The Prudential Regulation Authority's approach to cost benefit analysis

Statement of policy

Contents

CBA is an integral part of good policymaking. Supported by the CBA Panel, CBA enhances the transparency of our policymaking and our accountability and helps us make better policies.

The PRA's statement of policy (SoP) on CBA, published on 12 December 2024, sets out our approach. It incorporates feedback from the CBA Panel. We now welcome feedback from members of the public. The PRA plans a review of this SoP in Q4 2025, which will take into account feedback from the CBA Panel and other stakeholders. Depending on the outcome of the review, the PRA may publish a revised SoP in 2026.

Feedback should be sent to **PRA-costbenefitanalysis@bankofengland.co.uk** by 30 September 2025.

The Bank has also published the **Bank's Approach to CBA** which sets out how the Bank will conduct CBA on rules in relation to financial market infrastructure (FMI) regulation.

Privacy statement

By responding to this statement of policy, you provide personal data to the Bank of England (the Bank, which includes the Prudential Regulation Authority (PRA)). This may include your name, contact details (including, if provided, details of the organisation you work for), and opinions or details offered in the response itself.

The response will be assessed to inform our work as a regulator and central bank, both in the public interest and in the exercise of our official authority. We may use your details to contact you to clarify any aspects of your response.

Responses may be shared with the Financial Conduct Authority (FCA), HM Treasury (HMT) and the PRA CBA Panel (CBA Panel). If this is the case, these bodies will also review the responses and may also contact you to clarify aspects of your response. Responses may also be shared with the Payment Services Regulator (PSR) and the Financial Services Compensation Scheme (FSCS). If this is the case, the other organisation will also review the responses and may also contact you to clarify aspects of your response. We will retain all responses for the period that is relevant to supporting ongoing regulatory policy developments and reviews. However, all personal data will be redacted from the responses within five years of receipt. To find out more about how we deal with your personal data, your rights, or to get in touch please visit **Privacy and the Bank of England**.

Information provided in response to this statement of policy, including personal information, may be subject to publication or disclosure to other parties in accordance with access to information regimes including under the Freedom of Information Act 2000 or data protection legislation, or as otherwise required by law or in discharge of the Bank's functions.

Please indicate if you regard all, or some of, the information you provide as confidential. If the Bank receives a request for disclosure of this information, we will take your indication(s) into account but cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system on emails will not, of itself, be regarded as binding on the Bank.

Responses are requested by 30 September 2025.

Executive summary

Why we do cost benefit analysis and the costs and benefits we assess

Cost benefit analysis (CBA) is an integral part of good policymaking. Supported by the Prudential Regulation Authority (PRA)'s CBA Panel, CBA enhances the transparency of our policymaking and our accountability and helps us make better policies.

The most important benefit considered in our CBAs is the impact that policy change may have on financial stability and the economic output of the UK. Our conceptual framework for measuring the financial stability benefits of prudential regulation is grounded in the extent to which prudential regulation can influence the expected economic cost (or 'risk') of a financial crisis, which consists of three elements:

Prudential regulation promotes the safety and soundness of PRA firms and protects insurance policyholders. In doing so it supports confidence in PRA firms and the markets they operate in; and ensures the supply of essential services. Confidence is important for both large systemic firms and small firms alike. It also enhances competition and the UK's international competitiveness. These effects lead to better outcomes in individual markets. Indicators of better market outcomes can include higher transaction volumes, a greater quality or variety of products and services or lower prices.

Regulation can impose costs on firms, which may be passed on to customers and lead to negative market outcomes. There can sometimes be a trade-off between the costs and benefits of regulation. If too lax, regulation will impose low costs but fail to deliver the benefits described above. If too costly, then the net benefits of regulation can reduce. The PRA aims to achieve regulation that is neither too lax nor too costly. We may recalibrate our policies and CBA methodologies and processes from time to time in the light of experience and lessons learned.

How we do cost benefit analysis as part of policymaking

The PRA has a structured framework for undertaking CBA which involves: developing the case for action; assessing expected costs and benefits; considering the uncertainties; and forming an overall judgement on the net impact of a policy.

The PRA takes a proportionate approach to the use of CBA in its policymaking process and makes judgements about whether a CBA is required and, if so, whether it is reasonable to estimate the expected costs and benefits of a policy proposal[1], using criteria set out in the Financial Services and Markets Act 2000.

How we analyse and estimate costs and benefits

This statement of policy sets out how we assess costs and benefits. A key step is to identify and evidence the causal chains through which a policy affects changes in the behaviour of firms and households in ways that impact on markets and, in turn economic outcomes. These causal chains typically involve changes to: the resilience of firms and the financial sector; the level of effective competition in the relevant markets; and international competitiveness. The benefits and costs of regulation can arise through multiple channels. CBAs highlight where these channels are relevant.

We provide estimates of economic costs and benefits when they can reasonably be estimated, and where it is reasonably practicable to do so. In other cases we provide a qualitative assessment of the evidence that certain costs and benefits will arise.

The Financial Services and Markets Act 2000 (FSMA) (as amended by the Financial Services and Markets Act 2023) requires costs and benefits of PRA rules to be estimated where reasonably possible and the PRA has a range of tools and techniques to conduct quantitative assessments. Direct costs to firms are most straightforward. Impacts on markets and the level of economic output are more difficult to assess, but PRA has done this in past CBAs and continues to develop its toolkit.

The PRA's Cost Benefit Analysis Panel

The PRA is required under FSMA to consult the CBA Panel on the preparation of relevant CBAs ahead of public consultation. The Panel also reviews how the PRA is performing more generally in carrying out its duties with regards to CBA and may provide recommendations.

[1] References to the PRA's policies and policymaking throughout this document are references to PRA rule making for public consultation under **section 138J(1)(b) of FSMA**.

The CBA Panel plays an important role as a critical friend in supporting increased transparency and scrutiny of the PRA's policymaking by providing regular, independent input into the PRA's CBAs. The CBA Panel brings considerable experience and knowledge of CBA, prudential regulation, and the financial services sector.

The CBA Panel will be consulted on all CBAs on PRA rules except for instances where it would be disproportionate to do so. The requirement to consult the CBA Panel under section 138JA(2)(a) of FSMA 2000 will therefore not apply in cases where the PRA considers that a policy proposal would have an annualised net direct cost on PRA firms of +/-£10 million or less.

1: Introduction

1.1 FSMA requires the PRA to undertake CBA when proposing to make changes to the PRA rulebook, and to prepare and publish a statement of policy in relation to the preparation of CBAs. Under FSMA, the PRA has also established a CBA Panel, comprised of external members, to provide advice to the PRA in relation to CBA. These requirements enhance the transparency of our policymaking, our accountability and help us make better policies.

1.2 This statement explains how we do CBA, how we use CBA in our policy-making process, and how we communicate CBA. As required by FSMA, this statement also covers:

- our criteria for determining when we will not estimate (ie quantify) costs and benefits because either they cannot reasonably be estimated, or it is not reasonably practicable;
- our criteria for determining when we will not do a CBA either because we judge there to be no or minimal increase in costs, or because the delay associated with CBA would prejudice our primary objectives of safety and soundness/policyholder protection;
- our arrangements for considering feedback on the CBA published in PRA consultation papers (CPs);
- our criteria for determining when we will not consult the CBA Panel on CBAs; and
- our arrangements for considering feedback from the CBA Panel in relation to how we are performing generally in meeting our statutory CBA obligations.

1.3 The PRA's CBA approach has been informed by careful consideration of the CBA frameworks applied by financial regulators and governments in the United Kingdom (UK) and internationally. We have also considered how other organisations, and prudential regulators in particular, apply CBA in practice.

1.4 As a prudential regulator, the PRA takes action which makes firms and the financial system more resilient in a stress which, in turn, supports economic growth. However, extreme stress events arise infrequently and unpredictably which creates challenges to fully assessing the benefits of PRA policies. As outlined in Chapter 4, we have tailored our CBA approach to reflect this challenge, placing emphasis on forward-looking judgements about how our policies may work in a stress. Absent a real-life stress event, the Bank of England's stress testing can provide insight into the validity of these judgements.

1.5 This statement should be read alongside other documents that explain how the PRA makes policy: the PRA's statement of policy on its Policy Approach, when it is published in

Q1 2025, and its statement of policy on Rule Review. This statement is relevant to all stakeholders with an interest in how the PRA makes policy, including PRA firms.[2]

[2] PRA firms comprise deposit-takers, insurance companies, designated investment firms and designated critical third parties. Throughout this document we use the term ‘PRA firms’ to refer to PRA firms.

2: Why we do cost benefit analysis and the costs and benefits we assess

Summary

Why do we do CBA?	CBA helps the PRA make better policies by enhancing transparency and supporting the scrutiny of our policymaking. CBA facilitates informed and evidence-based engagement with our stakeholders about the proportionality of our proposals.
What benefits do we assess?	The benefits of the PRA's policies operate at the level of individual firms (including their customers, counterparties and investors), markets, and the financial system and wider UK economy. The most significant benefit we assess is the positive impact[3] prudential policies have, by promoting our statutory objectives, on the level of economic output in the UK over the medium to long term. At the firm level, our policies support safety and soundness and insurance policyholder protection by reducing the likelihood and impact of disorderly failure and support the continuous provision of essential financial services. At the markets level, our policies foster confidence benefiting consumers (including policyholders) in those markets both directly, and indirectly by facilitating effective competition. Confidence in PRA firms also supports international competitiveness. At the financial system level, our policies reduce the likelihood and impact of disruptions to the supply of essential financial services, and the likelihood and severity of financial crises. Annex A explains how our policies bring these benefits by addressing market failures. Provided our policy proposals advance safety and soundness, and where relevant insurance policy holder protection, they can also facilitate effective competition and international competitiveness and growth (subject to aligning with international standards) and economic output in the medium to long term by underpinning confidence in the system,

[3] In CBA we assess economic costs and benefits. In this document the term 'impacts' is sometimes used as shorth and for 'economic costs and benefits'.

	increasing the efficiency and reducing the operating costs of firms or enabling innovation.
What costs do we assess?	We assess three types of costs: • Direct costs to firms and the PRA; • Negative impacts on markets for financial services: arising from the way regulation affects firms' and customers' behaviour, including negative impacts on competition and international competitiveness; • Costs to the output of the UK economy as, during normal periods (when there is no financial crisis) regulation limits the supply of financial services and the overall level of economic output relative to what they would otherwise be.

Why we do CBA

2.1 As a prudential regulator, we act to advance our statutory objectives (Box 1), including by making policy. The economic case for prudential policy, set out in detail in Annex A, depends on the benefits of our policy intervention exceeding the costs. We examine this via CBA, where we aim to identify the most material costs arising from our policy approaches and compare these with the benefits, such as the reduction in the frequency and severity of financial crises. Sometimes we quantify costs and benefits. In other cases (for reasons set out in Chapter 4 below) we provide only a qualitative assessment of costs and benefits.

2.2 CBAs fulfil three important functions in our policymaking:

- CBAs represent our best judgement, drawing on the available evidence, of the net impacts that we expect our policies to have. Our policies are calibrated to deliver a net benefit to society;

- As part of policy development, consideration of economic costs and benefits shapes the design and calibration of the policies we make, for example by highlighting some of the possible unintended consequences;

- CBA enhances transparency and scrutiny of our policymaking by providing a structured way for us to communicate the type and scale of the costs and the benefits that our policies are expected to generate. This facilitates a two-way evidence-based conversation

with our stakeholders about how our policies effectively and proportionately advance the PRA's objectives. [4]

Box 1: The PRA's statutory objectives

The PRA has two primary objectives: a general objective to promote the safety and soundness of PRA-authorised firms; and an objective specific to insurance firms, to contribute to the securing of an appropriate degree of protection for policyholders or those who may become policyholders. The PRA also has two secondary objectives: to facilitate effective competition in the markets for services provided by PRA-authorised firms; and to facilitate, subject to aligning with relevant international standards, the UK economy's international competitiveness and its growth over the medium to long term. In advancing its objectives, the PRA must have regard to a number of important principles.[5]

The benefits we assess

The benefits of increasing the resilience of firms and the financial system

2.3 The economic benefits of prudential regulation are to the people of the UK. The UK's level of economic output is higher and more stable than it would be, over the medium to long term, absent adequate financial regulation.

2.4 As explained in more detail in Annex A, prudential regulation creates benefits by making firms more safe and sound than they otherwise would choose to be based on their individual commercial interests. In doing so, prudential regulation seeks to reduce the external costs ('negative externalities') that PRA firms impose on others through their own financial or operational weaknesses.[6] These benefits are 'indirect' in that they do not accrue only to the firms we regulate, and their immediate customers, but also to society more broadly.

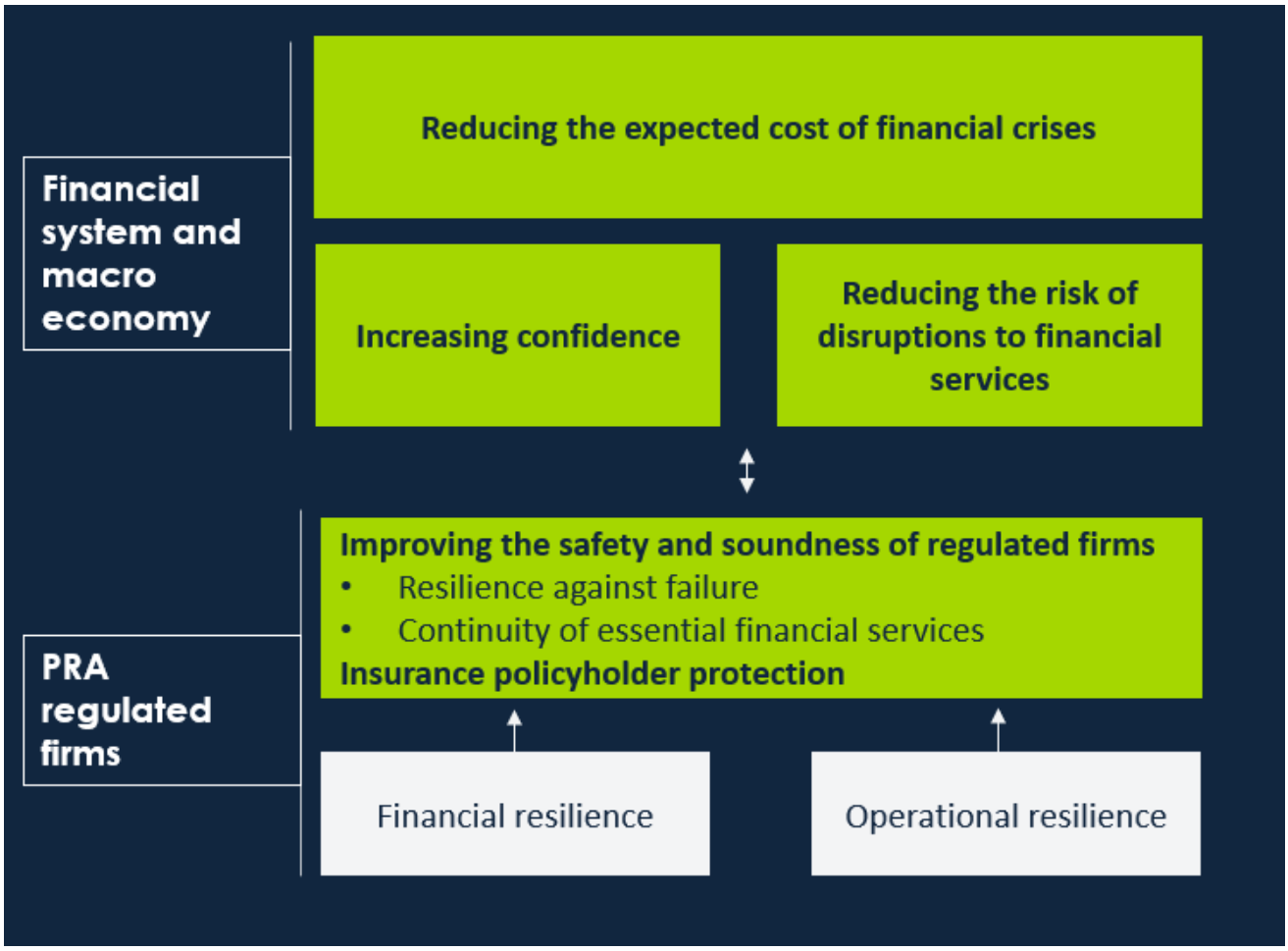
2.5 Figure 1 below summarises the channels through which prudential regulation brings benefits to PRA regulated firms and the wider financial system and macro economy.

