIs and the supervisors of PRA-regulated firms, as well as positive examples of collaboration.

Here we note that there would be value in developing a more systematic understanding of how and when it might be appropriate for supervisors to work through FMI members, rather than to default to acting through the FMIs themselves. A clearer articulation of the links between FMI supervision and the supervision of PRA-regulated firms could also help to promote a greater understanding across the Bank in general of the importance of FMIs and their impact on many of the institution's responsibilities.

3.3 Recommendations: clarifying strategy and objectives

FMI supervision at the Bank is rooted in the institution's financial stability objective, and we found a clear and consistent understanding of this overarching framework at all levels of the Bank. We observed that the supervisory objectives set for individual institutions were informed by the overarching aim of financial stability, and that there was clear evidence of the FMI Directorate, and the wider Bank, working to mitigate the risks to financial stability from the broader FMI sector.

Building on this firm foundation, we observed scope to provide a fuller articulation of a number of aspects of the Bank's FMI supervisory strategy and objectives (**Table 3.A**). In our view, this should include greater detail on the links between FMI supervision and the Bank's other responsibilities, as well as on the Bank's tolerance for financial risk and operational resilience with respect to FMIs. This would support the supervisors of individual FMIs in day-to-day supervision, the Bank's management when allocating resources and staff in the wider Bank when collaborating with the FMI Directorate.

Table 3.A Recommendations: clarifying strategy and objectives

High-level recommendations	Detailed recommendations
1 **Ensure a clear and shared understanding of strategy, objectives and risk tolerance**	• The **Governors**, supported as appropriate by the Bank's policy committees, to re-articulate the Bank's strategy to protect and enhance financial stability through supervision of FMIs. This should include an articulation of the links between FMI supervision and the Bank's other responsibilities. • The **Governors** to agree the Bank's tolerance for risks arising from FMIs. This should include both financial risk and operational resilience. • **FMI Directorate** to explain what the concept of 'systemic risk manager' means for each type of FMI, building on the forthcoming Code of Practice for Payment Systems. • Following from the above, **FMI Directorate** to revise the Bank of England 2013 Supervisory Approach document, working closely with other relevant stakeholders.

4 Evaluation: supervisory approach

Having considered the Bank's formulation of strategy for FMI supervision, we next assess how effectively this strategy has been transposed into a supervisory approach. We consider the supervisory approach currently adopted for FMIs (Section 4.1), as well as the Bank's approach to identifying new and emerging risks (Section 4.2). Section 4.3 concludes.

This aspect of our work is particularly relevant to our second and fifth evaluation criteria: how the Bank has organised itself to deliver is strategy and objectives in respect of FMI supervision; and how well the Bank's FMI supervision is placed to identify and respond to new developments. We draw on the following components of our evidence base: supervisory approach documents; supervisory reports and actions for each supervised FMI over the most recent cycle; thematic reviews on a range of supervisory topics; topic reviews of specific supervisory activities; surveys; and structured interviews with FMI supervisors, management and supervisory committee members.

4.1 The Bank's current supervisory approach

As noted in Section 1, the Bank's approach to FMI supervision is framed by global standards (the Principles for financial market infrastructures) and is underpinned by domestic and European legislation. Against this context, the Bank has chosen to operationalise its approach to FMI supervision by adapting the Risk Model used by the supervisors of PRA-regulated firms.

This section considers this approach in more detail, with a particular focus on:

(i) the extent to which the adapted PRA Risk Model is an appropriate way of supervising FMIs for financial stability;

(ii) the extent to which the current supervisory approach incorporates considerations of operational resilience; and

(iii) the Bank's approach to cross-border supervisory co-operation.

(i) Supervising for financial stability

In recent years, the Bank has invested in its approach to FMI supervision, including by adapting the approach that the PRA uses to supervise its authorised deposit-takers and insurers. In common with the PRA, the approach is intended to be risk-based and forward-looking. It is based around an annual cycle, and at its heart is a Risk Model. For many FMIs, operational resilience is at least as big a threat to financial stability as financial failure. Reflecting this unique profile of FMIs, the FMI Directorate has adapted the PRA's Risk Model accordingly to include more operational elements. We consider this further in subsection (ii) below.

Figure 4.1 sets out the supervisory Risk Model used for FMIs. The components cover the amount of risk posed by each FMI and the quality of mitigating factors. Supervisors use a combination of information to assess each FMI against the FMI Risk Model components: each FMI's self-assessment against the Principles for financial market infrastructures; supervisors' own assessment against these Principles; and information from ongoing supervisory activities.

The FMI Risk Model helps to generate an assessment about the risks posed by a supervised entity to the Bank's objectives. Supervisors use this assessment to generate a Proactive Intervention Framework (PIF) score[(1)] — which

(1) The PIF score places a supervised entity in one of five stages, ranging from stage 1 (low risk to the viability of a firm) to stage 5 (where a firm is in resolution or being actively wound up). See Bank of England (2016a), page 56.

Figure 4.1 Supervisory Risk Model for FMIs

Risk			Mitigating factors							
Potential systemic impact	Risk context		Operational mitigants				Financial mitigants			Structural mitigation
	External risks (eg member default or business risk)	Internal risks (eg IT failure)	Promotion and maintenance of standards	Management and governance	Risk management and controls	Disaster recovery plans	Collateral/ Margin and Default Fund	Liquid resources	Capital	Recovery and resolvability

Source: Bank of England (2013).

aims to capture their judgement about a firm's proximity to failure. The PIF scoring system is designed to ensure that supervisors identify and respond to emerging risks at an early stage. As a firm moves to a higher PIF stage — that is, as supervisors determine that the firm's viability has deteriorated — supervisory actions are reviewed accordingly.

The FMI Risk Model assessment and PIF score are reviewed at annual supervisory meetings for each FMI (known as Internal Risk Review meetings) and then signed off by the relevant supervisory committee. We reviewed materials produced for Internal Risk Review meetings conducted during our evaluation period and found them to be of good quality, and focused on identifying and mitigating the key risks posed by each FMI. Furthermore, the PRA's supervisory approach and PRA Risk Model were found to constitute a sensible starting point for FMI supervision.

As with the PRA's supervision of deposit-takers and insurers, FMI supervisors aim to deliver a risk-based, forward-looking approach. The prescriptive nature of some of the legislation governing FMIs, with which the Bank is obliged to ensure that it is fully compliant (Section 1), precludes an entirely risk-based approach. In our view, the Bank has largely achieved its aim to be a risk-based supervisor within these constraints. For example, the FMI Directorate allocates more supervisory resources to those FMIs assessed to pose the most risk, and triages certain model approval requests based on an assessment of risk and applies differing levels of scrutiny accordingly.

In our view, and building on these firm foundations, there is scope for further incremental development of the supervisory approach. Recalling that the Bank's objective for FMI supervision is financial stability, we found that the supervisory strategy, objectives and priorities for individual FMIs did indeed reflect this broad objective. We noted, however, that individual supervisors did not complement their risk model assessments with a clear and concise statement of the degree of risk posed by each FMI to financial stability. We also noted scope for FMI supervisors to standardise the key content of annual supervisory packs (prepared for the Internal Risk Reviews), including an assessment against risk tolerance of the key risks that each FMI poses to the Bank's objectives. A fuller articulation of the Bank's strategy and objectives, and risk tolerance (as noted in Section 3), is of course an important first step in driving improvements in this area.

(ii) The supervisory approach for operational resilience

For many FMIs, operational resilience is as big a threat to financial stability as financial failure. Indeed, for some FMIs, it is the main source of risk. As part of our evaluation, we reviewed how the FMI Directorate identifies, communicates and mitigates operational resilience vulnerabilities.

First, as noted above, the FMI Directorate has adapted the PRA Risk Model to identify operational resilience weaknesses. In our view, this modification is appropriate because the existing PRA Risk Model is focused on measuring the main risks from PRA-authorised firms, which tend to be financial, and as such does not place sufficient weight on operational resilience for use in supervising FMIs.

Second, in common with the PRA, all risks posed by individual FMIs are summarised in a PIF score. That said, we observed that some supervisory teams provided a second 'shadow' PIF score that exclusively captured operational resilience. This confirms the view we heard that it is difficult to combine financial and operational assessments within a single metric — strength in one does not necessarily mitigate weakness in the other. In our view, there is scope to deliver greater consistency in this aspect of the supervisory approach, and we therefore recommend that FMI supervisors continue in their efforts to formalise and standardise the setting of PIF scores in a way that gives appropriate weight and visibility to operational resilience.