4 As set out in FSMA, proportionality is the regulatory 'principle that the burden or restriction which is imposed on a person, or on the carrying on of an activity, should be proportionate to the benefits, considered in general terms, which are expected to result from the imposition of that burden or restriction'.

5 Set out in section 3B of the Financial Services and Markets Act 2000.

6 Separately, where our interventions are aimed at amending existing policies, a change can create benefits by reducing the costs of regulation while maintaining resilience (Chapter 2 discusses these costs in further detail). In competitive markets, reductions in the cost of regulations are passed on to customers.

Figure 1: How prudential regulation creates benefits



2.6 The main way through which prudential regulation improves firm safety and soundness is by making firms more resilient to financial and operational shocks than they would otherwise choose to be. This can involve strengthening PRA firms' management and governance, risk management and controls, capital, liquidity and/or operational resilience. These changes seek to improve firms' resilience against failure and ability to continue to supply essential financial services without disruption. Other measures aim to ensure that if firms do fail, they do so without disrupting the continuity of essential services (ie make the firms more 'resolvable').

2.7 Safety and soundness in turn brings about wider market and system-wide benefits by reducing the expected frequency and cost of financial crises, reducing the risk of disruptions to essential financial services, and increasing confidence in the financial system and macroeconomy.

2.8 When firms which are 'systemically important' individually or as a group are not safe and sound, this can impact the functioning of the financial system as a whole and damage the

economy. The distress or failure of systemic firms can trigger a series of events which lead to a financial crisis. The impacts of a financial crisis include disruption to the continuity of essential services, banks curtailing lending to firms and households in turn leading to bankruptcies and job losses. In the past, this has led to taxpayer support to prevent systemically important firms from failing. Prudential regulation aims to avoid these significant external costs by reducing the probability and impact (ie the 'expected cost' or 'risk') of financial crises. It can do this by making firms safer and sounder. It can also do this by limiting excessive build-up of risk during 'good times' when optimism, low risk perception, rising asset prices and lenient credit conditions can become self-reinforcing.

2.9 Firm-level resilience directly improves the continuity of essential financial services in the face of shocks, as well as reducing the expected cost of financial crises. Disruptions to the supply of essential financial services can be isolated incidents relating to a single firm, or be systemic in nature and undermine financial stability. Such disruptions can occur because of firms failing in a disorderly way or due to temporary operational outages. Disruptions to essential financial services impact not only firms' immediate customers but can impose external costs on wider stakeholders who may, for example, be unable to make or receive payments, or need to halt economic activities without necessary insurance cover. Reducing the probability and impact of disruptions to the point where they are not disruptive to wider financial stability, can support confidence, as well as reduce the risk and expected impact of financial crises.

2.10 Policies which promote firm-level resilience, as well as policies that reduce interconnectedness and contagion risk amongst firms, support confidence in PRA firms and the markets in which they operate. Confidence is important for both large firms and small (non-systemic) firms alike. If depositors, policyholders and other customers and counterparties have confidence that PRA firms are sufficiently safe and sound, they will be willing to transact with them, and benefit from the products and services which PRA firms offer. Absent regulation, it can be difficult for customers to judge the safety and soundness of PRA firms, due to the problem of asymmetric information, discussed in Annex A. This can limit customers' confidence and willingness to deal with PRA firms, for example to take out insurance or make deposits in banks, or to borrow from them, knowing they will be there to lend in difficult times. Regulation which supports safety and soundness, therefore, benefits customers both directly, and indirectly by supporting customers' willingness to shop around and firms' willingness to enter the market, so enhancing competition. This confidence increases the overall level of economic output: willingness to borrow from banks supports investment by firms across the economy. Confidence also supports financial stability. And financial stability supports confidence: reduced uncertainty about the economy makes all firms (both PRA firms and their customers) more likely to invest in good times, which again supports growth.

2.11 Confidence in PRA firms does not require that they do not fail – only that, where they do, they fail in an orderly manner that does not undermine confidence in other firms, or even disrupt the wider financial system.

2.12 Increasing resilience also supports confidence indirectly by making the Financial Services Compensation Scheme (FSCS) (which protects deposits and investments up to a certain level and eligible policyholders of failed insurers) economically viable. Absent strong prudential regulation, firms may fail too frequently for the FSCS to be able to operate sustainably. The FSCS supports confidence in PRA firms, bringing the benefits described above, including financial stability.[7]

2.13 Improved resilience increases international confidence in the UK market as a place to do business, and confidence in UK firms operating overseas. This can support international competitiveness, expand the value of financial services provision by UK firms and attract foreign firms and capital to the UK, leading to better outcomes in individual economic markets, or benefits at the macro-economic level.

2.14 The mechanisms set out above create economic benefits at three levels:

- At the level of the economy, reducing the expected cost of financial crises increases the level of output (GDP) over the medium to long term;
- At the level of markets, increasing confidence and reducing the risk of operational disruptions lead to increased transaction volumes, higher quality and lower prices;
- At the level of PRA firms, their customers and counterparties, increased firm-level resilience can bring direct benefits. For example, increased resilience can reduce firms' own cost of capital. Such direct benefits may or may not be relevant to the PRA's statutory objectives but they are benefits, and we may include them in our CBAs.[8]

Changes to existing PRA rules can also bring benefits by reducing costs as set out in the following section.

---

7 As in Annex A, FSCS and the Bank of England as provider of liquidity insurance for financial stability purposes both play a role in supporting confidence while relying on Prudential Regulation to ensure they do not give rise to moral hazard which would undermine the economic viability of these arrangements.

8 For example, the PRA does not operate a zero-failure regime and does not seek to prevent losses to wholesale creditors of PRA firms. On the other hand, under the PRA's objective of policy holder protection, it does seek to protect policy holders where justified by factors set out in **The Prudential Regulation Authority's Approach to Insurance Supervision**. The economic rationale for this position is explained further in Annex A.

The costs we assess

2.15 Our prudential policies set requirements and expectations on the firms that we regulate in order to advance the PRA's statutory objectives. Firms must comply with our regulatory requirements, and they may incur costs from doing so.[9] The manner in which firms respond can have implications for the markets in which they operate and, in some cases, for the cost and supply of financial services to the economy. This in turn can dampen economic output, although, provided the requirements are appropriately calibrated, these costs will be outweighed by their beneficial medium to long term economic impacts.[10]

2.16 When analysing the potential costs of proposed policies, the PRA considers three types of cost in its CBA:

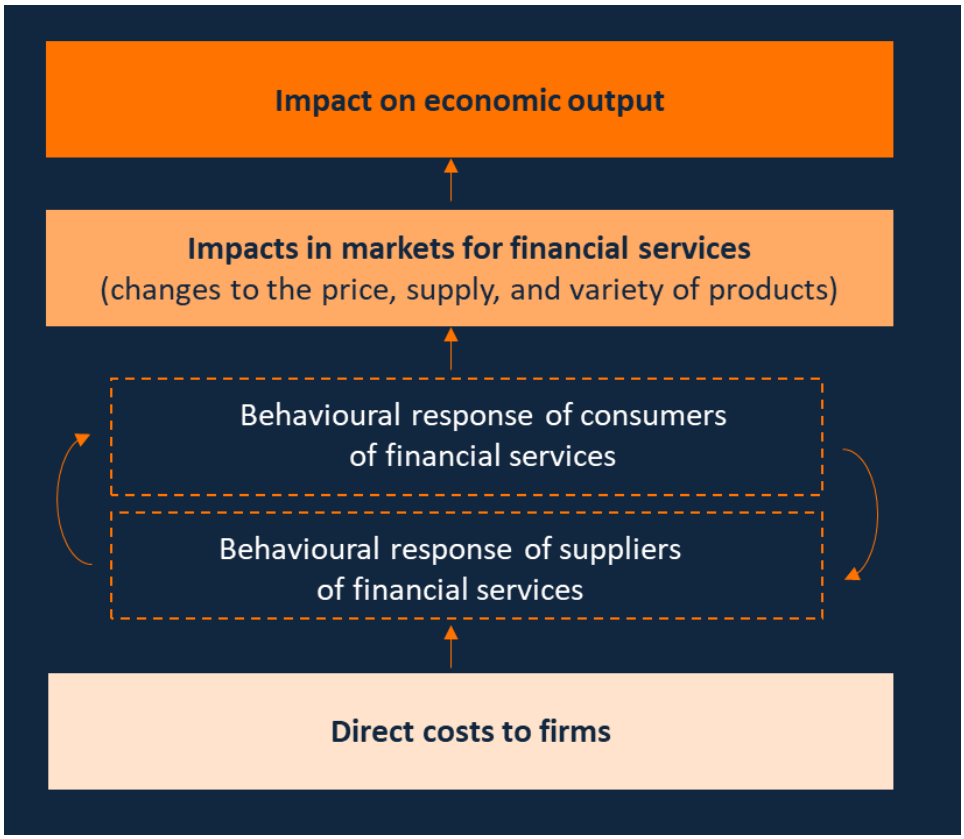
- **Direct costs** to firms and the PRA, both one-off and ongoing, including operational compliance costs and the costs of holding additional financial resources;
- **Negative impacts on markets for financial services** which may arise as firms respond to changes in regulation which have implications for the supply of financial services, including negative impacts on competition and international competitiveness;
- **Costs to economic output** as changes in the supply of financial services influence both short-run and long-run economic output.

2.17 The way these costs interact is show in Figure 2 below. The remainder of this section sets out these costs in more detail.

9 Costs arise in cases where regulatory requirements diverge from exiting business practices, which are in turn determined by firms' consideration of their private costs and benefits.

10 Such a trade-off is not always necessary. For example, policies that increase transparency can lower the financial system's running costs, thereby supporting both short term and medium to long term economic output.

Figure 2: **The costs of prudential regulation**



Direct costs to firms

2.18 Direct costs are costs that are directly attributable to proposed regulatory requirements. In analysing and estimating costs, we focus on incremental costs, comparing against the costs firms would incur absent the regulatory change.

2.19 We consider both one-off 'implementation' costs as well as any ongoing costs incurred to maintain compliance in future years. Costs include financial costs (eg the opportunity cost of holding an asset in order to meet capital and liquidity requirements) and operational costs (eg the opportunity cost of staff time and technology used to meet regulatory requirements). Table 1 below provides some examples of the types of direct costs we consider in our CBAs. Where our policies aim to reduce these costs the impacts will be covered in the benefits section of the CBA.

Table 1 – Examples of direct costs PRA considers in CBAs

One-off direct costs	On-going direct costs
Resource and system/process costs, for example: - engaging with the CP; - understanding the requirements; - conducting gap analysis; - designing the firm's response to the change, including business process change and IT, and governance required to approve the changes; and - staff training, communication with staff, the regulator on implementation progress, project governance. Financial costs associated with refinancing, eg issuing new instruments, retiring old instruments.	Resource and system/process costs, for example: - analysis and monitoring to ensure firm remains compliant; - reporting to the regulator; - senior management oversight and review; and - staff training and communication with staff. Costs of additional capital, longer-term or more subordinated funding, and/or holding more liquid assets.

Direct costs to the PRA

2.20 The PRA will generally need to take action to implement, monitor, supervise and enforce the proposed policies. These actions will incur direct costs, for example, incremental staff costs and investments in IT system development. In our CBAs we seek to analyse and estimate any one-off and ongoing direct costs to the PRA. These costs may be relatively small but can be important for ensuring that the benefits of a policy change are realised. PRA costs are met by fees paid by firms and ultimately passed on to their customers and shareholders.

Negative market impacts

2.21 Firms affected by policy change may change their behaviour, which in turn can affect outcomes in the markets in which they operate. For example, where a policy imposes direct costs (for example by requiring them to hold more capital), firms may raise the prices they charge or they may shrink some businesses or change their business models, which could impact the volume or quality of services available to customers. Those firms' customers may in turn respond for example by substituting away from services provided by PRA firms to other sources such as when bank borrowers switch to non-bank lenders or market-based finance.

2.22 These indirect costs ultimately impact customers through the:

- **Price of financial products:** Depending on the degree of competition in a particular market, banks and insurers can pass on some or all of the direct costs of regulation to their customers, which could lead to an increase in loan prices or insurance premiums.

- **Volume of financial transactions**: An increase in the price of a product will generally decrease the transaction volume of that product. An increase in credit or insurance policy prices can lead to a decrease in credit or insurance provisions.

- **Variety of financial products**: By influencing the cost of specific products within a general class, regulation plays an important role in influencing the availability of different financial products within that class (for example, a change to the risk weight of a certain asset could lead firms to increase or decrease their holdings of that asset).

2.23 These negative market impacts of regulation arise during ‘normal times’ when events do not undermine market confidence or financial stability. These impacts are reversed during times of stress when regulation supports a higher volume and variety of transactions at lower prices than otherwise would be the case.