Third, we found that a significant number of the priorities set for FMIs over the most recent cycle addressed operational vulnerabilities. But there were mixed views among members of supervisory committees about whether they were seeing the right balance of financial risk versus operational resilience material in their discussions.

More generally, there is a wider challenge within FMI supervision — and indeed within microprudential supervision more broadly — of developing an appropriately rich toolkit for mitigating operational resilience weaknesses. We note that the Bank's FMI supervisors have been contributing to work in this area both within the Bank, and in the international arena.

In our view, FMI supervisors could usefully articulate more clearly how the priorities set for each FMI address operational resilience weaknesses. And we recommend that as part of the Bank-wide operational resilience agenda, the FMI Directorate and the PRA continue to develop jointly a supervisory approach and toolkit for operational resilience in FMIs and their member firms.

(iii) Arrangements for cross-border supervisory co-operation

A number of UK-supervised FMIs have considerable international usage and international presence, and, recognising its role in helping to promote financial stability outside the United Kingdom, the Bank participates in a range of cross-border supervisory engagements. The cornerstone of this co-operation is provided by supervisory colleges and co-operative oversight arrangements, as explained in more detail in Box 1.

The Bank has made a significant commitment to its various co-operative oversight arrangements, allocating supervisory resources to the colleges (meetings of relevant supervisors in different jurisdictions) for its most significant systems. The FMI Directorate uses the colleges it hosts to help deliver each supervisory team's strategy, with the aim of enhancing the regulation of each FMI. By aiming to set an example of a well-functioning college, the Directorate seeks to encourage greater international co-operation between supervisors and to further the Bank's broader financial stability aims.

In addition to the colleges for institutions directly supervised by the FMI Directorate, the Bank also attends colleges for a number of European central counterparties. This provides the FMI Directorate with a more systematic view of central counterparty risk along with useful intelligence for both FMI and PRA supervisors. The Bank can also use college attendance to inform its view on the standards to which each FMI should be held. The Bank additionally participates in co-operative oversight arrangements for SWIFT and CLS (see Box 1).

Feedback from external stakeholders has been positive in respect of the Bank's participation in, and hosting of, FMI supervisory colleges.

4.2 Future/forward-looking supervision

Any supervisory approach, no matter how effective at a particular point in time, will become outdated if it does not respond and adapt to change. And change in the FMI space comes from a range of sources (Section 1), including regulatory pressures and technological innovation.

As part of our evaluation, we assessed whether FMI supervision at the Bank has processes to identify and mitigate emerging risks, and found numerous positive examples. We additionally found that the Bank's FMI policy agenda and supervisory approach combine effectively to identify potential threats to the Bank's objectives, both from new FMIs and from previously unknown risks within existing FMIs.

Box 1
International co-operative oversight

Co-operative oversight can take many different forms, ranging from formal college arrangements to informal, bilateral information-sharing agreements. Global standards for FMI supervision set out expectations for minimum levels of co-operation and information sharing, and these are subject to regular peer review (see also Section 6.2).

The Bank has been a leader in developing multilateral colleges to facilitate international co-operation and information sharing, particularly with respect to the UK CCPs that serve global markets. It devotes material resource and time to collaborating with other regulators, both domestically and internationally, and currently has the following arrangements in place:

For central counterparties:

- The Bank hosts global colleges for two of its largest central counterparties — LCH and ICE — and participates in other global colleges for institutions in which the United Kingdom has an economic interest. Global colleges are not required by legislation, although they are encouraged by internationally agreed supervisory standards. Global colleges allow authorities to share information and consult with one another on important risk-reducing activities.

- Under the current EU legislation (EMIR), national competent authorities are required to host supervisory colleges. The Bank is the national competent authority for four EMIR central counterparty colleges. As with the global colleges, information sharing is a key objective. In addition, colleges have a role in decision-making in specific instances, eg when authorising a central counterparty, or approving significant risk model changes.

For securities settlement systems:

- In contrast to the position for central counterparties, the relevant EU legislation — Central Securities Depositories Regulation (CSDR) — provides for co-operation between authorities through information-sharing and co-operation requirements.

For payments systems:

- CLS oversight: The Bank is a member of the CLS Oversight Committee, a collective oversight arrangement organised and administered by the US Federal Reserve.

SWIFT oversight:

- SWIFT provides a financial messaging platform which is systemically important to the United Kingdom and to the global financial system, but it is not an FMI recognised under UK legislation. It is headquartered in Belgium. The Bank participates in international SWIFT Oversight arrangements, chaired by the National Bank of Belgium.

Memoranda of Understanding:

- The Bank has Memoranda of Understanding (MoUs) with a number of international authorities to provide a framework for requesting and sharing information.

(i) Risks from new FMIs

The FMI landscape is constantly evolving. We found that the FMI Directorate has processes in place to scan for both: (i) new FMIs that should be supervised under existing legislation; and (ii) firms that, whilst offering FMI-type services, may fall outside of the scope of existing legislation.

New, but traditional, FMIs are generally caught under existing legislation. HM Treasury may recognise an inter-bank payment system for Bank supervision under the Banking Act 2009. And central counterparties and securities settlement services require authorisation under relevant EU legislation.

The Bank has made changes to its approach to scanning for new payment systems in recent years. In line with the Bank's Mission Statement, set out as part of its 2014 Strategic Plan, the Bank now places more emphasis on the potential impact of a payment system on the real economy, rather than only considering whether the failure of a system could transmit contagion within the financial system. Non-UK payment systems and service providers are also included in the scanning process.

New firms that may fall outside the scope of existing legislation include those that arise due to innovation from technology companies, commonly referred to as 'FinTech'. And hence, for the Bank's 2016 scanning exercise, there was one further change, which was to consider innovative financial technology. The Bank has secured agreement from HM Treasury to amend legislation to allow the Bank to supervise non-bank payment systems if they are systemic, although the precise timetable is not clear at this point. This is a good example of the Bank acting to ensure that systems that may have the substance, but not the traditional form, of FMIs do not escape supervision if they have the potential to affect UK financial stability or the real economy.

There is considerable interest from technology companies in bringing innovation to financial services more generally, not just in payment systems (Carney (2016)). And we found strong interest in, and commitment to, this area at the most senior levels of the Bank. We also found that the FMI Directorate has considered the potential impact of FinTech in all of its areas of responsibility and has been strongly involved in a variety of initiatives across the Bank, such as FinTech working groups.

Looking ahead, in our view it is important that the FMI Directorate continues to engage with the Bank's FinTech work. And our understanding is that the FMI Directorate intends to earmark a small, but fixed amount of supervisory expertise to keep abreast of such developments. Complementing this approach, it will be helpful for those other parts of the Bank that are more directly involved to consider and brief the FMI supervisors as necessary.

(ii) New risks from existing FMIs

FMI supervisors also have processes in place to identify — and if necessary mitigate — new risks from existing FMIs. These processes have been strengthened over the past year, with the introduction of more proactive investigatory work in the form of a new 'Core Assurance Programme'. The Core Assurance Programme — a systematic approach to reviewing all aspects of supervised FMIs — consists of up to 16 components per institution. As set out in Bank of England (2016c), the new programme is '*designed to ensure that all key areas within the supervisory model are assessed to an agreed depth, as part of a rolling multi-year programme of work*.'

The Core Assurance Programme is intended to be delivered over five years, with the financial risk components completed in three years for central counterparties. In our view, the Core Assurance Programme is a proactive, forward-looking programme of investigatory work that considers key sources of potential risk and is an important complement to reactive supervision. We recommend that the Bank's senior management consider whether a five-year cycle for the Core Assurance Programme accurately reflects their risk tolerance in this area, however, noting that local management had initially proposed a three-year programme (Section 5.2).

One additional benefit of the Core Assurance Programme is that it is a discretionary programme of proactive work. It affords the FMI Directorate the flexibility, should new risks crystallise, to pause temporarily the programme and divert resources to new priorities. In our view, this is a good example of designing flexibility and agility into the supervisory approach.