2.24 A certain degree of behavioural response is often the intention of proposed policies, eg to rein in excessive risk-taking. In some cases, a financial activity, while profitable to those who conduct it, may be harmful to the economy and restricting or eliminating its supply will be considered a benefit rather than a cost to the economy.

2.25 Indirect behavioural responses may arise in relatively complex and indirect ways. For example, increased requirements on Senior Managers could reduce people’s willingness to serve on the boards of PRA firms. This could impact firms’ costs or the quality of their governance, which would impact their business indirectly. Regulation also influences how firms compete for business, which in turn influences the scale of indirect costs and benefits.

2.26 As noted above, regulation is necessary for effective competition in the markets where PRA firms operate. However, regulation can also negatively impact effective competition, for example, by creating barriers to entry and exit in markets for regulated financial services. Regulation can also limit innovation for example by directly restricting the activities firms can undertake.

2.27 Regulation can also impact on international competitiveness. Increased costs for UK firms could make it more difficult for them to sell abroad in certain markets, or reduce the willingness or ability of foreign firms to operate in certain markets in the UK. Where policies

are likely to have a material negative market impact, including via their effect on competition or competitiveness, the PRA consider this as a cost in its CBAs.[11]

Macroeconomic costs

2.28 The response of PRA firms and their customers' responses to regulatory change can impact the wider economy. Where regulation reduces supply of financial services or finance, this will have implications for the real economy, and the earnings and employment opportunities for UK households. For example, an increase in industry-wide capital requirements could, in some circumstances, lead banks as a group to de-risk, or shrink their assets.[12] This may reduce funding to the real economy and economic output in the short term, until the macro-economic benefits of prudential regulation described above crystalise in the medium to long term. Similarly, solvency regulation may also affect the relative incentives for insurers to invest in certain asset classes and support economic output of the real economy in the short term. Where regulation negatively affects the competitiveness of the UK, including the UK's ability to attract foreign firms, this could reduce economic growth.

Recalibrating existing regulation

2.29 The PRA may revisit existing rules to see if they can be amended to achieve our objectives while reducing the costs described above. This is another way in which PRA policy changes can bring benefits.

2.30 For example, policy proposals may bring benefits by reducing costs to firms, which, in competitive markets, are then passed on to customers. Policy proposals may reduce costs by giving firms more flexibility, allowing them to operate efficiently. Or policy proposals may reduce costs to firms directly – for example reducing capital requirements where the PRA establishes that they are higher than they need to be, given the risks. In this example, market level benefits could include higher lending volumes as well as lower prices.

2.31 At the market level, reductions in cost may also increase competition, by enabling market entry and/or by intensifying competition among firms already competing in the market,[13] and international competitiveness, by enabling innovation or increasing the ability of PRA firms to undertake cross-border activities. At the economy level changes may increase

---

11 In a given case, where different options are available, we will choose the option that appropriately promotes our secondary objectives while also pursuing our primary objectives. We consider the interaction between the primary and secondary objectives, and the benefits of each option.

12 Lending can also be restricted as a result of firms not having enough capital – as was the case following the global financial crisis.

13 For example, the PRA introduced requirements that promoted a more level playing field between firms through reducing the potential competitive advantage firms using internal ratings-based approaches (typically used by larger firms) have relative to firms using standardised approaches (typically used by smaller firms) to calculate risk weights, and increasing the consistency in risk weights across firms. (See **PS17/23 – Implementation of the Basel 3.1 standards near-final part 1**, December 2023).

lending by firms, or increase the attractiveness of the UK as a financial centre – thereby attracting investment and facilitating the efficient allocation of capital within the UK economy.

3: How we do cost benefit analysis as part of policymaking

Summary

How we do CBA	Our CBA comprises three main elements: • developing the case for action, which includes defining the problem and identifying potential benefits of change; • assessing costs and benefits; and • drawing conclusions, which includes considering key uncertainties and forming an overall judgement on the net impact of a policy.
Our approach to proportionality	The resources – both from the PRA and firms – we spend on CBA will be proportionate to the significance of the policy issues and the impact of the proposal. We consider a range of factors in determining whether we will produce quantitative estimates of a policy's costs and benefits, including the availability of data, the costs to firms and the PRA in collecting data and the availability of credible techniques and models. In some circumstances we will not produce a CBA, either because costs are expected to be minimal or because consultation itself would be prejudicial to the PRA's primary objectives.
How we communicate CBA	We include CBA in PRA consultation papers. Policy statements will include feedback received on the CBA and may include a revised CBA to reflect feedback, or amendments to the policy made following consultation.

How we do CBA

3.1 We prepare CBA in an iterative manner as part of our policymaking process. As set out in the PRA's Policy Approach,[14] we consider evidence and undertake partial analysis of costs

[14] CP27/23 – **The Prudential Regulation Authority's approach to policy**, December 2023.

and benefits throughout the policy cycle. The evidence and analysis that we use in our final CBAs evolves primarily during the 'initiation' and 'development' phases of the policy cycle:

- The **Initiation** phase is the first step in our policy-making approach. We identify potential reasons to act, consider possible responses, and conduct an initial assessment of the case for intervention. Sometimes we set out this analysis, and seek further evidence, via a discussion paper.

- The **Development** phase starts once we determine that we might need to act, and that a policy response could be appropriate. We develop a policy proposal by analysing the options for new policy, and assessing their relative pros and cons.

3.2 We regularly analyse the merits and drawbacks of different policy approaches throughout the initiation and development phases. Ultimately, we produce a refined policy proposal, which delivers what we judge to be the best mechanism for addressing the issue identified, while pursuing our objectives.

3.3 We prepare a full CBA on our refined policy proposal, drawing together the evidence gathered and the analysis undertaken throughout the policymaking process. The level at which we undertake our CBAs varies by policy proposal. Our proposals often take the form of a number of individual component requirements that we consider will, in aggregate, achieve the intended policy outcome (eg policy proposals may take the form of a number of new or amended rules, and may be accompanied by new or amended guidance).

3.4 Our CBAs are intended to support our judgement on the aggregate economic costs and benefits of our policies. In some cases, we can reach that judgement by analysing the costs and benefits of the component requirements on an individual basis. In other cases, where a CP includes a number of significant proposals whose costs and benefits overlap, we may conduct a single, aggregate-level, CBA with or without identifying the standalone impact of component proposals.

3.5 Our approach to preparing CBA is iterative and evolves as part of our policymaking process. Whilst our CBAs are tailored to individual circumstances, they are standardised to a degree and generally include the following core components, which are also shown in Figure 3:

- An analysis and explanation of the strategic case for policy intervention (developing the case for action).

- An analysis of the costs and benefits that we expect will arise if the proposed policy were to be taken forward. As part of this analysis, we provide an estimate of (ie seek to

quantify) the costs and benefits where they can reasonably be estimated at low enough cost to the PRA and to firms, and it is reasonably practicable to do so.[15]

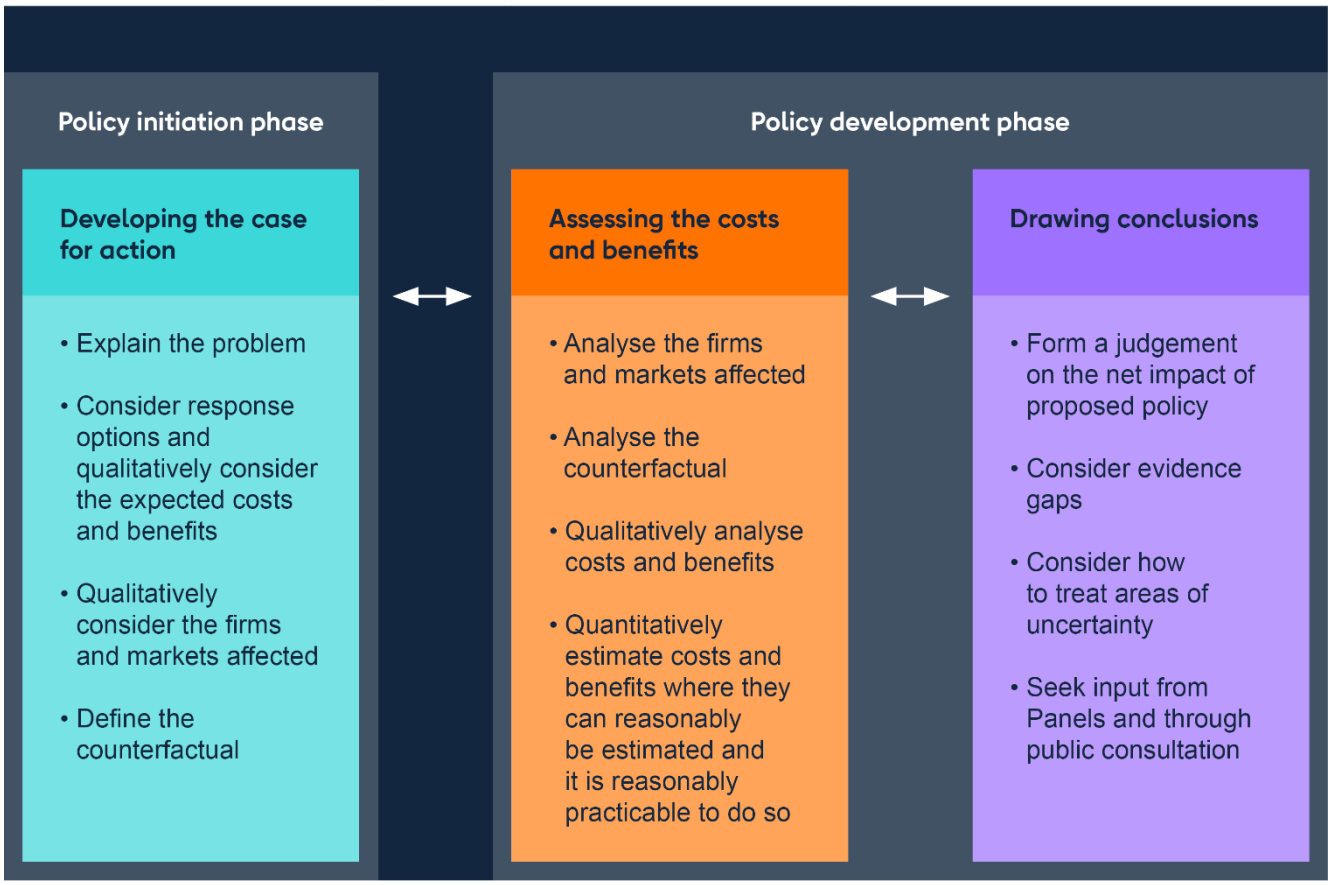
- An overlay of judgement and qualitative evidence to draw conclusions from our analysis and to form an overall view of the expected net impact of our proposal, subject to uncertainty in our analysis and gaps in the available evidence base.

3.6 To benchmark our approach we have reviewed a number of CBA frameworks applied by public organisations domestically and internationally.[16] We have also benchmarked the application of our framework in practice against recent examples of CBAs on financial regulation conducted by government departments and prudential regulators in the UK and abroad.

15 **Section 138J(8) of FSMA**.

16 We reviewed the frameworks of the Australian, Canadian, UK and US governments, the European Union, and the FCA. The UK government framework is **The Green Book**.

Figure 3: The core components of our CBA methodology



Developing the case for action

3.7 The first step in our CBA methodology is analysing and explaining the strategic case for policy intervention, also referred to as the 'case for action'. Each CBA will begin by articulating the underlying economic issues which motivate the proposed change. That might be identified failings in the operation of the relevant markets (so called 'market failures', discussed further in Annex A) and/or existing policies that are operating sub-optimally, for example due to unintended consequences.

3.8 As part of analysing the case for action we aim to (i) explain the problem and assess the potential benefits of rulemaking in addressing the problem, (ii) qualitatively consider the relative merits of our different response options, (iii) qualitatively consider the firms and markets impacted, and (iv) define the counterfactual (or a 'do nothing' scenario).

3.9 The CBA frameworks we reviewed generally require that the problem which regulation aims to solve be set out in a CBA and that alternatives to the proposed regulation be considered. However, the extent to which regulators, in the UK and internationally, consider different potential policy options, and the manner in which they do so, varies. Different approaches are taken to the number of policy options considered and the depth of CBA

conducted on each option. The PRA is required to conduct a CBA only on its proposed policy intervention, which reflects the legal framework the PRA operates under (which includes predetermined objectives and principles to which it must have regard) as well as the need to be proportionate in the use of CBA. We therefore consider different policy options as part of policy development, including pros and cons, as explained below, but generally only conduct a full CBA on our preferred approach, which is the point at which we consult the CBA Panel. Typically, however, a CP will include arguments for why a particular calibration should not be higher or lower, which in turn offers some insight on CBA for alternative policy options.

3.10 In developing the 'case for action' we seek to articulate the problems we have identified in practical terms (eg 'risk weights appear wrongly calibrated') as well as through an economic lens (eg 'there is a market failure as firms are not holding sufficient capital relative to the risks they are exposed to, as they do not fully take account of the costs of their failure to the wider economy').

Consider response options and qualitatively consider the expected costs and benefits

3.11 The existence of an economic problem on its own does not provide a case for policy action. Early on in policy initiation we consider different options for responding to an identified problem. We consider whether any response is required and, if so, whether an industry-led, supervisory-led, or policy-led response would be most appropriate. Where there are multiple viable options, we consider the likely costs and benefits of each option, and weigh up their 'pros' and 'cons' for our primary and secondary objectives and regulatory principles requirements.[17] The use of alternatives to policymaking can help us to solve policy problems more quickly and encourage greater compliance. It can also help to minimise burdens on firms and consumers, and promote competitive markets.

3.12 Where we consider a policy-led approach to be the right response, we start policy development by examining the policy options. We set out one or more initial policy approach(es), and articulate their aims and scope. We consider the channels through which we expect our policies to bring about benefits and costs.

3.13 Once we have described our initial policy approach(es), we analyse and refine these. The nature of the respective risk or opportunity will shape this process. Where we need to act urgently to meet our objectives, we might expedite some of these steps.

---

17 CP27/23 – **The Prudential Regulation Authority's approach to policy The PRA's Approach to Policy**, December 2023, explains in further detail the different response options we consider.

Qualitatively consider the firms and markets affected

3.14 During policy initiation we qualitatively consider which firms and markets will be affected by any proposed policy interventions. When considering affected firms, we focus on the population of firms to which any requirements will directly apply. Where relevant, we also consider other firms that may be affected (for example, counterparties to PRA regulated firms).

3.15 Where relevant, we also identify the particular markets for financial services that are likely to be impacted by the policy intervention. This will vary considerably depending on the type of policy intervention, from very broad markets (eg banking or insurance services), through to particular product markets (eg mortgages, annuities).