4.3 Recommendations: supervisory approach

Our assessment is that the FMI Directorate is generally delivering effective, risk-based and forward-looking supervision of FMIs, and has developed processes aimed at identifying and mitigating emerging FMI risks. We make a single recommendation for further incremental supervisory improvements, with the aim of focusing actions towards the Bank's financial stability objective and giving appropriate prominence to risk arising from operational issues at FMIs (**Table 4.A**).

Table 4.A Recommendations: supervisory approach

High-level recommendations	Detailed recommendations
2 Further improve supervisory practices	• **FMI Directorate** to further align its supervisory model and practices to reflect the Bank's overall financial stability objective and the relative significance of operational resilience.

5 Evaluation: resourcing

The Bank has chosen to employ a specialist model for its FMI supervision. A separate Directorate — the Financial Market Infrastructure Directorate — brings together FMI supervision, policy development, risk analysis and research. To an extent, the FMI Directorate can be thought of as a quasi-standalone regulator, responsible for supervision and related functions.

This specialist model has a number of advantages, including dedicated resources, specialist knowledge and flexibility to address emerging issues. But the specialist model also has potential drawbacks, including loss of scale, capacity constraints, and key person risk. For the specialist model to make the most of its advantages and mitigate its potential drawbacks, there is a need to leverage the wider organisation as effectively as possible.

This section assesses the effectiveness of the Bank's resourcing model for FMI supervision. We first consider the nature of the resources directly available to the FMI Directorate (Section 5.1), before turning to the support for the FMI Directorate provided by the wider Bank (Section 5.2). Section 5.3 concludes.

The evidence set out in this section of our report relates to our second evaluation criterion, namely how the Bank has organised itself to deliver its strategy and objectives. In addition, we asked whether the resourcing model would be able to meet future changes in the FMI landscape (our fifth evaluation criterion).

This aspect of our evaluation draws on evidence from surveys and interviews, staff data and internal documentation. We also drew some comparisons with the Prudential Regulation Authority (PRA). While we are not suggesting that the PRA is the 'right' benchmark for the FMI Directorate, these comparisons were nonetheless instructive.

5.1 Resourcing of the Bank's FMI Directorate

We looked closely at the adequacy of resourcing, including staff skills, experience and the funding structure chosen by the Bank for its FMI supervisory activities.

We note that resourcing adequacy is a risk that has been closely monitored by Bank management. And in its recent financial stability assessment, the International Monetary Fund (IMF) flagged that resourcing in the future would need to keep pace with the increasing importance of FMIs (IMF (2016)). Specifically, the IMF commented on the need to strengthen resources, particularly with respect to quantitative and qualitative analysis of system-wide risks of FMIs, noting, however, that there had been a recent increase in staff numbers.

(i) Workforce capacity

The FMI Directorate was established in July 2014 and is a Directorate in the Bank's Financial Stability area. The FMI Directorate currently has around 65 members of staff. Staffing levels have risen from just under 50 in July 2014, with the most significant increases in supervision, risk and policy. This increase in staff coincided with a rise in supervisory demands, including: an increase in the number of recognised payment systems; EU-required authorisation of all UK-based central counterparties (under EMIR) and the associated establishment of European supervisory colleges; and the FMI Directorate's continued contribution to the international policy agenda. The FMI Directorate also draws on the expertise and resources of the wider Bank in a number of respects (Section 5.2).

Around 30 of the FMI Directorate's staff work as firm supervisors. Reflecting its risk-based approach to supervision (see Section 4.1), the FMI Directorate has allocated more supervisors to high-risk FMIs than to lower-risk firms. In addition to firm supervisors, the FMI Directorate has seven risk specialists and around 20 people working in its policy and research teams, reflecting its aims to play a leading role in the development of

Box 2
Policy and research

The FMI Directorate has a comprehensive research and policy programme, supporting both its supervisory activities and its international policy engagement.

The policy work has been focused on making contributions to the ongoing development of global standards and domestic and European legislation including:

- Central counterparties (CCPs): producing more granular international guidance on CCP resilience and developing an approach to supervisory stress testing of CCPs.

- Central securities depositories: input into the finalisation of European legislation (CSDR) and related technical standards.

- Payment systems: understanding the interaction between ring-fencing of banks and banks' participation in payment systems.

- Data: input into the development of technical standards of the Securities Financing Transactions Regulation related to the reporting of securities financing transactions.

Policy teams also contributed to the development of CCP recovery and resolution standards, including as part of the FSB CCP work plan, although this area is outside the remit of the present IEO evaluation.

The research programme has focused on:

- Understanding pro-cyclicality of CCP margin requirements and the tools that can limit its impact.

- The impact of reducing tiering in payment systems.

- Adoption of distributed ledger technologies in securities trading.

In addition, the Directorate has invested significantly in the development of high-quality FMI data, both through participation in international initiatives aimed at harmonising and standardising trade repository data, and through developing in-house solutions to improve access to these data.

The trade repository data have been used for a number of research projects, including research aimed at understanding the effect of new trading facilities in interest rate swap markets, and on the transmission of shocks through the network of UK banks in credit default swap markets.

international FMI policy. The FMI Directorate also makes a significant contribution to broader Bank work, through its research programme and its data work (for more details, see Box 2).

Compared with the PRA, the size of supervisory teams within the FMI Directorate is towards the lower end of the spectrum (although, as noted above, it is not clear that the PRA is necessarily the 'right' benchmark for FMI supervision). International comparisons on staffing levels are complicated by the differing responsibilities and legislative frameworks of FMI oversight arrangements in different jurisdictions. We observe, though, that many jurisdictions have relatively small supervisory teams for their domestically headquartered FMIs, although additional resources may be allocated for the oversight of overseas central counterparties (eg where these central counterparties clear domestic markets) or where the style of supervision is more intrusive.

Despite a very full business as usual workload, and relatively small supervisory teams, we found no evidence of material shortcomings in the supervisory approach and numerous examples of good practice. For example, the quality of the FMI Directorate's technical analysis was widely praised, both by internal stakeholders and by international contacts. And there was evidence that policy analysis and research originating in the FMI Directorate had made material contributions to the Bank's international policy agenda (see Box 2).

Our work does suggest that the FMI Directorate's workforce is currently at capacity, however. While the area has been able to deliver on its core supervision responsibilities during the review period, this is in part because it has been able to draw on others in the Bank for key pieces of work (see also Section 5.2) and also because prioritisation choices have been made. For example, the FMI Directorate's new Core Assurance programme (Section 4.2) is spread over five years, compared with the three-year programme that was originally proposed by local management. Re-prioritisation has been required in some areas, such as a reduction in the frequency of formal reporting on horizon scanning. We also note that internal measures of resource stretch have been more pronounced for the FMI Directorate than for several other areas of the Bank.

Looking ahead, with major developments on the horizon (including the RTGS review and possible changes in payments and settlement technology resulting in an expansion of the regulatory perimeter for FMIs), the supervisory workload is expected to increase further. We therefore recommend that the Bank strengthens its capability to deal effectively with future changes in the FMI landscape, both expected and unexpected. As such, we recommend that the FMI Directorate's senior management sets out a desired future resourcing model. We recommend that this resourcing model encompasses both resources within the FMI Directorate and access to Bank pools of expert skills, as we explain in Section 5.2.

(ii) Building supervisory experience

The FMI Directorate's workforce relies on a wide range of skills, ranging from frontline supervision to quantitative risk analysis and research. Some FMI supervisors have prior supervisory experience, including supervising the highest-risk UK banks. Others have a broader public policy background. About half of the Directorate's workforce has external experience, covering a wide range of sectors.

Despite this relatively wide range of backgrounds and experience, both Directorate staff and wider stakeholders emphasised the need to continue to build deep supervisory experience with respect to FMIs, especially in the light of the challenges ahead. Compared with PRA-regulated firms, supervisory outputs were generally seen as being of a similar quality, but the experience of supervisory teams was seen as being towards the lower end of the spectrum. A commonly heard view was that frontline supervision requires prior experience, particularly when communicating supervisory priorities to firms.

Developing deeper supervisory experiences would ensure supervisory teams are fully equipped to engage effectively with today's supervised firms and to respond swiftly to future changes in the FMI landscape. Building supervisory experience may also increase the agility of the workforce, as more experienced staff may find it easier to pick up new projects at very short notice,(1) as well as mitigating key person risk. This will require planning for critical roles and a more co-ordinated approach to talent management that sees FMI supervision as an integral part of the Bank-wide supervisory career path.

Taken together, our recommendation is that the FMI Directorate, as part of its annual review of its resourcing and organisation, considers ways of strengthening the experience and flexibility of its supervisory teams to respond to future developments in the FMI landscape, both in the short and the medium term.

(iii) Funding structure for FMI supervision at the Bank

Our work also raises the question of whether the current approach to funding for FMI supervision — where the Bank has the legal power to levy fees, but, to date, has not exercised these — acts as a barrier to a more flexible resourcing model.

FMI supervision — like many other functions of the Bank of England — is funded by Cash Ratio Deposit (CRD) revenue (see Box 3). CRD revenue has been used to fund payments systems oversight since the Bank assumed statutory duties in this area in 2009, and it has also been used to pay for FMI supervision since 2013. In contrast,

(1) For an introduction to agile working, see Holbeche (2015).

Box 3
Cash ratio deposits[1]

Under the Cash Ratio Deposit (CRD) scheme, sterling deposit-taking banks and building societies place non-interest bearing deposits at the Bank. Eligible institutions include those banks and building societies who have reported average eligible liabilities of over £600 million over a calculation period. The level of each institution's CRD is currently calculated twice-yearly (currently in May and November) at 0.18% of average eligible liabilities, over the previous six end-calendar months, in excess of £600 million.

The Bank invests these deposits and the income earned is used to fund the costs of its policy costs, ie its monetary policy and financial stability operations, on the basis that they benefit sterling deposit-takers.

The proportion (or ratio) of banks' and building societies' deposits that will be non-interest bearing is reviewed every five years, and was last reviewed in May 2013. It will be reviewed next in 2018. The proportion is decided by HM Treasury, following a public consultation and consultation with the Bank of England.

(1) See www.bankofengland.co.uk/statistics/Documents/faq/crds.pdf.

both banking and insurance supervision are funded by a levy on PRA-regulated firms.[1] Points of comparison between the levy-based funding model and the CRD-based funding model include:

- The CRD revenue is calculated on a five-yearly cycle. This is by definition much less able to respond to changes in the cost of supervision than the PRA's annual levy-setting process, which can also, where appropriate, recoup overspends from past years.
- While legislation allows the Bank to charge both FMIs and PRA-regulated firms for independent expert reports, the PRA can additionally make bespoke charges for special projects — for example, the introduction of Solvency II for insurers or of structural reform ('ring-fencing') for larger banks.
- The PRA can charge supervised firms directly for particular additional costs — for example a merger or acquisition or an application to become an authorised (and supervised) institution.

In our view, a fee-based funding model potentially has two main advantages from the perspective of FMI supervision at the Bank. First, it would potentially enhance the Bank's ability to adjust its staffing model for FMI supervision as the regulatory perimeter expands. For example, as noted in Section 4.2, technological change in the payments area could lead to the development of new payment providers, who, if they became systemic players, could meet the recognition criteria for supervision by the Bank. Second, levying fees would strengthen the Bank's ability to meet the resource requirements for large, one-off supervisory projects (provided they fell within the Bank's fee-levying powers), without having to scale back existing supervisory work, including pro-active investigative work.

We recognise, however, that any decision to introduce a fee-based approach to FMI supervision would not be costless. There would be costs associated with collecting fees. And any decision to introduce fees would require careful timetabling, including consultation on a fee-charging model. It should also be noted that fees would only cover statutory functions, which would not cover all of the Directorate's functions or staff.

More broadly, FMI supervision is only one of a large number of functions carried out by the Bank that are currently funded by CRD revenue, and we note that the existing arrangements for CRD funding and Bank revenues are due for renewal in 2018. Our recommendation is therefore that the Governors and Court consider the Bank's position on levying fees for FMI supervision as part of any wider discussions on the Bank's medium-term funding structure.

(1) See Bank of England (2016e); www.bankofengland.co.uk/pra/Pages/publications/cp/2016/cp1016.aspx.

5.2 Leveraging support from the wider Bank

In this section, we consider the linkages between the FMI Directorate and other parts of the Bank. These linkages matter for two reasons. First, reflecting their critical role in the financial system, FMIs matter for several of the Bank's objectives. It follows that the FMI Directorate needs to work closely with other parts of the Bank, with regards to both the identification and the mitigation of FMI-related risks. Second, as noted above, the FMI Directorate is a relatively small and specialised area, covering a range of functions, including supervision, risk analysis, policy and research. Given its size, there are instances where the FMI Directorate has to rely on the services and expertise provided by other parts of the Bank.

This section considers the effectiveness of the engagement between the FMI Directorate and other areas of the Bank when working to mitigate FMI-related risks. We then turn to the question of whether the FMI Directorate is able to leverage the wider organisation effectively.

(i) Working with others to mitigate risks related to FMIs

FMIs are not isolated entities, but sit at the heart of the financial system. Their members are typically PRA-regulated firms. When deciding how best to achieve risk mitigation and other objectives, FMI supervisors can use one of two levers: acting on the FMIs directly; or acting via the members. Acting via the members requires good lines of communication with PRA supervisors. And it also requires a shared view of how and when it is appropriate to seek to achieve FMI supervisory goals through PRA-regulated members, rather than acting directly through the FMIs themselves.

In terms of communication, we evaluated both formal and informal channels of communication and collaboration between FMI supervisors, PRA supervisors and the wider Bank, and found that these generally worked well. For example:

- Formal channels, in particular the broad membership of the internal supervisory committees for FMI supervision have contributed to greater awareness of risks to and from FMIs (see also Section 6.1).

- The FMI Risk Forum — an internal advisory group established in early 2015 that brings together FMI supervisors, PRA supervisors and other staff from around the Bank — has also helped deepen understanding of the links between FMIs and the Bank's wider responsibilities. Conversations with the FMI Directorate's senior management indicated, however, that there was scope to raise the visibility and impact of the FMI Risk Forum's work.

- Staff from the FMI Directorate have been involved in numerous collaborative policy projects with colleagues across the Bank (for example, structural reform or 'ring-fencing' in the UK banking system). These joint projects have promoted expertise-sharing and helped to ensure that broader Bank policy work reflects the specific needs of FMIs.

We also noted a number of occasions where FMI supervisors worked together with banking supervisors to help achieve FMI-related supervisory goals. For example, FMI supervisors undertook joint work with the supervisors of international banks on member participation in central counterparty risk committees.

Our view, however, is that there would be value in developing a more systematic understanding of how and when it might be appropriate for supervisors to work through FMI members, rather than to default to acting through the FMIs themselves — and to ensure that this view is shared with colleagues in the PRA. This is supported by evidence from our structured interviews, where the prevailing view was that more could be done to support FMI supervisors in their work, and to embed a collective responsibility across the Bank for delivering FMI supervisory objectives.

(ii) Support for the FMI Directorate from other parts of the Bank

Given the specialist model adopted for FMI supervision at the Bank, we also considered the extent to which FMI supervisors felt able to call on expert resources available in other parts of the Bank, and whether access to resources was formalised or instead part of an informal arrangement.

Box 4
Specialist resources in the PRA

The PRA has a dedicated team of risk specialists, working in the Supervisory Risk Specialists Directorate (at present 155 people). The specialists cover a wider range of risks, including traded risk, credit risk, operational risk and resilience, risk analytics and data, liquidity and capital.

The purpose of the Supervisory Risk Specialists Directorate is to provide deep technical expertise in these risk disciplines to identify, analyse and mitigate risks to the safety and soundness of PRA-regulated firms. Risk specialists work with supervisors across the range of PRA-regulated firms (deposit-takers, investment banks and insurers), although its resources are focused on the highest-risk UK banks. They also provide some support to the Bank's supervision of central counterparties. Finally, they work with micro and macroprudential policymakers and support the Bank's own risk management functions.

The PRA employs a small number of senior people with extensive industry experience or specific skills as Senior Advisors. Senior Advisors typically have no line management responsibilities and report directly to senior executives within the PRA. As part of their role, they provide independent challenge and support to PRA staff. Most commonly they work part time, on fixed term contracts.

The PRA has a dedicated Supervisory Oversight Function, to assess the quality and effectiveness of supervision (see Box 5 in Section 6.2).