Define the counterfactual (or a 'do nothing' scenario)

3.16 During policy initiation, as a basis for considering the potential costs and benefits of policy interventions, we define a counterfactual against which to compare the expected outcome of potential policy interventions.

3.17 FSMA requires us to make a 'comparison between the overall position if the rules are made and the overall position if the rules are not made'.[18] A CBA, therefore, needs to establish a counterfactual 'do nothing' scenario, in which the rules are not made. Generally, this is straightforward. In some cases, however, where legislation or other PRA policies are changing we need to take a judgement about what will be in place in the counterfactual scenario. For example, in CP20/23 the PRA consulted on changes to its ring-fencing policy. The CP was a response to proposed legislative changes on which HM Treasury was consulting. The counterfactual for our CBA assumed that the legislation had changed but the PRA had not changed its policy. In some instances, the expected policy approaches of other jurisdictions can be relevant to the counterfactual. For example, if other jurisdictions chose to implement less strict regulation this may create competitiveness considerations, which can increase the costs of applying stricter regulation in the UK. The PRA, therefore, pays close attention to the plans of other jurisdictions when implementing international agreements.

Assessing the costs and benefits

3.18 In the policy development phase of the policy cycle we examine the economic case for policy intervention using CBA. Our assessment of costs and benefits of the proposed policy intervention starts with analysing the firms and markets affected and the counterfactual. We

[18] See section 138L(5)(a) of FSMA. Where a CBA is required under section 138J(5)(a) of FSMA, because the PRA is making final rules which differ significantly from those on which it consulted, then see section 138L(5)(b).

then use these inputs as part of our qualitative analysis and, where practicable, quantitative estimates of the expected costs and benefits of our policies.

Analyse the firms and markets affected

3.19 As part of our policy development process, we analyse the population of firms that our policy intervention will impact. Where possible, we seek to quantify the number of firms impacted and differentiate firms according to important characteristics, for example, smaller or larger firms: We often aim to identify separately the impacts on smaller firms, given potential impacts on competition, discussed in Chapter 4.

3.20 Understanding the affected firm population and markets is critical for analysing and estimating the impacts of the intervention, and in particular the costs.

Analyse the counterfactual scenario

3.21 We also analyse the counterfactual against which to compare the expected outcome of our policy intervention, and in particular what we expect to happen if the PRA does not change its policies. This requires judgement and can significantly impact the analysis of costs and benefits. The counterfactual scenario may evolve to look different from the status quo. Markets, business practices, and regulations evolve over time, and we aim to take these future developments into account where possible. Such developments could be, for example, the growth of a risky activity that, while small now, is likely to become a material risk to our objectives if left unchecked, or the commencement of any unrelated but relevant regulations that will come in to force over the assessment horizon.[19]

3.22 Absent regulatory change, firms still face incentives to mitigate risks – so the costs and benefits we identify are those which are incremental to firm practices absent the proposed change to regulation.

3.23 The other two key steps involved in assessing costs and benefits – qualitive and quantitative analysis – are considered in detail in the next Chapter.

Drawing conclusions

3.24 As part of assessing benefits and costs, we reach a judgement, in light of the best available evidence, of whether the policy proposal creates an overall positive net benefit.

[19] The Bank of England's Financial Policy Committee and the PRA's horizon-scanning programme are important mechanisms for systematically identifying such growing risks.

3.25 We will highlight evidence gaps and how we have taken these into account when forming our judgement. Highlighting these evidence gaps also maximises the value of the feedback we receive as part of the consultation process.

3.26 In forming our judgement on net impact, we have to take into account the fact there is generally material uncertainty around estimating costs and benefits in prudential regulation. We deal with uncertainty as part of preparing our CBAs in part by:

- testing that our assumptions are reasonable and by considering the implications of altering important assumptions, especially those where the gaps in the supporting evidence are most significant;
- where appropriate, conducting sensitivity analysis around the key assumptions in our analysis, including presenting ranges for our estimates for benefits and costs to account for uncertainty and to avoid presenting an estimation that appears more accurate than it is possible to achieve in practice (ie spurious accuracy or false precision);
- in some cases, using break-even analysis where it is difficult to estimate benefits in a precise or quantitative way. Break-even analysis considers the size of the benefit required for benefits to exceed costs. Such analysis can help stakeholders form a view on how reasonable it is to expect a policy to be net beneficial.

3.27 A very important step, particularly where expected impacts are uncertain but potentially material is seeking expert independent input from the CBA Panel on individual CBAs. Chapter 5 explains the role of the CBA Panel, which also includes providing recommendations on the PRA's overall approach to CBA. Additionally, the PRA will consult the PRA's Practitioner Panels, where relevant, to gather industry insights, which can be particularly useful where impacts on firms are uncertain but potentially material.

3.28 Finally, uncertainty in CBA is also addressed through the consultation process itself. We welcome views from respondents on all aspects of our CPs, including on the CBAs contained within them. All responses are considered. We judge the relevance and materiality of responses and whether they merit adjustments to the policy proposal. As part of policy statements containing final rules the PRA summarises consultation responses, including those on CBA, as well as its judgements on them and any adjustments it has made in light of them.

Our proportionate approach to CBA

3.29 FSMA requires us to have regard to the efficient and economic use of our resources, and this informs our approach to CBAs. There is a cost to undertaking CBA both to the PRA

and to the firms we regulate, whom we may rely on to provide certain data and evidence to help us understand the potential economic costs and benefits of our policies. Data from regulated firms is an important input in our CBAs but it is costly for them to provide, so we have to be selective in deciding when to seek input from regulated firms. We calibrate the depth of our analysis so that the expected costs of undertaking CBA are proportionate to (i) the significance of the issues our rules aim to address, and (ii) the potential impact of those rules, (iii) the costs of asking firms for data; and (iv) the likelihood that costs and benefits are finely balanced (with relatively less depth required when there are sound reasons to expect that benefits will significantly outweigh costs). In our calibration we pay particular attention to the materiality of the burden the associated policy change is likely to impose on regulated firms and the UK economy; the scope for the CBA to inform policymaking;[20] and the extent to which evidence supporting intervention already exists.

3.30 Proportionality also informs our approach to **estimating** costs and benefits. When we do provide estimates, they take the form of approximate calculations or judgements of the quantitative size or value of costs and benefits. We provide estimates of economic costs and benefits when those impacts can reasonably be estimated, and where it is reasonably practicable to do so.[21] As explained in Chapter 4, we may sometimes estimate benefits in prudential, rather than monetary terms – eg how does the policy change reduce firms' probability of default. We determine our approach to estimation on a case-by-case basis.

3.31 When determining whether an impact can **reasonably be estimated** we have regard to:

- the existence and quality of the data inputs required for estimation;
- the suitability and robustness of the methodological approaches and models available;
- the reliability of counterfactual analysis;
- the empirically validated credibility of expected market participants' responses to our proposed intervention;
- the usefulness of any resulting estimate, including the feasibility of representing the estimate as a monetary value for comparison against other costs and benefits; and
- the credibility of any resulting estimate, including the need to avoid presenting an estimation that appears more accurate than is possible given the accuracy of the inputs from which it is derived (ie spurious accuracy or false precision).

---

20 Where a change is made to implement an international agreement, or legislation made by the government, the scope for a CBA to inform policy, and hence the resources to be put into CBA, will be less than where this is not the case.

21 As required by **FSMA**.

3.32 When determining whether it is **reasonably practicable** to quantitatively estimate costs or benefits, we have regard to proportionality and to the efficient and economic use of our resources:

- **Proportionality**: Proportionality underpins our assessment of when it is reasonable to seek to estimate costs and benefits. We generally consider it proportionate to estimate impacts where these are likely to be significant; where such estimates will provide useful inputs into the development and calibration of our policies; or where the judgement of the balance between costs and benefits is finely balanced and the quantification of impacts can reasonably be expected to help inform that judgment.

  To judge proportionality at an early stage of policy development, we consider the significance of the issue that we are seeking to address and the potential impact of a policy response. We assess, at a high level, the potential benefits to our objectives and the expected scale of compliance costs that may be faced by regulated firms. This initial assessment is generally qualitative in nature but may make use of quantitative techniques such as modelled approximations of expected compliance costs.

- **Economic and efficient use of resources**: Practicability of estimation is primarily driven by the availability of relevant data and the suitability of our existing CBA toolkit22 as applied to the costs and benefits being analysed. Where relevant data may exist but is unavailable to us, we must judge whether it is proportionate to seek to collect and analyse it. Assuming relevant data exists, the PRA must expend resources to collect and analyse it. Generally, such data is held by regulated firms, who must also expend resources to collect the data and provide it to the PRA. In addition to the resource implications of gathering data, we also consider the feasibility and expected costs23 of expanding our toolkit if and when required and the likely benefits this will bring to estimating impacts.

3.33 Our CBAs provide a structured approach to analysing the potential costs and benefits of our policies and assessing the evidence base supporting this analysis. The CBA process is an important and useful one even where costs and benefits are not quantitively estimated. In cases where we do not estimate costs or benefits we will provide a statement in our CP which explains why, in our opinion, they cannot be reasonably estimated or it has not been reasonably practicable to do so.[24]

3.34 Our review of the CBA frameworks used by other organisations, and the CBAs they publish suggests that our approach to proportionate quantification is in line with other

---

22 Toolkit refers to the data, model, techniques and evidence that we have at our disposal to conduct CBA.

23 Costs in this context refers to the PRA resources required, and the risks associated with the delay of policymaking that be required to give sufficient time to expand our toolkit.

24 As required by **section 138J(8) of FSMA**.

domestic and international approaches. Many organisations' CBAs will routinely estimate material changes to costs arising from increases or decreases in compliance obligations. The indirect impacts of policy changes, including the benefits set out in Chapter 2 above, are estimated relatively infrequently. The PRA is relatively advanced in having an established empirically grounded approach to estimating the macro-economic impacts of prudential regulation.[25]

The circumstances in which we may not undertake a CBA

3.35 We seek to undertake a CBA in some form for the vast majority of our policy decisions in order to support transparency and accountability in our policymaking.

3.36 There are a limited number of circumstances where we are not legally required to undertake a CBA when making rules, including where we consider there will be no increase in costs or that there will be an increase in cost but that increase will be of minimal significance.[26] When considering the use of this exemption we have regard to the following matters:

- The quality and transparency of the evidence base supporting our view that there will be no or minimal costs;
- The expected size of the benefits of the associated policy. Where benefits are material, we would still seek to undertake a CBA.

3.37 Examples of policy proposals where we may not undertake a CBA include; corrections to inadvertent errors in our Rulebook or changing the location of material within our Rulebook.

3.38 FSMA also provides an exemption from our requirement to undertake a CBA of rule changes (or consult) where the associated delay would be prejudicial to the safety and soundness of PRA-authorised persons or securing the appropriate degree of protection for policyholders. In the limited circumstances where this exemption applies, we will still usually seek to conduct and publish a CBA in a timely manner after the associated policy has been made. When considering the use of this exemption, we have regard to the following matters:

- The scale of any immediate threat to the PRA's objectives and the risks of delaying policy action (for example where we may need to respond to rapid changes in market conditions caused by low-probability high-impact events to protect safety and soundness or avoid significant adverse effects);

[25] The **ECB** also has an approach, which has informed the work of the European Commission.
[26] As set out in **section 138L(3) of FSMA**.

- Our ability to mitigate observed or anticipated risks to our objectives via a means other than creating or amending PRA rules (eg supervisory led action or firm-specific requirements);
- Any relevant directions or recommendations made to us from UK public authorities, regulators, or international standard setting bodies;
- The evidence available to us that the benefits to our objectives will be proportionate to any costs.

How we communicate CBA

3.39 We undertake CBAs in the 'Policy Development' stage of the policy cycle and publish them as part of our public consultation process in our CPs required under section 138J of FSMA. In most cases the CBA will be set out in the chapter relevant to the proposals to which it relates. In other cases, we may set out an aggregate-level CBA, which complements analysis in the individual chapters.

3.40 If the final rules we make differ from those consulted on in a manner that we consider to be significant then, as required by section 138J(5)(a) of FSMA, we will publish details of the difference, together with an updated CBA.

4: How we analyse and estimate costs and benefits

Summary

Causal chain analysis	We undertake causal chain analysis to identify the expected costs and benefits of our policy interventions and to establish how those impacts will be generated. We consider whether a policy proposal is likely to result in: • costs or benefits as they would apply to individual firms (for example, impacts on firm safety and soundness and policy holder protection), including direct impacts on firms' policyholders, depositors, other customers and counterparties; • market impacts (for example, increased resilience or positive or negative impacts on effective competition or UK international competitiveness and growth); and/or • macroeconomic impacts (for example, economic benefits such as reduction in frequency and severity of financial crises or economic costs such as reduced lending and investment to the UK economy).
Evidence	Where appropriate we present evidence to validate the key assumptions of our causal chain analysis using supervisory intelligence; research and international comparisons; data analysis; and information gathered from firms. Based on this evidence, we draw qualitative conclusions about the scale of costs and benefits. We revisit this analysis in light of new evidence gathered as part of our public consultation process.
Estimation	We provide estimates of costs and benefits when those impacts can reasonably be estimated, and where it is reasonably practicable to do so.[27] Our estimates take the form of approximate calculations or judgements of the quantitative value, number, quantity or extent of costs and benefits. If our causal chain analysis suggests that a policy proposal could have a macroeconomic impact, then we estimate this impact in monetary terms

[27] As required by **FSMA 2023**.

	using economic and statistical models. When estimating firm-level or market-level impacts, we may do so in monetary terms (eg estimating costs such as the compliance costs faced by firms or benefits such as the reduction in the cost of a firm failing in a disorderly manner) or non-monetary terms (eg estimating benefits such as a reduction in the probability of a firm failing in a disorderly manner). Where we expect a significant positive or negative impact on effective competition and UK international competitiveness and growth, we seek to provide evidence that supports our judgement of the size of that impact. But we do not provide precise estimates of these expected impacts. Where relevant, we also estimate monetary economic benefits arising where our policies reduce the direct costs to firms of complying with PRA policies.

Causal chain analysis

4.1 The primary analytical technique we use in our CBAs is causal chain analysis – an explanation of how a policy change will create benefits and costs. All PRA CBAs will include a coherent and credible explanation of the causal chains through which benefits and costs are expected to arise, including the following elements:[28]

- an understanding of how the intervention is expected to work in practice, eg the problem the intervention aims to address, including whether the measure aims to address resilience against failure or to support the continuity of essential financial services, and the extent to which there are likely to system-wide benefits;
- the change it aims to bring about;
- the causal chain of events that are expected to bring about the change;
- the main actors affected (eg PRA firms and their customers or counterparties); and
- the expected conditions required for the intervention to succeed.

4.2 The causal chain will generally begin with the **direct** impact of a policy on individual firms and their costs. The impacts on firms' cost are relatively easy to analyse, compared to other kinds of impacts. The costs that firms incur will impact their behaviour, potentially creating benefits of improved firm-level resilience.

[28] Consistent with central government guidance on the need for policymakers to identify a Theory of Change. **Magenta Book**, Section 2.2.1.

4.3 In turn, impacts on firms' costs, behaviour and resilience will create **indirect** impacts at the level of economic markets (eg for a particular insurance product) and ultimately, the macro-economy. The indirect impacts of prudential policy on the macro-economy are generally the most important. But they are hard to analyse and estimate, Box 2 below summarises some of the challenges.

4.4 Key among these challenges is that prudential regulation involves addressing the risks of very high impact but low probability events, which may not have occurred for decades, or indeed ever. In consequence, concrete evidence that a policy change will bring immediate economic benefits rarely exists. Rather, we will often need to consider how a causal chain might operate in the future, under a plausible hypothetical stress or shock, to bring benefits over the medium to long term. This creates a significant role for forward-looking judgement in the PRA's analysis of benefits.

4.5 Our analysis of causal chains may rely on economic theory, evidence and experience, which together allow us to draw conclusions about how firms will respond to a change of incentives, and how this will feed through to economic benefits or costs. Our review of the evidence will be proportionate to the impact we expect a policy change to have.

4.6 The remainder of this section highlights the main sources of evidence we draw upon in our analysis and estimation of costs and benefits before turning in more detail to how we analyse and estimate those benefits.

Box 2: Factors to consider when analysing and estimating the market or system-wide benefits of prudential regulation

In analysing the causal chains associated with prudential regulation, we need to take account of a range of challenges linked to the channels through which costs and benefits arise. These channels are set out in detail in Annex A. The most relevant points arising from Annex A are that these channels:

- are complex in that they involve multiple mechanisms which may feed into each other and back on themselves (feedback loops) in ways which are not easily observed or predicted;
- involve a wide range of stakeholders which interact with each other: PRA firms, other financial firms, corporates, households, and the public sector (including the FSCS, the Bank of England as provider of liquidity insurance for financial stability purposes and HM Treasury);
- involve addressing the risks of low probability but very high impact hypothetical scenarios which may arise in the future rather than current harms that are visible and measurable today; and

- involve the avoidance of costs which are rarely experienced in practice or in full. This could be due to, for example: government intervention, prudential regulation, the FSCS, or the provision of liquidity insurance by the Bank of England. Both FSCS protection and the provision of liquidity insurance rely on prudential regulation.

Sources of evidence for CBA

4.7 We gather and use evidence as part of policy development. This evidence base informs the final CBA we prepare on our preferred policy proposal. We may also seek to gather additional evidence, beyond that needed directly for policy development, for the purposes of CBA. When responses to our CPs reveal additional information or more relevant data, the PRA will review the CBA to incorporate additional information that has become available and revise CBA if necessary. The primary sources of evidence that we rely on are: supervisory intelligence; information and data from regulated firms; third party information and data; international benchmarking and case studies and research.

Supervisory intelligence

4.8 An important source of evidence of benefits is information gathered as part of the supervision of PRA regulated firms. Our supervisors regularly speak with and assess the practices of regulated firms, and may have evidence, for example, on the extent to which firms' current practices fail to mitigate risks, or on the scale or nature of new risks which product or process innovation is creating. Both could help identify and size the benefits from a policy intervention. Equally supervisory intelligence is important for understanding the practical implications of the changes firms need to make and so the impact on their costs. Supervisory intelligence can include a broad spectrum of sources including: business-as-usual supervision of firms, thematic or cross-firm reviews, horizon-scanning exercises, and insights from significant events, including near-misses.[29] Given the forward-looking nature of prudential regulation, information drawn from hypothetical scenarios, such as stress-testing or simulated events can be important.

Table 2 – Examples of types of Supervisory Intelligence used in CBA

Evidence source	Example

[29] Given the infrequency of financial crises, historical events can be relevant.

Cross-firm Review	Supervisors supported an analysis of UK firms' software assets, focusing on their realisable or recoverable values in liquidation or in stress. The analysis (also taking into account a firm survey) found no credible evidence that software assets would absorb losses effectively in a stress. This supported the PRA's view that it should require firms to deduct software assets from CET1. (PS17/21) In recent years, the PRA has seen a growing appetite for the use of funded reinsurance to support the writing of bulk purchase annuity (BPA) business. After a thematic review which identified areas of potential risks, the PRA sets out its expectations for consultation in respect of UK life insurers' use of funded reinsurance (CP 24/23).
Stress-testing	Analysis of ACS stress testing has supported the view that the risk of lending to SMEs is materially less correlated with the economic cycle than lending to larger firms, and the risk weights proposed by PRA for SME lending are appropriate (PS9/24)
Business-as-usual supervision	Intelligence from supervisory specialists in small firms' capital has been essential in identifying the potential time and cost-savings achievable by firms through the changes to the capital regime proposed as part of the Strong and Simple regime (CP7/24) Following the UK leaving the EU, the PRA adapted the Solvency II framework to better tailored to the UK insurance market with a suite of policy proposals (PS29/21, CP14/22, CP12/23, CP19/23 and CP 5/24).
Significant events	The failure of the Lehman Brothers UK investment bank subsidiary in 2008 and supervisory concerns around other investment bank subsidiaries that came close to failure led the PRA to develop a policy on Trading Book Wind Down (PS4/22 and CP20/21) following several years of cross-firm work.

Information and data gathered directly from firms

4.9 The PRA uses regulatory reporting, surveys, ad hoc data requests and discussion papers to source information and data from firms that can help us to assess costs and benefits. It may be difficult for individual firms to take a view on the benefits of change, which depends on industry-wide changes. However, surveys and discussion papers can be a good way to

understand current practices and how firms might respond to policy intervention, which can provide insight into both costs and benefits.[30] Using surveys can be challenging in the context of preparing a consultation paper because policy proposals continually evolve, and the proposals at the time of the survey may differ from those on which the PRA will eventually consult. While the Bank does regularly engage with industry on policy issues, we cannot pre-consult particular firms on specific policy proposals, or set expectations that we will implement specific policy proposals, so any information gathered from industry surveys may be necessarily high level. This can require the PRA to make further assumptions when applying survey results to the CBA of the proposal in the CP. The resource cost of surveys for firms (particularly small firms) and the PRA can also be significant, and there can be challenges in achieving sufficient response rates.

4.10 More in-depth information can be sought via subject expert industry groups. In these cases, the PRA must ensure a level-playing field by which all firms have an equal opportunity to participate.

4.11 Analysis of regulatory returns and data volunteered by firms can all be important in the analysis of benefits. Such quantitative analysis may stop short of estimating benefits while providing evidence that benefits are likely to arise. For example, a proposal to increase a risk-weight on a particular asset might be supported by data showing that this asset-type is higher risk than others currently subject to the same charge, and therefore warrant a higher risk-weight.

4.12 Information volunteered by firms and provided through feedback (eg to discussion papers or pre-consultation surveys) can also be important sources of information. For example, as part of reviewing how insurance reporting and disclosure requirements could be improved to better reflect the UK insurance sector, the PRA launched the Solvency II reporting cost survey, where participation was on a voluntary basis, to gather information to help inform cost benefit analysis of future reporting and disclosure policy proposals.

4.13 New evidence received from CP respondents, including firms, can also lead us to revisit its CBA, as well as our policy proposals, as part of our public consultation process.

International benchmarking and case-studies

4.14 Where different jurisdictions apply different standards, it may be possible to draw conclusions on the effectiveness of the standards eg in terms of the frequency at which a particular risk crystalises. Where another jurisdiction has introduced a policy measure, it may

[30] Examples of where the PRA has used surveys to support quantitative estimates of impacts include the **Solvency II: Quantitative Impact Study**, July 2021and the quantitative impact study used in the PRA's consultation on the **implementation of the Basel 3.1 standards**, November 2022.

be possible to make inferences about the effectiveness of that measure by considering it as a case study.

4.15 Much prudential policymaking begins at the international level, with the Basel Committee on Banking Standards and, to a lesser extent, the International Association of Insurance Supervisors (IAIS). This often provides a body of evidence from international benchmarking, or other techniques, which is relevant to a PRA CBA.[31]

Research

4.16 High quality central bank, practitioner, academic or industry research, can also inform our analysis of costs and benefits. Industry research can also provide significant insight, particularly into fast-changing markets. There is a large body of research into the costs of financial crises and the mechanisms by which they emerge. This literature underpins the PRA's Framework for Assessing Macroeconomic Costs and Benefits discussed below. The PRA's research[32] on whether and how the 'bonus cap' rule – a cap on the ratio between fixed and variable remuneration – affected bankers' compensation helped inform the policy proposal to remove the cap[33] (PS9/23 and CP15/22). PRA models are quality assured through a variety of processes, including review by external academics and researchers. Those underpinning the PRA's Framework for Assessing Macroeconomic Costs and Benefits have also been published in peer-reviewed journals.

Evaluation and rule review

4.17 The review of rules is an important part of our policy cycle. When we review rules, what is learnt through this process can inform future CBAs.[34] In this way, rule review complements CBA and increases the PRA's effectiveness in delivering its objectives. The CBA Panel may be involved if we develop CBAs to support new policy proposals following a rule review, as part of its usual role as described in Chapter 5. When reviewing CBAs relating to changes to existing rules, the Panel may also revisit the earlier CBA to identify lessons for the PRA's approach to CBA.

4.18 Our overall approach to rule review is set out in a separate Statement of Policy on the review of rules.[35]

---

31 See, for example, **Financial Regulation Assessment: Meta Exercise**, for one such set of international benchmarks.

32 **Measuring the effects of bank remuneration rules: evidence from the UK** Staff Working Paper No. 1,008, December 2022.

33 **PS9/23 – Remuneration: Ratio between fixed and variable components of total remuneration ('bonus cap')**, October 2023.

34 **PRA statement on the review of rules**, February 2024.

35 See the **PRA's statement on the review of rules**, February 2024, for more detail on how the PRA reviews its rules.

Techniques for assessing impacts on PRA regulated firms

Direct costs to firms

4.19 Identifying and estimating direct compliance costs to firms is generally more straightforward than other impacts, albeit still subject to material uncertainty and we typically give a range of estimates Analysing direct costs also helps us to understand potential market and macro-economic costs. As such, direct costs will be estimated more frequently than other impacts. We generally estimate one-off and ongoing compliance costs, as well as the additional costs of any increased financial resources (capital). Where possible we seek to differentiate between the relative materiality of the costs that will be incurred by smaller and larger firms.

4.20 Our starting point for estimation is usually market prices (eg salaries and consultancy fees). We estimate the opportunity costs of staff time using the full time equivalent (FTE) costs – including salary and overheads (pension, national insurance contributions, benefits etc. – of relevant skilled employees and the time required. We obtain technology and labour market prices by making use of industry reports and market and supervisory intelligence. We estimate the time required through comparison with past comparable exercises and discussions with supervisors or industry experts. When necessary, we also conduct surveys among relevant firms to substantiate our modelled operational costs.

4.21 We may make use of a Standard Cost Model (SCM) which helps quantify direct operational costs to firms using assumptions including on average salaries, the person days required to implement a policy change, and any technology or other costs on firms.

4.22 When the policy intervention impacts capital requirements, we estimate the differences in capital levels in pre- and post-implementation of the proposed change. These estimates take into consideration how banks change their capital resources and adjust balance sheets in response to an increase in regulatory capital requirements. Estimates account for the fact that higher regulatory capital requirements, even when not strictly binding on firms, may nonetheless lead firms to increase their capital.[36]

[36] There is considerable evidence that banks hold excess capital over and above regulatory requirements for a number of reasons, including to avoid the costs of inadvertently breaching such requirements and the impact of market discipline which leads firms adjust their level of capital in response to changes in their peers. For a discussion of these reasons, see Isaac Alfon, Isabel Argimon, Patricia Bascunana-Ambros, What determines how much capital is held by UK banks and building societies? FSA Occasional Paper 22, 2004. For empirical evidence of these effects see Sebastian J.A. de-Ramon, William B. Francis, Qun Harris, Bank-specific capital requirements and capital management from 1989-2013: Further evidence from the UK, Journal of Banking & Finance, Volume 138, 2022.

4.23 When firms increase capital, this leads to a reduced cost of capital as the risk to equity and debt investors falls. This effect, proposed by economists Modigliani and Miller (MM), is explained further in Annex B and offsets the increase in capital costs which would otherwise occur when firms increase their level of capital. Using data covering periods of both financial crisis and stability, the Bank of England has previously estimated this 'MM offset' to be 45%[37] and 53%[38] in banking in the UK. We will take this offset into account in its calculations of capital costs, informed by this range and findings from the academic literature.[39] Estimates of the MM offset are uncertain and the MM offset may evolve over time, for example as regulation affects market pricing: we will continue to evaluate the appropriate level of MM offsets.

4.24 Depending on the type of firms affected, the PRA may use different methods to assess the appropriate cost of equity to apply to a proposed increase in capital. These include estimates based on market data, firm financials, or industry research or firms' own estimates.

4.25 Some policy proposals primarily bring benefits through lower costs to firms, for example by reforming an existing policy that had unintended consequences. These may be relatively straightforward to estimate, using the methods outlined above. What is less certain is the extent to which these savings will be passed on to customers, employees or shareholders. Typically, we assume that in relatively competitive markets, such savings will be passed on and so represent true economic benefits (the same is true of costs).

4.26 In assessing costs, it is important to distinguish between **fixed costs** – that remain the same regardless of production output and **variable costs** – that change based on the amount of output produced. For example, an increase in capital requirements may increase the variable costs associated with bank lending or an insurance contract. In contrast the requirement for a firm's CEO to be approved under the senior management regime is a fixed cost.

4.27 The distinction between fixed and variable costs may be considered qualitatively in terms of its implications for indirect market impacts discussed below. Smaller firms are more affected by the fixed regulatory costs as they have a lower sales volume to spread the fixed costs, so policies with higher fixed costs may have greater negative market impacts on the ability of small firms to compete. More generally, the scale of the direct costs to firms will influence whether and how firms might adjust their business models or practices in response to the proposed regulation, feeding through to indirect and macroeconomic costs.

---

37 Miles, D., Yang, J., & Marcheggiano, G., 2013. Optimal bank capital. The Economic Journal, *123*(567), 1-37.

38 Brooke, Martin, et al. (2015): 'Measuring the macroeconomic costs and benefits of higher UK bank capital requirements.' Bank of England Financial Stability Paper 35.35 1-55.