We found a number of examples of FMI supervisors drawing on resources in other parts of the Bank, including, but not limited to specialist resources within the PRA (as described in Box 4). For example:

- Work on FinTech developments drew on experts in the Banking, Payments and Financial Resilience Directorate.
- Specialist risk experts in the PRA have worked on a number of reviews and *ad hoc* projects related to FMI operational resilience.
- The Bank's information security experts have supported cyber penetration testing for FMIs.
- The PRA's Senior Advisors have provided support on projects relating to FMI governance and offered challenge at annual reviews of supervisory strategy for individual FMIs.

This access to resource in other parts of the Bank was invariably not governed by formal arrangements, but was instead characterised by relatively informal, *ad hoc* agreements. Although informal agreements can have the benefit of flexibility, it is not clear whether they are always conducive to effective or efficient long-term planning. For example, staff in the FMI Directorate report that they are not always able to rely on support from the PRA's specialist risk resource pools, leading them to replicate some of the expertise available in the wider Bank/PRA within their small, specialist area.

Our view is that a more formal approach concerning the use of the PRA's specialist resources (risk specialists, Senior Advisors, supervisory oversight) would be desirable. That way the support and expertise of the wider organisation can be leveraged as fully as possible, ensuring that FMI supervisors have adequate access to specialist risk resources, and that the Bank's premium resources in this area can be allocated in the most effective manner.

It is particularly important that a more formalised agreement over resourcing between the FMI Directorate and the PRA should cover the area of operational resilience. As discussed in Section 4.1, by their very nature, operational resilience is critical for FMIs — indeed, for certain FMIs, this is the main source of risk. The Bank's experts in operational resilience are based within the PRA, with a remit to support the wider organisation as well as PRA-regulated firms. In our view, there is a strong case for the FMI Directorate being a priority customer.

Hence our recommendation is that the FMI Directorate and the PRA agree to a more formal approach for the use of specialist PRA resources, including operational resilience expertise.

5.3 Recommendations: resourcing

The Bank has chosen to employ a specialist model for its FMI supervision. This approach has both advantages (including dedicated resources, specialist knowledge and flexibility) and potential drawbacks (loss of scale, capacity constraints, and key person risk). For the specialist model to make the most of its advantages and mitigate its potential drawbacks, there is a need to leverage the wider organisation as effectively as possible. And while we found positive evidence of productive collaboration between the FMI supervisors and the wider Bank/PRA in numerous areas, we also found scope for the FMI Directorate to leverage the wider organisation more effectively, and have made a number of recommendations accordingly (**Table 5.A**). Recommendations set out in Section 3 — where we suggest a fuller articulation of the links between FMI supervision and the wider activities of the Bank — will also be helpful in this respect.

Greater support for FMI supervisors from the wider institution should also help to mitigate resource-related risk. While the FMI Directorate has been able to deliver on its core supervision responsibilities during the review period, this is in part because it has been able to draw on others in the Bank for key pieces of work and also because prioritisation choices have been made. Against a backdrop of a rapidly-evolving FMI landscape, our view is that there are steps that could usefully be taken to strengthen the institution's capability to deal effectively with the challenges ahead (**Table 5.A**). These include the articulation of a desired future resourcing model and a continued drive to build supervisory experience. We also recommend that the Bank reconsiders its stance on levying fees for FMI supervision as part of any wider discussions on the Bank's medium-term funding structure.

Table 5.A Recommendations: resourcing

High-level recommendations	Detailed recommendations
3 Ensure FMID is a priority customer for Bank-wide work on operational resilience **4 Wider Bank to invest more fully in FMI Directorate engagement** **5 Design a workforce model that is flexible, encourages the development of deep FMI expertise and enables FMI Directorate to respond to future change in the FMI environment**	• **FMI Directorate** and **PRA** to continue to develop jointly an approach to supervising operational resilience at FMIs, as part of the Bank-wide work on the topic. • **FMI Directorate** to articulate its desired future resourcing model, dependent on the outcome of other recommendations and the skills requirements arising from the changing FMI environment. • **FMI Directorate** and **PRA** to agree a more formal approach for the use of specialist PRA resources. • **FMI Directorate** and **PRA** to co-ordinate talent management and succession planning to support the development of an experienced cadre of FMI supervisors. • **Governors** and **Court** to reconsider the Bank's position on levying fees for FMI supervision as part of any wider discussions on the Bank's medium-term funding structure.

6 Evaluation: governance and assurance

Effective governance of FMI supervision and policymaking is critical to support the delivery of the Bank's strategy and objectives. Good governance ensures that decisions are taken by the appropriate people and subject to sufficient, informed challenge. In support of good governance is an adequate assurance framework that enables the Bank's leadership to evaluate the quality of decisions taken and the performance of the supervisory approach.

This section is in two parts. The first assesses the governance structure that the Bank has put in place for FMI supervision, how it operates in practice and how well it is understood (Section 6.1). The second assesses how local management and the Bank's leadership team gain assurance that FMI supervision is delivering its objectives, identifying and addressing the main risks, and making the best use of Bank resources (Section 6.2).

The evidence set out in this section of our *Report* relates to our third and fourth evaluation criteria, namely: whether the Bank has effective governance to support the delivery of the strategy and objectives, and the extent to which the Bank has established clearly defined success criteria for FMI supervision.

This part of our evaluation draws on our reviews of: FMI Directorate's annual published reports; FMI supervisory committee agendas and papers; FMI Directorate key management information reporting; interviews with FMI supervisory committee members; Bank Audit and Risk Committee discussions; and discussions with Non-Executive Directors of the Bank's Court.

6.1 Governance of FMI supervision

(i) Governance structure

As a quasi-standalone regulator, the FMI Directorate has its own governance structure, separate from that of the Bank's statutory committees (the Monetary Policy Committee, the Financial Policy Committee and the PRA Board), and other statutory and non-statutory activities conducted by the Bank.

As set out in Section 1, the Bank made a number of changes to the way FMI supervision is carried out at the time of its 2014 Strategic Plan, including revisions to the governance framework (see **Table 6.A** for a summary). These included some changes to the allocation of decision-making responsibilities and a broadening of the membership of some key FMI committees to bring in a greater range of views from across the institution.

Table 6.A Governance structure for FMI supervision

Court	Reviews the FMI Board's effectiveness in meeting the Bank's objectives and strategy
Governors	Decisions reserved to the Governors Decisions referred by Deputy Governor for Financial Stability
FMI Board	(i) Regulatory, policy and risk decisions in relation to FMIs (ii) Oversight of the Bank's functions in respect of FMIs and the Bank's participation in FMI colleges (iii) Review of policy and risk issues relating to FMIs on a forward-looking basis
FMI Executive Committee	Functions delegated to it by the FMI Board
FMI Director and senior management	Functions delegated to it by the FMI Board

Responsibilities for the supervision of FMIs have been delegated by Court (the Bank's Board) to the Governor. As shown in **Table 6.A**, while some key decisions are reserved to the Governors (eg decisions to withdraw authorisation or recognition from an FMI), in practice, the delivery of the bulk of the Bank's supervisory responsibilities is discharged through the FMI Board, chaired by the Deputy Governor for Financial Stability. The FMI Board makes decisions relating to both supervisory and policy matters. Its remit covers those decisions that can have a significant impact on the Bank's objectives, either because of the nature of the FMI involved or the possible impact of the decision. The FMI Board also has some oversight responsibilities for the FMI Directorate. FMI Board membership is drawn from across the Bank.

Decisions that are likely to have a lesser impact may be taken by either the FMI Executive Committee or the Director of the FMI Directorate and his senior management, depending on the exact nature of the decision and its likely impact. The FMI Executive Committee is chaired by the FMI Director and reports to the FMI Board. Its membership too is drawn from across all of the Bank's functions.

Whilst not part of the above governance structure, the Bank's Financial Policy Committee also has a potentially important role in helping to shape the Bank's overall strategy in respect of FMIs, given that the overall objective for FMI supervision is reducing risks to the UK financial system (see Section 3).

Finally, in early 2015, the FMI Directorate created the FMI Risk Forum. This is an internal advisory committee with membership drawn from across the Bank, including the PRA. Its focus is on identifying risks to and from FMIs and promoting awareness of these risks throughout the institution. The FMI Risk Forum is not part of the Bank's formal supervisory processes, but where issues are identified that are relevant for either FMI or PRA supervisors, it can raise these with the relevant staff.