39 For example, see PS8/21 – **Non-systemic UK banks**, April 2021.

4.28 Another key distinction is between private costs and social costs. Private costs are those paid by firms or consumers, and usually factored into supply and consumption decisions. Social costs include both the private costs and any other external costs to society arising from the production or consumption of a good or service. This distinction can be relevant eg when analysing policies which require firms to replace debt funding with capital. The private cost to firms is higher than the social cost because the dividends associated with new capital are taxable whereas the interest paid on the old debt was not.

Firm-level resilience

4.29 The next step in the causal chain is generally to consider how policy proposals affect firm-level resilience, which is important for the PRA's general objective to promote the safety and soundness of PRA-authorised firms.[40] From an economic CBA perspective we do not generally view improved firm-level resilience as 'an end in itself'.[41] Rather it is an intermediate step towards the economic benefits at market and macro level set out in Chapter 2: reducing the risk of financial crises; improving confidence in the financial system and reducing the risk of operational disruption to essential services. It is, however, a critical step. It may, therefore, be the main focus of our analysis and estimation of benefits, particularly given the challenges mentioned above to analysing and estimating how improved firm-level resilience feeds through into economic impacts on markets and the macro-economy.

4.30 An analysis of how a policy change improves firm-level resilience will typically consider the evidence for how the change contributes to reducing or mitigating risk.[42] Depending on the relevant impact the evidence may be more qualitative or quantitative in nature. For example, changes relating to management and governance or risk management and controls may often (but not always) rely on qualitative evidence. Changes relating to capital and liquidity more often include quantitative evidence (eg risk data from firms or PRA Stress testing) alongside qualitative evidence.

4.31 Where proportionate, we will go beyond analysis of firm-level prudential benefits to estimate them. Examples of firm-level prudential outcomes that we estimate include reductions in:

---

40 Most policies made by the PRA are micro-prudential – they aim to improve firm-level resilience and may thereby contribute to resilience at the system-wide (macro-prudential) level. However, it is possible that PRA policy proposals contribute only at the system-level without improving firm-level resilience – for example reporting changes which provide the Bank's macro-prudential function better insight into system-level risks.

41 By contrast, under FSMA, advancing firm resilience or 'safety and soundness' is a Statutory Objective and, therefore, an end in itself for the PRA. CBA seeks to evaluate the economic consequences of the PRA pursuing those Objectives.

42 The PRA's framework for assessing risk is set out in its Risk Element Framework contained in the **PRA's approach to supervision of the banking and insurance sectors**, July 2023. Policies which aim to improve firm-level resilience should generally do so by addressing one of the elements of this framework.

- the expected probability of firms failing in a disorderly manner;[43]
- the risk and impact of operational failures;
- costs to firms of disorderly exit; and
- potential losses to customers, policyholders or the FSCS from firm failures.

4.32 We view such estimates as useful in assessing proportionality and the relative costs and benefits of an intervention. In some cases, they might be considered as proxy measures for the wider economic benefits to markets and economic output.[44]

4.33 These intermediate firm-level benefits (in terms of costs avoided) can be significant. For example, FSCS paid out £23 billion following the failures of Bradford & Bingley, Kaupthing Singer & Friedlander Limited, Heritable Bank Plc; Icesave, and London Scottish Bank Plc in 2008. Meanwhile, the near-collapse of UK insurer Equitable Life in 2000 resulted in a loss to policyholders estimated at around £4 billion - £5 billion (2010 figures). Following this, the government announced compensation worth £1.5 billion to affected policyholders in 2010. The FSCS has also paid out more than £400 million in compensation between 2001 and 2015 in connection with the collapse of the Independent Insurance Company Limited.[45] In relation to operational resilience, the FCA's CP19/32 examines firm-level losses and highlights TSB's £330 million loss in relation to a 2018 IT failure.

4.34 The PRA continues to develop its approach to estimating how major policy proposals may impact the probability of disorderly firm failure. Techniques for estimating the impacts of policies on probability of disorderly failure are most advanced for the banking sector, where there is a well-established body of research and evidence including work undertaken over many years by the UK regulators.[46] We have also developed a quantitative failure model for credit unions, which estimates default probabilities for credit unions based on a firm-specific financial metrics and unemployment rates.[47] In the insurance sector, we are enhancing our

---

43 Including the risk of insurers being unable to meet their obligations to their policyholders.

44 The difficulties in estimating economic benefits were acknowledged in Parliament during the creation of the Financial Markets and Services Act 2000 which required the then regulator FSA only to analyse benefits rather than estimate them; (**Financial Services And Markets Bill**).

45 Wired-Gov (2015), **Update on Independent Insurance Company Limited ('IICL') | FSCS | Official Press Release (wired-gov.net)**, news article, April 2015.

46 For example, Bank of England staff have examined how well different prudential metrics might have identified banks that failed during the Global Financial Crisis and European Sovereign Debt Crisis (Buckmann, M., Gallego Marquez, P., Gimpelewicz, M., Kapadia, S., and Rismanchi, K., 'The more the merrier? Evidence on the value of multiple requirements in bank regulation Journal of Banking & Finance', Volume 149, April 2023) as also how prudential metrics were better predictors of distress for large banks than small banks in 2007 (Saunders, A., and Willison, M., 'Measure for measure: evidence on the relative performance of regulatory requirements for small and large banks', Bank of England Staff Working Paper No.922, May 2021). Such approaches draw on a well-established literature on the quantitative estimation of the probability of bank distress going back eg to: Cole, R. A., and Gunther, J. 'Separating the Likelihood and Timing of Bank Failure.' Journal of Banking and Finance 19 (6), September 1995.

47 Coen, J., W.B. Francis, M. Rostom. 2019. 'The Determinants of Credit Union Failure: Insights from the United Kingdom.' International Journal of Central Banking X:207-240.

tools for quantitative estimation of this type. The Bank of England has identified that how shocks propagate from the insurance sector to the financial system and the economy and how insurance regulators should respond as a priority area for further research.[48] We are considering the important roles that the insurance sector plays within the economy and, in particular: the supply of risk transfer and the supply of finance.

Techniques for assessing market impacts

4.35 As set out in Chapter 2, the most important benefits of our policies arise at the level of markets, the financial system and the economy. However, our policies can also lead to costs at the level of markets and the economy. These impacts arise because our policies can have an indirect impact on supply and demand in economic markets, and on the quality, quantity or variety of products and services available. We consider three main channels through which our policies may indirectly impact markets: (1) maintaining the supply of essential financial services, (2) market impacts of changes to firms' compliance costs and (3) confidence effects. Each of these channels is discussed in turn below. In the second and third channels, in particular, the impacts of our policies may in part arise through effects on international competitiveness[49] and competition.[50]

Maintaining the supply of essential financial services

4.36 Reducing the risk of firm failure or operational disruption can bring benefits in the markets for essential financial services provided by PRA firms, and other economic markets which depend on them. An example would be the benefits to the travel industry that derive from improving the resilience of travel insurers. Absent resilient travel insurers, demand for travel would fall, as some customers may be unwilling, or even unable to travel without insurance.

4.37 We generally analyse impacts on the supply of essential financial services by examining whether a policy change is likely to improve resilience at the level of the firm and how firms

---

48 See the **Bank of England Agenda for Research** as well as the **letter from Andrew Bailey to Harriet Baldwin MP**, 22 February 2023. The letter explains the challenges in providing a monetary estimate of the benefits of reducing firm probability of default but sets them in context by noting the scale of policyholder and taxpayer losses in the case of Equitable Life.

49 PRA policies can impact international competitiveness of the UK economy by facilitating: (i) PRA regulated firms in allocating capital efficiently among financial and non-financial corporates; (ii) PRA regulated firms in competing in international markets, and thereby increasing their ability to undertake cross-border activities; and (iii) regulated international firms in locating their headquarters, subsidiaries and/or branches in the UK, which supports investment in the UK. For more information see the speech by Victoria Saporta, September 2023: **Competitiveness and growth: continuing the conversation**.

50 Competition leads to improved outcomes for customers, such as lower prices or better quality and gives customers the confidence to shop around. For further information see **The Prudential Regulation Authority's secondary competition objective**, Quarterly Bulletin 2015 Q4.

will benefit from this increased resilience (for example by avoiding losses). Firm-level benefits of this type give an indication, or proxy, of market-wide benefits and can be used to inform break-even analysis. Examples of this kind of analysis can be found in the FCA CP19/32[51] and the joint FCA, PRA, and Bank of England CP26/23.[52]

Market impacts of changes to firms' compliance costs

4.38 As explained in Chapter 2, regulation increases firms' costs and this can indirectly lead to negative market outcomes, reducing the quantity, quality or variety of products and services available, or increasing their price.

4.39 Direct costs impact firms' behaviour and lead to indirect costs. These causal chains can be complex, especially when indirect costs arise due to international competitiveness or competition effects. For example, a reduction in compliance costs may make it easier for suppliers, including those offering new products and services, to enter the market and to expand. In turn, this positively affects the quality, quantity or variety of products and services available. Increases in cost will have the opposite effect. As noted above, fixed costs of regulation can impact smaller firms' ability to compete, so CBAs generally aim to distinguish the impacts on compliance costs to smaller and larger firms. Given the complexity of the causal chains involved in these processes, our analysis of such impacts will generally be qualitative, unless a relevant study (such as those mentioned above) already exists.

4.40 In some instances, we do seek to estimate how volumes or prices for a product or service may be affected by our policies. For example, the PRA has undertaken significant work to estimate the indirect costs associated with higher bank capital requirements.[53] A wider body of economic literature analyses the impact of capital and liquidity regulations on prices, volumes and other economic outcomes. The Bank of International Settlements has created an online repository of the key quantitative results that we can draw on.[54]

Confidence effects

4.41 The PRA's general approach to analysing confidence effects is to analyse whether there is a credible impact of a policy change on firm resilience. As discussed in Chapter 2 and Annex A, customers and counterparties often lack information to judge the safety and

---

51 CP19/32, **Building operational resilience**, Financial Conduct Authority, December 2019.

52 CP26/23 – **Operational Resilience: Critical third parties to the UK financial sector**, Prudential Regulation Authority & FCA, December 2023.

53 Sebastian J.A. de-Ramon, William B. Francis, Qun Harris, Bank-specific capital requirements and capital management from 1989-2013, Journal of Banking & Finance, Volume 138, May 2022: estimates the extent to which higher capital ratio requirements, even when not binding in a regulatory sense, result in firms raising capital and contracting their asset base to reduce risk.

54 **Impact of financial regulations: insights from an online repository of studies**, BIS Quarterly Review, March 2019.

soundness of PRA firms (an example of asymmetric information) which can limit their confidence in dealing with them. Regulation which improves firm resilience can support confidence in, and so consumer demand for, certain products such as bank deposits or insurance. This will lead to increased quantity and/or variety of good and services being purchased from PRA firms. This can benefit UK households who purchase those goods and services directly. It may benefit UK households indirectly where business they rely on purchase goods and services from PRA firms, or where they are employees or shareholders of PRA firms.

4.42 Confidence also supports effective competition – a competitive market is one where customers have the confidence to shop around thanks to the fact that firms are subject to strong and proportionate prudential standards. Absent confidence there could be a stronger tendency towards concentrated markets, as consumers stick with large well-established firms in the belief that they are less likely to fail. Confidence also relies on maintaining trust among domestic and foreign firms in the PRA and UK prudential framework – one of the PRA's regulatory foundations for facilitating international competitiveness of the UK economy and its financial services sector. Strong prudential standards preserve the growth prospects of the real economy in the medium-to-long term by reducing harm from future financial instabilities, thereby creating trust in the prudential regime. In turn this supports capital allocation, the ability to sell and the ability to attract, as set out above.

4.43 To inform our judgement on the confidence effects of our policies we rely on estimating firm-level measures as proxies or case study analysis. We know that when confidence is damaged, the impacts can be significant. For example, small US banks lost $108 billion in deposits in the week following Silicon Valley Bank's collapse, while deposits to the 25 largest US banks grew by $120 billion. Meanwhile, equity prices for small US banks fell 30% following the failure. Similarly, in 1991 the UK experienced a 'Small Banks Crisis' during which some large depositors withdrew funds and larger banks, including foreign banks, also began to reappraise their exposure to the small banks' sector. This resulted in a number of bank closures.[55] These effects increase smaller banks' cost of capital and funding. In turn this can negatively impact small banks' ability to compete and the quantity, variety and prices (eg deposit rates) of products and services available to customers.

4.44 Supporting confidence can also reduce the risk of financial crises, to which we now turn.

---

55 Bank of England Quarterly Bulletin 2016 Q1: **The small bank failures of the early 1990s: another story of boom and bust**.

Techniques for assessing macroeconomic impacts

4.45 Where the PRA is making a major policy intervention, this may be expected to have a material and standalone impact on the financial stability channel, primarily via a change to banks' capital requirements. The economic benefits associated with the financial stability channel are very large (Box A, Annex A) and there is a significant body of academic literature which supports this estimation, including research conducted by the PRA. However, our policies can also bring about macroeconomic costs during non-crisis periods, primarily as a result of implications for the cost of funding for non-financial corporates, and implications for productive investment. Our approach to the estimation of macroeconomic impacts recognises that there is an optimum level of financial stability (and therefore, capital) that balances these benefits and costs.

4.46 Our conceptual framework for measuring the financial stability benefits of prudential regulation is grounded in the extent to which prudential regulation can influence the expected economic cost of a financial crisis, which consists of three elements:

- the probability (in % terms) of a financial crisis. This variable can be influenced by, for example, the amount of leverage in the economy, liquidity in the banking sector, risk appetite, etc.
- the cost (in % terms) given a financial crisis, in terms of the resulting deadweight economic loss to society. This variable is driven by; the costs generated as a result of procyclical dynamics that develop during crisis, and the economic costs of the failure or distress of banks and insurers ('bankruptcy costs'). These costs in turn are influenced by the degree to which market frictions hinder the ability of consumers to substitute financial services in a crisis and the degree of competition and barriers to entry and exit in the markets for services provided by PRA-authorised firms (for example, the extent to which new firms can step in to the market to maintain the supply of services lost due to a firm's failure).
- the value (in £ terms) of economic output exposed to the relevant risks. In the case of the PRA, this is predominantly about the economic output exposed to a banking and/or insurance crisis.

4.47 A prudential policy change may reduce the expected cost or 'risk' of crisis either by reducing the probability of financial crisis, or its impacts, or both. For example, policies aimed at advancing our objectives at the firm level influence variables such as leverage in the system, liquidity in the banking sector, and risk-taking activities by firms, all of which can affect probability of crisis. In addition, PRA policies may address the size and nature of bankruptcy costs and barriers to exit/entry that can, in turn, affect the cost of crisis.

4.48 Annex C provides more detail on the PRA's model for estimating these benefits, which focusses on the reduction in the probability of crisis.[56]

4.49 In the PRA's model, these impacts arise through two channels: implications for the cost of funding for non-financial corporates, and implications for productive investment. The PRA uses macroeconomic models to estimate the potential impact on aggregate investment and economic output (GDP), as set out in Annex C and considers short run and long run impacts.

4.50 In assessing short-term impacts, PRA considers negative impacts on economic output driven by both increased lending spreads and declines in the supply of credit.

4.51 To understand the long-run economic impact, PRA compares two steady states, one with and one without the proposed prudential policy. The PRA focusses only on increases in lending spreads rather than reductions in the credit supply, under the assumption that credit rationing primarily occurs over the short term. It estimates the increases in lending spreads using a quantitative model and input these estimates into a dynamic structural general equilibrium model to assess the resulting negative impact on GDP.

4.52 The PRA's approach to estimating these broad macroeconomic impacts is consistent with techniques employed by other international policymakers (Basel Committee on Banking Supervision (BCBS) 2021).[57] The PRA recognises, however, that there is considerable uncertainty in understanding these effects and, therefore, has an ongoing programme of research aimed at strengthening its approach. This research has included, for example, examining whether and how the influence of capital requirements on UK banks' capital and balance sheet management practices changed in the aftermath of the 2007-09 financial crisis.[58]

---

56 Other models examine how regulatory change reduces the loss given crisis, as it helps banks better sustain lending to the real economy through an economic stress (see Budnik et al, **Occasional Paper Series, European Central Bank**, 2021).

57 **Assessing the impact of Basel III: Evidence from macroeconomic models: literature review and simulations**.

58 See de-Ramon, S., Francis, W., and Harris, Q. (2022), **Bank-specific capital requirements and capital management from 1989-2013: further evidence from the UK**, Journal of Banking and Finance 138.

5: The PRA's Cost Benefit Analysis Panel

5.1 The Cost Benefit Analysis (CBA) Panel is a statutory Panel that provides independent advice on CBA to the PRA and also to the Bank in respect of its rulemaking for financial market infrastructure firms (FMIs) and critical third parties.

The role of the CBA Panel

5.2 The CBA Panel plays an important role as a critical friend to the PRA in supporting increased transparency and scrutiny of the PRA's policymaking by providing regular, independent input into the PRA's CBAs. The CBA Panel brings considerable experience and knowledge of CBA, prudential regulation, and the financial services sector. The Panel's terms of reference and membership can be found on the Bank of England's website.[59] The CBAs of many other public organisations are subject to review by external bodies and the role of the PRA's CBA Panel is consistent with international practice.

5.3 The PRA is required to consult the CBA Panel on the preparation of CBAs ahead of public consultation, subject to the materiality threshold set out below. The PRA generally consults the Panel once the PRA has determined which proposals it will consult on. This maintains the PRA's ability to develop policy in an agile manner and ensures the Panel's time is used efficiently and only on CBAs for viable policy proposals. The Panel does not make recommendations on which policies the PRA should consult. The PRA's default approach to consulting the Panel is to submit to the Panel a near-final CBA for the Panel's review and to meet with the Panel to discuss its feedback and advice. In some cases, where policy proposals are deemed lower impact and the associated CBAs are more straightforward, the Panel may provide its advice in writing. For more complex CBAs, the PRA may brief the CBA Panel at an earlier stage of policymaking, enabling the Panel to offer early input on the preparation of, and plan for, the CBA in those cases.

5.4 The CBA Panel must also keep under review how the PRA is performing more generally in carrying out its duties with regards to CBA and may provide recommendations for example on how the PRA can improve the overall approach to CBAs and its methodologies over time. The CBA Panel discharges this duty by inputting into the preparation of the PRA's CBA Approach statement of policy and by recommending improvements to this statement of policy over time, informed by the lessons learnt from reviewing PRA CBAs (including reviewing samples of past CBAs[60]) or by examining the PRA's methodologies. The Panel may provide

59 See **PRA Cost Benefit Analysis Panel Terms of Reference**.
60 The Panel will consider how it will assess the outcomes of CBAs ex-post.

to the PRA recommendations as a result of its reviews, which the PRA will consider and respond to in its annual report. In addition, the Chair of the CBA Panel meets regularly with the PRA's executive to support timely and effective engagement with the Panel, and to support the PRA's careful consideration of the Panel's advice.

Composition of CBA Panel

5.5 The CBA Panel is established and maintained by the PRA. The PRA appoints panel members in line with its Statement of Policy on Panel appointments.[61]

5.6 The CBA Panel is formed of independent experts from a range of backgrounds as well as a minimum of two practitioners employed by PRA-authorised firms. Collectively, the membership of the CBA Panel brings experience and knowledge of CBA, prudential regulation, and the financial services sector across banking, insurance, and FMIs.

Public communication

5.7 The CBA Panel writes an annual report submitted to HM Treasury and laid before Parliament. This annual report will also be published on the Bank of England's website.

5.8 The PRA makes clear in its CPs when it has consulted the CBA Panel and, where relevant, may set out in the CP the areas where the Panel focused its feedback and advice. Ahead of public consultation, the PRA incorporates feedback from the CBA Panel and reflect any implications in the accompanying policy proposal. Responsibility for the CBA remains with the PRA.

5.9 The PRA includes in its Annual Report information about its engagement with the CBA Panel as well as the contributions the CBA Panel has made to the PRA's CBA methodology and approach over the reporting period.

Threshold for CBA Panel review

5.10 The CBA Panel will be consulted on the CBAs of all proposed rule changes except for instances where it would be disproportionate to do so.[62] This will ensure the best use of the CBA Panel's expertise and resources.

---

61 **Panel appointments by the PRA and the Bank of England**, October 2023.

62 The need for a proportionate approach was determined by HM Treasury. In its response to the House of Commons Treasury Committee's '**First Report – Future of financial services regulation**', HM Treasury determined that 'to manage the resource burden, the regulators will be required to publish a CBA framework, which will specify, amongst other things, when the CBA Panel does not need to be consulted before publication of an individual consultation.'

5.11 In determining whether it would be disproportionate to consult the CBA Panel, the PRA will consider whether, in its view, the annualised net direct cost to PRA firms will exceed +/- £10 million.[63] This ensures that we consult the CBA Panel on CBAs both for proposals that materially increase costs to firms (plus sign) and for proposals that are expected to materially reduce their costs (minus sign), this ensures:

- the definition focuses on direct costs to (affected) regulated firms only and therefore does not include consideration of indirect costs or potential prudential benefits;
- direct costs to regulated firms can be positive (eg when a new regulatory requirement is introduced) or negative (eg when an existing regulatory requirement is removed). The net direct cost is the sum of these positive and negative direct costs. For example, when the PRA introduces a new reporting template that replaces an existing reporting template, the net direct cost to regulated firms will be the cost firms incur in meeting the new reporting requirement **netting off** the cost firms would no longer incur in meeting the existing reporting requirement;
- the measure uses the annualised present value of the net direct costs to regulated firms.

5.12 In coming to this view the PRA will take a proportionate approach. The PRA will not seek to collect new data for this purpose at a greater frequency than we already do as there is a cost to doing so, both to the PRA and to the firms we regulate. This means that in some cases, assessment against the threshold will be based a calculation, potentially reflecting evidence collected from firms, and in other cases a judgment will be made without seeking to calculate the net direct impact.

5.13 The PRA will generally not consult the CBA Panel where the direct impacts on PRA firms are expected to be below the +/-£10 million threshold[64] but may decide to do so in some cases, in consultation with the CBA Panel chair. This could be because, for example:

- despite the low direct impacts on PRA firms, the PRA considers that a policy could have significant indirect impacts on other stakeholders, markets, or the financial system; and/or

---

63 Costs are annualised using a discount rate of 3.5% and a time horizon of 10 years, in line with standard assumptions in HMT's Green Book. Using these assumptions, changes imposing £90 million of one-off costs but no ongoing costs would exceed the threshold.

64 The requirement to consult the CBA Panel under section 138JA(2)(a) FSMA will therefore not apply in cases where the PRA considers that a policy proposal would have an annualised net direct impact on PRA firms of +/-£10m or less.

- the impacts are expected to be concentrated in a way that could disproportionally impact a particular group of persons or firms, despite impacts being relatively low in aggregate.

5.14 The PRA, in consultation with the CBA Panel, will keep this threshold under review.

Annex A: The economics of prudential regulation

Market failures: The economic rationale for regulation

Policy proposals bring economic benefits for society when the benefits of the change are larger than the costs. This does not require that all individuals are better off as a result of the policy change but rather that those who gain do so by more than the losers lose.[65] It also does not require the economic benefits to exceed the costs immediately: the benefits might materialise over an extended period, whereas the costs might arise sooner.

In order to achieve a net benefit, a policy change must improve the level of economic efficiency in a given set of markets. Economic efficiency refers to the extent to which resources are being deployed to their highest-valued use in terms of the goods and services they create. It is only possible for regulation to improve upon the economic efficiency of an unregulated if that market is operating sub-optimally for some reason, ie there is a 'market failure' present. A regulatory intervention can improve the efficiency of a given market by addressing market failures present within it. Conversely, regulations that are not directed at market failures generate net economic costs by absorbing resources, such as technology or labour spent on compliance, without generating a commensurate improvement in efficiency.

The existence of market failure alone does not justify intervention for the PRA. We intervene when market failures (i) present a risk to PRA objectives (are relevant and material), and (ii) can, in principle, be mitigated by regulatory intervention.

The market failures relevant to prudential regulation

Banking and insurance markets have features which differentiate their products and operation from those of many other sectors. These features lead to market failures. Of particular relevance to prudential regulation are failures related to; asymmetric information, negative externalities, moral hazard, principal-agent problems, and gridlock or co-ordination failures.

Customers and counterparties entrust PRA firms with their money but they lack information to judge the safety and soundness of those firms – an example of **asymmetric information**. Customers unable to judge firms' safety and soundness at the point they contract with them and, furthermore, firms may change their behaviour post-contract which can affect the firms'

[65] This is known as the Kaldor-Hicks criterion, and conceptually related to the concept of Pareto efficiency. See: Boardman, A, Greenberg, D, Vining, A, and Weimer, D (2018), Cost-Benefit Analysis - Concepts and Practice, Section 2.2.1.

soundness and the value of contracts. For example, annuity holders are locked in a long-term contract and are often unable to exit or switch to a new provider.

These features make it important that consumers and counterparties have confidence in PRA firms; they will be unwilling to transact with PRA firms to the same extent and those firms will be unable to play their full role in supporting the real economy. Asymmetric information is an important part of the rationale for prudential regulation.

The next building-block of the rationale for prudential regulation is set of market failures known as **negative externalities**: The activities of regulated banks and insurers can impose costs on firms and households with whom they do not directly transact. Firms do not take externalities sufficiently into account when determining how to run their business. For PRA firms, this means they may not behave in ways which are optimal from society's perspective. This generally means they would take too much risk. The negative externalities associated with PRA firms are closely related to the problem of information asymmetries: if customers and counterparties were well placed to judge firms' safety and soundness themselves, firms would not tend to take excessive risks and these negative externalities would not arise.

Furthermore, if customers and counterparties were well placed to judge firms' safety and soundness, they would be less liable to **herding** behaviour (such as occurs during a bank run) in which they base their decisions on observing the actions of others, rather than their own private information. So information asymmetries are a root cause of contagion in financial markets and **systemic risk externalities**. The section below headed 'How prudential regulation creates economic benefits' explains in further detail on the kinds of negative externalities which the PRA seeks to prevent, so creating benefits via three 'channels': supporting confidence, reduced risk of operational disruption and reduced risk of financial crisis.

Other market failures can further exacerbate the tendency of firms to take excessive risks. One of these is **moral hazard**: a situation where an economic actor has an incentive to increase its exposure to risk because it does not bear the full costs of that risk. Notwithstanding the difficulties customers have in judging PRA firms' safety and soundness, the existence of the Financial Services Compensation Scheme further reduces their incentives to do so in relation to amounts below the FSCS limit. In turn this could increase firms' willingness to take risks to their safety and soundness, knowing they will not lose customers as a result. Similarly for banks and investment firms, access to the Bank of England's lender of the last resort facilities, would (absent regulation) reduce their incentives to reduce the risks the face from financial turbulence.

Another source of moral hazard is the limited liability structure of most PRA firms which limits the downside risk to shareholders without limiting the upside. These sources of moral hazard support the rationale for prudential regulation.

An example of moral hazard is that, before the financial crisis, the systemic importance of some firms, and the recognition that they could not fail safely under the prevailing insolvency laws, led many market participants to believe that these firms were too-big-to-fail. The belief that the government would step in and bail them out in the event of trouble, allowed firms to fund themselves more cheaply than other firms and contributed to them taking more risk than they otherwise would. This belief also undermined competition. Efforts since the financial crisis to make firms more resolvable, including new legal frameworks for resolution, greater international co-operation and new firm-level requirement such as for the largest retail banks to be 'ring-fenced' aim to address this source of moral hazard.

Grid lock and co-ordination failures are market failures which also explain the need for regulation and why firms or customers on their own cannot solve the problems described above. It is in the interest of all firms if all behave prudently. However, due to the problem of information asymmetry mentioned above, any one firm which chose to act more prudently on its own, while other firms did not, would incur additional costs but would not gain sufficient additional business to make its prudence worthwhile. Imprudent firms gain a competitive advantage over prudent firms, which will lose business, due to their higher costs, which require them to charge higher prices.

Absent prudential regulation, effective competition cannot take place and firms are driven towards imprudent behaviour. This has been termed the grid-lock problem.[66] No one firm or group of firms or customers can co-ordinate to solve this problem. One role for regulation, therefore, is to set common minimum standards that all firms know will be applied equally to all competitors so supporting safety and soundness and market discipline.[67]

Another example of how regulation can address co-ordination failures is in relation to transparency. Individual firms lack incentives to coordinate the information they share in a standard form that is comparable across firms and allows market participants and analysts to evaluate and use the information. Transparency to the market (for example 'Pillar 3' disclosure rules for banks) also supports effective market discipline and effective competition – allowing more prudent firms to obtain funding more cheaply because market participants understand they are lower risk. This provides an additional incentive to act prudently.

Principal-agent problems are another set of market failures which increase risk-taking behaviour. It can be difficult for shareholders to monitor the risk-taking behaviour of a firms' management. Moreover, it can also be difficult for firms' management to monitor the risk-taking behaviour of their staff, such as sales-people and traders. As a result, staff and management may take excessive risks where compensation arrangements fail to ensure their incentives are aligned with those of shareholders, creditors, and the public interest.