The remainder of this section assesses how effective the decision-making framework for FMI supervision has been in practice. First, we consider the degree to which the framework is understood, consistently adhered to and allows for flexibility, where appropriate. Second, we consider the role of challenge and diversity of expertise.

(ii) Decision-making framework

Our review of papers and comments made by committee members and supervisory staff indicate that the governance structure set-up in 2014 effectively supports senior decision-making on a wide range of supervisory and related policy decisions. The decision-making framework is well understood and is consistently adhered to. We further found that the framework is flexible enough to allow for discussion of new developments as and when they arise, and to consider the interaction between FMI supervision and wider policy initiatives.

Specifically, our evaluation suggests that during the review period:

- The decisions brought to the FMI Board were wide-ranging, with around two thirds of the Board's agenda items relating to regulatory and statutory decisions, and to policy and risk decisions. Most decisions involved microprudential tools, with a small number of macroprudential issues considered. The Board also discussed forward-looking policy items that were not related to either individual supervisory or live policy decisions. The FMI Board spent the remainder of its time on items relating to oversight of the FMI Directorate's responsibilities.

- The FMI Executive Committee had its own distinct agenda. It spent around a fifth of its time on supervisory decisions and just over half of its time on policy and research topics. As with the FMI Board, the bulk of its discussions related to microprudential, not macroprudential issues.

- The Governors considered a number of FMI-related items. In some cases, these referred to individual supervisory matters, but the majority of Governors' discussions focused on broader strategic topics, including macroprudential policy.

- The FPC occasionally considered FMI-related items as part of its broader programme of systemic risk mitigation. Relevant items included: the cyber-testing programme for the UK financial sector; preparations for the EU referendum; and aspects of the broader regulatory reform programme aimed at reducing risks in the over-the-counter derivative markets.

Overall, we found clear evidence of an effective governance framework following the changes made around the time of the Bank's 2014 Strategic Plan. Furthermore, survey respondents largely agreed that the decision-making framework was clear.

At the same time, we believe now is an opportune time to take stock and review the balance of responsibilities. This recommendation is supported by observations made to us during the evaluation by members of FMI's supervisory committees and by supervisory staff. For example, members of both supervisory committees commented on the large number and variety of committee decisions. Some queried whether highly technical papers should come to a senior committee or whether alternative fora might be more appropriate, eg a panel of technical experts. FMI Board members also expressed a desire for the Board to have more time to reflect on the Bank's overall objectives with respect to FMI issues. And some thought that the FMI Board should set out the broad strategy for FMI Directorate, thus providing high-level guidance for the majority of policy and supervisory decisions.

The case for a governance stock-take is strengthened, in our view, by the ongoing change in the FMI landscape, and the associated desirability of ensuring there is sufficient senior airtime and capacity to consider broader strategic considerations related to the outlook for the industry.

(iii) Challenge and diversity of expertise

As part of the 2014 governance changes, supervisory committee memberships were widened to include members from across the Bank, as a way of injecting greater challenge into deliberations, and to help ensure that the FMI Directorate was drawing on the breadth of expertise across the institution. During our review, we considered whether deliberations in supervisory committees were constructive and challenging, whether a wide range of views were considered and whether members considered interdependencies between the various Bank objectives.

Our review of minutes, together with our interviews and survey evidence, indicated that committee members debated and challenged issues brought to the respective committees. We also found a number of instances where committee members asked for a clearer articulation of supervisory priorities, or in some cases, suggested tougher action. That said, feedback from interviewees suggested that more could be done to harness individual members' expertise and knowledge.

We also observed several instances where members considered interdependencies between the different Bank objectives, in some instances resulting in subsequent collaboration between FMI teams and other parts of the Bank. In interviews, committee members commented that they had opportunities to share supervisory best practice. In our view, this is an important feature of the cross-Bank membership. Looking ahead, a fuller articulation of the Bank's supervisory objectives relating to FMIs (as recommended in Section 3) would also have the benefit of clarifying how committee members from the PRA can continue to contribute to the Bank's supervisory objectives for FMIs through their individual membership.

Finally, we note that in contrast with the PRA, there is a more limited opportunity for third-party challenge to internal supervisory and policy decision-making.(1) For the PRA, policy and supervisory decisions at both PRA Board and its supporting committee are subject to third-party challenge from PRA Senior Advisors and PRA Board Non-Executive Directors.(2) PRA Senior Advisors — third parties with significant external expertise who have an explicit role to challenge and support PRA supervisors at all levels — also attend internal challenge meetings prior to papers reaching formal committees.

(1) We note that, outside of the Bank, supervisory colleges can provide useful input, and the Bank has chosen to make good use of them. The Bank actively encourages college members to provide technical and independent challenge, and has drawn on members' expertise for specific supervisory reviews.
(2) The role of the PRA's Senior Advisors is set out more fully in Box 4 in Section 5. The PRA Board consists of four members of the Executive, six Non-Executive Directors and the CEO of the FCA.

In contrast, there are no third-party members of the FMI Board, and no FMI-specific Senior Advisors. The FMI Directorate has made increasing use of the PRA's Senior Advisors, however. For example, since 2014, PRA Senior Advisors have been attending annual supervisory stock-take meetings (known as Internal Risk Reviews) and since 2015, meetings of the FMI Risk Forum. As set out in Section 5.2, arrangements for support from the PRA's specialist resources — including its Senior Advisors — for FMI supervisory staff tend to be relatively informal and *ad hoc*.

Independent challenge, together with diversity of thought and experience, is well-established in the management literature as an essential ingredient of effective decision-making processes (for further discussion, see, for example, Warsh (2014)). Given the sizable risks concentrated in certain FMIs, and the fast-changing FMI landscape, there is in our view a good case for considering whether more third-party expertise could be injected into FMI decision-making processes. For example, it might be useful to consider whether elements of the PRA's Senior Advisor model could be adapted for FMI purposes.

6.2 Oversight and assurance

This section evaluates the adequacy of the oversight and assurance framework that has been put in place for FMI supervision. We first assess the quality of the management information provided to the FMI Board, whose terms of reference include the responsibility to oversee the Bank's functions in respect of FMIs. We then turn to the assurance provided by recent international reviews. Finally we turn to the role of Court, the Bank's Board, which has a statutory duty to keep the performance of the Bank (including its role in FMI supervision) under review.

(i) Assurance and the FMI Board

Measuring supervisory and policy outcomes, and their contribution to the Bank's financial stability objective, is a challenging task, because it is often difficult to attribute outcomes to specific activities, and in the absence of negative shocks, it can be hard to measure success. Moreover, it is unlikely that success can be captured by a single metric. Recognising these challenges, we took a holistic approach, and considered information from a variety of sources that together might provide a helpful picture of how effectively the Bank's supervisory activities are contributing to the mitigation of risks in supervised FMIs, and the FMI sector as a whole.

Specifically, we considered how the FMI Directorate scored against four questions:

- *Are we doing what we said we would be doing?* Our view is that the FMI Board and FMI local management receive comprehensive information on progress against the Directorate's key deliverables. This information primarily refers to inputs, activities and processes, however, and there is scope to make it more outcome-focused.

- *What are we achieving?* In this area, we noted that the FMI Directorate had tried to quantify 'success' in a number of ways. For example, FMI Board members were systematically shown the year-on-year change in Risk Model component scores in their annual stock takes of individual FMIs. But we did not see evidence of linkages made against the Bank's overall objectives for those FMIs, as noted in Section 4. Looking beyond supervision, we observed that policy and research teams provided a variety of appropriate success metrics.

- *What is our capacity and how are we making use of it?* We noted that information on resourcing is limited to resourcing gaps and experience levels in supervisory teams. At present, the FMI Board does not see any further resourcing metrics, such as for example skills gaps. As set out in Section 5, we recommend that the FMI Directorate sets out a forward-looking resourcing strategy and conducts an annual review of resourcing against the desired workforce profile. This would provide a useful complement to the resourcing metrics currently captured.

- *What are the biggest risks and how are these set against our tolerance?* We reviewed the risk registers maintained by the Directorate, and concluded that a comprehensive set of risk indicators is being provided. These risk registers include identification of current key risks to UK financial stability arising from FMIs, and form part of

Box 5
The PRA's Supervisory Oversight Function

The Supervisory Oversight Function (SOF) provides firm-level assurance to the PRA Board and Executive on the quality and effectiveness of PRA supervision. In doing so, it promotes the PRA's aim to deliver high-quality, forward-looking, and judgement-led supervision.

Most of SOF's work takes the form of firm-specific reviews, covering the supervision of a specific firm or groups of firms. SOF also undertakes thematic reviews, such as on the use of a supervisory tool. Both types of reviews identify good practices and make recommendations to improve the quality of supervision.

SOF also undertakes a quarterly feedback survey with regulated firms to assess the quality of supervision. These can be followed up by meetings with firm representatives.

SOF regularly reports the findings of its firm-level reviews and the firm feedback to the PRA Board and executive.

Financial Policy Committee briefing materials. We note that the articulation of more specific risk tolerances (see Section 3) will further enhance the reporting of risks and related mitigants.

Taken together, our assessment is that the FMI Directorate has many of the elements in place to measure the effectiveness of its activities. In our view, FMI Board members receive a substantive set of management information. However, we believe that the assurance framework could usefully be strengthened by focusing more on reporting risk-reducing outcomes. A focus on outcomes would also help inform FMI Board discussion on future strategy, as discussed in Section 3.

We further note that an important way in which PRA management and the PRA Board gain assurance is through its Supervisory Oversight Function (see Box 5). This is currently a missing element of the assurance framework for FMI supervision. We welcome the Bank's decision to bring FMI supervision within the purview of the PRA's Supervisory Oversight Function, thus providing additional assurance to the FMI Board, and we would encourage its timely implementation as part of the broader set of changes following the IEO assessment.

(ii) International peer reviews

International peer reviews on FMI supervision are an alternative way of providing assurance about the Bank's work, and can be a valuable complement to internally-generated management information.

During our review period, there were international reviews of the Bank's supervisory approach in respect of FMIs by global standard setters for FMI supervision and by the IMF. As set out more fully in Box 6, these reviews were favourable, with the IMF, for example, noting the progress that had been made in the United Kingdom in respect of FMI supervision, concluding that: '*supervision of financial market infrastructures (FMIs) in the UK has significantly strengthened in recent years; the Bank of England (BoE) is one of the leaders worldwide in shaping reforms in this area*' (IMF (2016)).

Box 6
International reviews

CPMI-IOSCO peer reviews

In April 2012, the Committee on Payment and Settlement Systems (since renamed as the Committee on Payments and Market Infrastructures or CPMI) and the Technical Committee of IOSCO (the International Organization of Securities Commissions) published the Principles for financial market infrastructures. These are global standards, consisting of 24 Principles for FMIs and five Responsibilities for authorities.

As part of implementation monitoring, CPMI and IOSCO conduct regular peer reviews.[1] To date, reviews have looked at (i) whether countries have the relevant legislation, policies and regulations in place to support implementation of the standards (level 1 reviews) and whether (ii) the content of the legislation, policies and regulations are consistent with the standards (level 2 reviews). In addition, level 3 peer reviews focus on the outcomes achieved through the implementation of specific principles by FMIs or responsibilities by the authorities.

The United Kingdom has consistently scored the highest rating in the level 1 peer reviews. Likewise, in a recent level 2 assessment report of all central counterparties in the European Union, the United Kingdom received the highest rating (alongside seven other countries). A 2016 level 3 review examined financial risk management and recovery practices at ten central counterparties, including one UK-based central counterparty. The review concluded that significant progress had been made by the central counterparties in the sample, and identified some areas for further improvement. It did not identify specific central counterparties. A 2015 report on authorities' Responsibilities identified the United Kingdom as one of 16 jurisdictions meeting all five Responsibilities for all FMI types.

IMF Financial Stability Assessment Programme

In 2016, the IMF reviewed the Bank's supervision of FMIs as part of its broader Financial Stability Assessment Programme (FSAP). The IMF's report (IMF (2016)) was positive, noting the progress made in FMI supervision at the Bank in recent years, and stating that supervisory practices have become '*more formalised, disciplined, and standardised*'. It also notes the consistent implementation of the Principles for financial market infrastructures across all types of FMIs. It characterises the supervisory process as comprehensive, including regular monitoring of key statistics and risk information.

The report describes the changes made to governance for FMI supervision at the Bank in recent years, including the introduction of internal challenge sessions to scrutinise, for example, central counterparties' risk models. Also noted are the potential benefits of having FMI supervision housed in the same institution as broader central bank services and microprudential supervision: '*This combination under one roof of FMI supervision, along with the PRA's prudential supervision of FMI participants and central bank services allows for an approach that focuses on the resilience of FMIs in a broader context*'. The IMF also observed the increased focus on operational risk, including cyber resilience.

Reflecting this strengthening of supervision, the IMF concluded that the risk management of UK FMIs had improved in line with international standards, contributing to greater safety and soundness. It was also of the view that the Bank had been effective in inducing change at supervised FMIs, including in the area of governance: '*Several FMIs have substantially reformed their board and committee structures at the instigation of the BoE*'.

In terms of scope for further improvements, the IMF notes that, despite recent progress, the Bank '*could do more to monitor systemic-wide risks, in particular interconnectedness between CCPs, financial institutions and markets*'. And it noted that '*additional systematic and quantitative analysis was needed to improve the Bank's understanding of contagion channels of credit and liquidity risk, for example*'.

(1) Available at www.bis.org/cpmi.

On resourcing, the IMF noted the rise in staff numbers in the FMI Directorate to around 65 FTE, but concluded that further investments in resourcing were desirable: '*The recommended work on stepping up the management of system-wide risks of FMIs requires additional staff to conduct quantitative and qualitative analysis in this area, as well as staff to implement a more system-wide approach in daily supervisory activities*'.

(iii) The role of Court

The Court is the Bank's Board of Directors. Its role has changed over the years as the Bank has evolved from a privately owned Bank into a public institution (see Footman and Lees (2014) for further discussion). Court's oversight responsibilities have evolved in line with its broader role, and with the associated changes in the Bank's statutory framework. The Court today is modelled along the lines of a UK plc board, with a majority of Non-Executive Directors and a Non-Executive Chair.(1) Its statutory duties include the responsibility to keep the performance of the Bank, including of the Bank's policy areas, under review.(2)

Broader changes in the role of Court, and in the underlying statutory framework for the Bank, have also been reflected in Court's evolving role in oversight of FMI supervision (see Box 7 for further detail). The FMI Directorate reports into a member of Court (the Deputy Governor for Financial Stability). And Court currently exercises its oversight duties with respect to FMI supervision in a number of ways:

- Non-Executive Directors can and do attend meetings of the FMI Board in an observer capacity. They also have full access to all FMI Board papers.

- Court's Audit and Risk Committee conduct periodic (typically annual) risk drilldowns of the FMI Directorate, in line with the approach taken for other Directorates of the Bank. The Bank's Internal Audit function, which reports directly to the Audit and Risk Committee, also conducts regular audits of the area.

- Court has periodic (typically annual) discussions of the performance of the FMI Directorate. It has an opportunity to discuss the FMI Annual Report prior to publication. Court also has periodic updates on wider developments in the FMI landscape.

Court's oversight duties with respect to FMI supervision, the relatively new statutory responsibilities given to the Bank, and the evolving nature of the FMI landscape, provide relevant context for its decision to commission an in-depth IEO report into this area of the Bank's work (Section 2). While we note that Court receive detailed information about FMI developments and the Bank's approach to supervision, we would also observe that the area of FMIs is one where the Bank has substantive statutory responsibilities. It is also an area where there has been substantive structural change in recent years, and where further shifts in the landscape are expected (Section 1).

With this background in mind, we recommend that Court augment its annual discussion of FMI supervision. In particular, we recommend that Court supplements its current approach with a regular structured survey of FMI Board members, similar to the survey conducted by the IEO for this evaluation, and in line with the approach taken for statutory policy committees of the Bank. We would note that the IEO's follow-up framework would be a further way in which Court could continue to exercise effective oversight of the area.

(1) Court has five executive members from the Bank and up to nine non-executive members (currently seven), including a non-executive chairman.
(2) S3A of the Bank of England Act 1998, as amended by the Bank of England and Financial Services Act 2016.

Box 7
Oversight of FMI supervision and the evolving role of Court

In 2009, when the Bank was given formal responsibility for the oversight of certain payment systems (Banking Act 2009), it was also given a statutory financial stability objective. A Financial Stability Committee (FSC) of Court was established by statute to advise the Court on a financial stability strategy, and to monitor the Bank's use of its new powers under the Act (including its oversight responsibilities with respect to inter-bank payment systems). The FSC, which was chaired by the Governor, and whose members included four Non-Executive Directors of Court, met approximately half a dozen times a year.

There were further changes in Court's role upon the enactment of the Financial Services Act 2012 (the 2012 Act). This Act established the Financial Policy Committee and the Prudential Regulation Authority, and also gave the Bank formal responsibility for the supervision of central counterparties and securities settlements systems. The 2009 provision establishing the Financial Stability Committee of Court was repealed.

For a brief period following the enactment of the 2012 Act, a subset of Court Directors met on a non-statutory basis as the Financial System Advisory Committee. This comprised both Executive and Non-Executive Directors, was chaired by the Deputy Governor for Financial Stability, and had a (non-statutory) advisory role in respect of Court and of the newly constituted FMI Board. Statutory duties for the oversight of FMI supervision were vested in Court (specifically, in the Oversight Committee, then a statutory sub-committee consisting solely of Non-Executive Directors). The 2012 Act also ensured that Non-Executive Directors of Court had direct access to the policy-making process and papers of the Bank, the ability to attend policy meetings and the power to commission *ex post* reviews from external policy experts.

The Financial Stability Advisory Committee ceased to meet in 2014, as part of the wider review of the governance framework for FMI supervision (Section 6.1). The Bank of England and Financial Services Act 2016 abolished the Oversight Committee and vested its statutory oversight responsibilities in the full Court.

6.3 Recommendations: governance and assurance

The Bank revised its governance and decision-making framework around the time of the Strategic Plan in the light of its new statutory responsibilities for FMIs and the changing risk profile of its supervised institutions. Our evaluation suggests that the impact of these changes has been positive and international assessments confirm our view. We found that relevant policy and supervisory decisions are made at senior levels and receive challenge from supervisory committee members. We also found good evidence of discussion of future landscape developments.

In light of our evaluation criteria and assessment, we believe that now would be an opportune time to review governance and assurance, building on the achievements described above, and looking at the challenges ahead (**Table 6.B**). This includes the role of the FMI supervisory committees, how best to harness individual members' contributions, and the role of third-party challenge. We also recommend that Court considers augmenting its annual discussion of FMI supervision.

Table 6.B Recommendations: governance and assurance

6 Continue to strengthen governance and develop a comprehensive approach to assurance	• The **Governors** to review the responsibilities of the internal governance committees for FMI supervision. • The **Governors** to review membership of the FMI Board in order to ensure optimal use of resources. • The **Governors** to consider the role of third-party challenge in the internal governance structure for FMI supervision to increase opportunities for independent challenge. • **Court** to augment its annual discussion of FMI supervision, including via a structured survey of FMI Board members. • The **FMI Directorate** to enhance its assurance framework with a particular focus on assessing how well the Bank is meeting its supervisory objectives for FMIs. • The **FMI Directorate** and **PRA** to agree an approach for using the PRA's Supervisory Oversight Function in order to bolster the assurance framework for FMI supervision.

Annex

Table A.1 Recognised payment systems

CHAPS Operated by CHAPS Clearing Company Limited (CHAPS Co)	The United Kingdom's high-value payment system; provides real-time gross settlement (RTGS) of sterling transfers between members.
Bacs Operated by Bacs Payment Schemes Limited (BPSL)	Processes high volume and low value payments, such as salary, benefit, Direct Credit and Direct Debit payments.
Faster Payments Service (FPS), Operated by Faster Payments Scheme Limited (FPSL)	Processes standing orders and electronic retail transactions, including transactions generated in telephone and internet banking.
CLS	Provides a settlement service for foreign exchange transactions in 18 currencies, including sterling.
Visa Europe	A payments technology business owned and operated by member banks and other payment service providers from 38 countries.
LINK	LINK is the interbank payment system that provides the network for the United Kingdom's cash machines.

Table A.2 Supervised CCPs and securities settlement systems

CME Clearing Europe Limited	Clears a range of OTC and exchange-traded derivatives and spot commodities contracts.
ICE Clear Europe Limited	Clears a range of exchange-traded derivatives and OTC credit default swaps.
LCH.Clearnet Limited	Clears a range of exchange-traded and OTC securities and derivatives.
LME Clear Limited	Clears a range of metal derivatives traded on the London Metal Exchange, and OTC metal contracts.
Euroclear UK & Ireland Limited	Operates the CREST system — the securities settlement system for UK gilts and money market instruments, and UK equities.

Table A.3 FMI data

Recognised payment systems and securities settlement system[a]

		Volume		Value (£ millions)		Number of settlement bank participants	Operational availability	Important payment types
		2016	2015	2016	2015	Dec. 2016	2016	
Bacs		24,580,024	24,031,791	18,880	18,143	16	99.97%	Higher volume and lower value payments, such as salary, benefit, Direct Credit and Direct Debit payments.
CHAPS		154,008	148,411	298,710	270,400	24	100%	Settlement of financial market transactions including CLS sterling pay-ins and pay-outs and house purchases.
CLS	All currencies	805,587	846,044	3,587,377	3,171,521	66	99.97%	Settlement of foreign exchange transactions in 17 currencies, including sterling.
	Sterling	61,236	56,552	279,334	236,003			
CREST	Sterling US dollar Euro Total CREST	187,681 7,253 4,852 199,786	174,435 6,202 4,767 185,404	534,799 1,755 912 537,466	578,689 1,470 852 581,011	17	99.76%	Settlement of gilts, equities and money market instruments (including in respect of the Bank's Open Market Operations and repo markets transactions more generally).
Faster Payments Service		5,636,731	4,928,992	4,700	4,114	12	100%	Standing orders and electronic retail transactions, including transactions generated in internet, mobile and telephone banking.
LINK[b]		3,170,800,000	3,162,650,000	129,665	127,832	39	100%	Withdrawing cash from ATMs deployed by entities other than the withdrawer's card issuer.
Visa Europe[c]	All issuance	58,239,926	53,433,201	2,362	2,250	478	100%[d]	Card payments.

(a) All value and volume data represent daily averages unless otherwise stated.
(b) Value and volume represent yearly total.
(c) Figures represent average daily volume for the year of 2016 based on processed transaction volume.
(d) All Visa Europe principal members including UK members.

CCPs (by default waterfall)

		Total initial margin requirement (£ equivalent, millions)[a]		Default fund (£ equivalent, millions)[b]		Number of clearing members	Operational availability of core systems	Products cleared
		2016	2015	2016	2015	As at 31 Dec. 2016	As at 31 Dec. 2016	
CME Clearing Europe[c]		107	26	157	131	18	100%	Clears a range of OTC and exchange-traded derivatives and spot commodities contracts.
ICE Clear Europe	Credit default swaps	5,276	4, 524	824	798	22	99.96%	Clears a range of exchange-traded derivatives and OTC credit default swaps.
	Futures and options	30,449	21,648	1,293	1,290	74		
LCH.Clearnet Ltd[d]	Commodities Equities ForexClear RepoClear SwapClear[e]	78 1,414 874 9,630 67,853	312 983 292 9,091 41,440	11 176 352 815 3,947	79 180 261 806 2,739	19 38 25 78 111	99.97%	Clears OTC and exchange-traded interest rate derivatives, OTC FX derivatives, cash equities and equity derivatives, cash bonds and repos, and commodity futures.
LME Clear		6,248	5,684	313	363	44	100%	Clears a range of metal derivatives traded on the London Metal Exchange, and OTC metal contracts.

Source: The Bank of England's supervision of financial market infrastructures — Annual Report 2017.

(a) The end of day total margin requirement (including add-ons) per default waterfall, averaged over all business days in the period.
(b) The size of the clearing member prefunded default fund, averaged over all business days in the period.
(c) For CME, the Initial Margin and Default Fund figures represent the average over Q4, and include both default waterfalls.
(d) The Initial Margin includes default fund additional margin (DFAM).
(e) The SwapClear line above covers SwapClear and Listed Rates.

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