---

66 Goodhart (1998), Financial Regulation - Why How and Where Now?, Routledge.

67 Llewelyn (1999), Occasional Paper Series: The Economic Rationale for Financial Regulation, Financial Services Authority.

Principal-agent problems (in combination with negative externalities and the gridlock problem) explain for example, the need for rules on remuneration which disincentivise excessive risk-taking.

Market failures can arise even if it is assumed that human beings are rationale and are good at understanding risk. However, in reality human beings can suffer from **cognitive biases** in relation to our preferences, behaviour and decision-making (Iscenko et al 2016). These biases can increase risk-taking in firms and magnify negative externalities, including the risk of financial crisis (Barberis 2011). Examples of biases include short-termism (or 'present bias'), overconfidence and groupthink. Recognition of these biases has led to an increased regulatory focus on firms' culture and the way they take decisions. For example, under the Senior Managers Regime firms must designate an individual (eg Board Chair) to be responsible for the firm's culture. To support good decision-making the PRA also sets expectations (SS5/16) on firms' need to have a sufficient quantity and quality of independent non-executives who can provide effective challenge to the executives.

Finally, while, cognitive biases can lead to excessive risk taking in firms, households and society as a whole tend to be **loss averse**. Households prefer a small ongoing, predictable loss to a large unexpected one. For this reason, households pay small but certain insurance premiums each year to avoid the risk of large and uncertain losses. By analogy, the ongoing costs of prudential regulation to society have been compared to insurance payments: the small but certain cost of prudential regulation is intended to substantially reduce the probability of large future losses – specifically those of a financial crisis, discussed further below.[68]

How prudential regulation creates economic benefits

Prudential regulation solves the problems associated by the market failures above by forcing firms to act more prudently or transparently than they would otherwise choose to do. In this way, prudential regulation reduces the potential for negative externalities. This creates benefits for the economy through three channels: supporting confidence, reduced risk of operational disruption and maintaining financial stability. These channels are not mutually exclusive: a change to prudential regulation could, potentially bring benefits through all three channels. A change mainly relating to one channel could support benefits through one or both of other channels.

Channel 1: Supporting confidence of customers and counterparties

All types of PRA firm have the potential to damage confidence in other PRA firms when they fail – ie to impose negative externalities on them. Confidence or trust in PRA firms is

[68] Elliott, D, Salloy, S, and Santos, A (2012), IMF Working Paper 12/233; **Assessing the Cost of Financial Regulation**.

important because, as set out above, customers and counterparties entrust them with their money, they have limited ability to judge firms' safety and soundness for themselves, and PRA firms are able to change their behaviour after a contract has been made in ways which make themselves more risky.

For deposit-takers, the importance of confidence is further increased by key features of the banking business model: maturity transformation (banks borrow short-term and lend long-term) and their leverage (ie have debt in their capital structure). Concerns about excessive leverage (inadequate solvency) can cause the short-term funding to disappear ('a bank-run') while long-term lending positions cannot be quickly unwound. In this way concerns about insolvency can become self-fulfilling and concerns about one firm can rapidly spread to other firms.

Solvency concerns typically develop more slowly for insurers (eg Lloyd's of London, Equitable Life) but problems at one firm similarly have the potential to damage confidence in the wider industry. The collapse of the then Australia's second-largest insurance company HIH Insurance in the early 2000s had a substantial impact on the confidence in the wider insurance industry in the country. Many HIH policyholders faced financial losses, which eroded trust in insurance companies.

Confidence can be damaged by an actual or feared lack of operational resilience as well as a lack of financial resilience. For example, customer losses or disruption caused by a cyber-attack could also damage confidence in banks or insurers beyond those immediately effected.

Damage to confidence can impact the people of the UK in a number of ways. Most directly, households may reduce the products and services they are willing obtain from PRA firms – eg buying less insurance due to lack of trust. Less directly, if firms (financial or non-financial) reduce their use of financial services, this may reduce the scale and scope of business they are able to do. Households will suffer to the extent they rely on those firms as employers, or as providers of goods and services, or to the extent they are shareholders and receive reduced dividends. Additionally, as confidence is lost in PRA firms, they may find it more expensive to raise funding, or their cost of doing business may rise as their volume fall. These effects will reduce the ability of those firms to supply financial services at a given price. Competition between firms may also be harmed if firms chose to exit or not enter a particular market. This may mean higher prices being paid by households and the firms on which households rely.

A wider loss of confidence in the UK system of financial regulation, could negatively impact international competitiveness. It could harm the ability of PRA-authorised firms to compete successfully abroad reducing earnings of UK households. Or it could impact and the willingness of foreign firms to operate in the UK, further increasing the price or reducing the quantity or quality of services available.

In practice the UK has not recently experienced such confidence effects outside of the financial crisis scenario described below. However, confidence effects have been observed in the past (for example the 'small banks crisis' of the early 1990s) and they have been observed in other countries. Such confidence effects have not been experienced in the UK in recent years outside of the financial crisis due to the direct impact of prudential regulation and because when a PRA firm fails financially, the Financial Services Compensation Scheme (FSCS) helps support confidence of retail consumers, and in other cases Government has taken ad-hoc measures to ensure policy-holders or depositors are protected.

Prudential regulation makes the FSCS financially viable and reduces the need for ad-hoc measures to limit losses to customers. Prudential regulation makes disorderly failure less likely, either by making firms more resilient to shocks or by preparing them for an orderly exit should their business cease to be viable. In this prudential regulation reduces the costs of FSCS or other ad hoc measures the government may take to maintain confidence. For example, following the near-collapse of Equitable Life, it was estimated that policyholders suffered relative loss - the difference between the value of a policyholder's Equitable Life policy and what they would have received if they had invested with a different company – of £4.1 billion.[69] The government announced compensation worth £1.5 billion to affected policyholders in 2010.

Channel 2: Reducing risk of operational disruption

The Operational Disruption channel relates to the potential disruptions including human-caused threats such as physical and cyber-attacks, IT system outages and third-party supplier failure, as well as natural hazards such as fire, flood, severe weather and pandemic. Externalities also arise in relation to operational disruptions because, absent regulation, PRA firms may not take into account the full costs these disruptions cause to households or other firms. Firms may not invest sufficiently in achieving operational resilience by making robust plans to ensure they can continue to supply important business services following severe but plausible disruptions. A lack of operational resilience could, for example impact the ability of households and firms to make and receive payments.

As with the confidence channel, the way a policy change which reduces operational disruptions benefits the people of the UK is complex, working through a variety of mechanisms which can include improved confidence and financial stability.

Channel 3: Maintaining financial stability

The negative externalities associated with systemic risk are the most damaging externalities the PRA seeks to address. Systemic risks to financial stability are particularly relevant to large firms, mainly (but not exclusively) banks. As indicated by **Figure 1** this channel can

69 **Equitable Life Payment Scheme: final report - Payments made under the scheme**.

interact with both the Confidence and Operational Resilience channels. For example, promoting Confidence can support Financial Stability and vice versa. However, maintaining financial stability creates benefits through its own distinct economic mechanisms, which have specific, large effects on the real economy. The PRA's 'micro-prudential' supervision of individual firms can support the 'macro-economic' goal of financial stability in two ways: firstly by making systemically important firms safe and sound; and secondly by limiting and excessive build-up of risk during 'good times' when optimism, low risk perception, rising asset prices and lenient credit conditions become self-reinforcing.

Systemically important firms are those whose size, interconnectedness, complexity, and business type give them the capacity to cause very significant disruption to the UK financial system, and through that to economic activity more widely. The disorderly failure of a systematically important firm (or group of firms which together are systemic) can directly and indirectly damage the solvency or liquidity of other financial firms and even lead them to fail. This can occur as the supply of funding is disrupted (eg bank runs) and through fire sales of assets as firms seek maintain their solvency and liquidity. The fire sale mechanism can involve large insurers as well as banks.

Reduced solvency and liquidity across the financial sector (particularly of banks but also of non-banks including insurers) can cause significant damage to the supply of credit to the real economy and therefore very significant impact on household employment and earnings. A severe operational disruption at systemic firms, affecting eg firms' and households' ability to make payments could also have direct impacts on the real economy. There can be significant increases in unemployment and bankruptcies, both of which also cause permanent damage to the future productive capacity of the economy. Numerous academic studies estimate costs of a financial crisis as a material proportion of GDP (see Box A). These negative externalities were evident during the great financial crisis (GFC): in 2008 many banks found they were unable to borrow the cash they needed. Several banks failed. Most reduced lending. As discussed in Box A below, the costs to the UK real economy of the GFC were significant. A financial crisis creates costs to the real economy additional to those caused by a loss of confidence. A financial crisis will also amplify the costs associated with a loss of confidence. There can also be direct losses to the public sector, as there were in 2008, where the government intervenes to support the safety and soundness of firms.[70] Box B provides an example of significant negative externalities arising from the failure of an insurance firm.

As with Confidence and Operational Resilience, the mechanisms by which improved financial stability brings benefits are complex and interrelated. They will include macro-economic mechanisms by which changes to bank borrowing and interest rates impact consumer

[70] As of 2018, UK bank rescues during the 2007-08 financial crisis were estimated to have cost the taxpayer net £27 billion. See **Bank rescues of 2007-09: outcomes and cost**.

spending, business profitability and investment, both directly as indirectly eg via wealth effects which arise through changes in house prices.

Box A: Cost of financial crises (and the benefits of preventing them)

There is a substantial body of research that has examined the economic costs of financial crises, in terms of GDP foregone. Empirical attempts to measure the cost of financial crises typically focus on the direct costs of resolving the crisis as well as the welfare costs for the crisis, which are typically proxied by output losses. The estimates tend to be very large on average, depending on among other things, the persistence of such losses, the countries included in the sample and the approach used to define the crisis.

The Basel Long-term Economic Impact (LEI) study (BCBS, 2010) reviewed academic studies that used various approaches to measure the cost of banking crises. The LEI study found that around half of the studies reviewed had allowed for GDP to be on a permanently lower path following a crisis. The remaining studies had measured the crisis cost by considering the period from peak GDP to the point output catches up with its pre-crisis peak, or by assuming that crises last a fixed number of years. The LEI study reports a median drop in output of 9% (across studies which compare GDP levels at the beginning of the crisis to the trough or to the point when its growth recovers to its pre-crisis trend). Studies that found a permanent gap between the pre- and post-crisis implied growth path estimate this gap to be between 2 and 10%, with a median of 6%.

The LEI study also highlighted that the literature examining the cumulative costs of banking crises find large losses. The median cumulative output loss across comparable studies is 63% of pre-crisis output. The average loss is higher, exceeding 100%. It reported that studies that assess cumulative costs of crises over a specified period (Hoggarth et al. 2002; Laeven and Valencia, 2008; Haugh et al., 2009; Cechetti et al. 2009), which implicitly assume that effects are only transitory, the median cumulative loss estimate is lower at around 19%. Hogarth, Reis and Saporta (2002), for example, found that the average output losses arising from episodes of banking instability in the last quarter of the twentieth century are on the order of 15% to 20% of annual GDP. Similarly, Laeven and Valencia (2008) estimate median output losses for crisis in the 1970-2006 and 2007-09 periods at 19.5% and 24.5% of GDP, respectively. In addition, they estimate the median direct fiscal costs as a percentage of GDP for these two periods to be 10.0 and 4.9, respectively. Studies that explicitly allow for permanent effects (Boyd et al.,

2005; Haldane, 2010) have a much higher median estimate of cumulative loss, equal to 158%.

Romer and Romer (2015) estimate the costs of crises for advanced economies. Such economies generally experience lower costs of crises, as they tend to have greater capacity to use monetary and fiscal policy to offset the negative impact of a crisis. They estimate peak-to-trough losses to be 4% of GDP (below the LEI's 9%), and long-run losses equal to 3% (below the LEI's 6%). The LEI study considered a mix of advanced and emerging market economies, where such capacity is less likely.

Brooke et al. (2015) extended Romer and Romer (2015) to tailor estimates to the UK. They estimate average peak-to-trough losses to be 5% of GDP and long-run losses be 4% of GDP for a generic advanced economy with characteristics closer to the UK. Assuming crises have permanent costs and an effective resolution regime, Brooke et al. estimate the cumulative cost of crisis to be 43% of GDP – lower than the 63% estimated by the LEI, which assumed crisis cost to have a less permanent effect.

BCBS (2019) reviewed more recent studies on the cost of crises and concluded that the estimates reported in LEI (2010) stand up reasonably well to these later studies, some of which incorporate effects of other post-crisis reforms. Considering the effects of TLAC and resolution, Cline (2017) estimates cumulative cost of crisis of 64% of GDP, while Fender and Lewrick (2016) and Firestone et al. (2017) estimate such costs to range between 63% to 100% of GDP and between 41% to 99% of GDP, respectively.

Box B: The cost of insurance failure

The failure of a large insurer will not only have a negative impact on the market confidence in the insurance industry but can also disrupt the provision of critical insurance service that is essential to the functioning of the modern economy, especially where the failed insurer is dominant in a market.

The collapse of HIH Insurance, a large general insurer in Australia, accounting for c. 10% of all gross written premiums earned by Australian Prudential Regulation Authority (APRA)-regulated general insurers in 2001 had far-reaching impacts on the Australian economy.[71] Sick or disabled policyholders claiming on salary

[71] See: **Aftermath of the HIH collapse**.

continuance policies with HIH stopped receiving ongoing payments which they often relied on for day-to-day living. In Queensland alone, car accident victims insured with HIH were left waiting for operations and other medical procedures worth $190 million. Many of Australia's 150 community legal centres suspended their services as their professional indemnity cover were thrown into doubt. Almost $2 billion of construction activity were put on hold as thousands of builders were left without insurance cover which was mandatory in most states and territories. The Australian Rugby Union had to cancel games across the country until replacement insurance cover was procured.

Private versus social benefits in CBA

The above explanation of the rationale for prudential regulation relies on the external benefits it creates for markets and the macro-economy. It does not consider the private benefits regulation may create for firms' customers, counterparties, shareholders and creditors by helping these stakeholders avoid losses. In some cases, these private benefits may not contribute to PRA's objectives and do not provide an economic rationale for regulation. For example, the PRA does not operate a zero-failure regime and does not seek to prevent losses to firms' shareholders or creditors. On the contrary, if firms' shareholders or creditors are protected from loss, this will contribute to the problem of moral hazard mentioned above, and incentivise excessive risk taking.[72]

However, in some cases, PRA does seek to avoid losses to customers. Not only is this consistent with the PRA's policyholder protection objective but there are good economic reasons for preventing certain losses to customers. The asymmetric information problem, and fiduciary role of PRA firms can lead to an efficiency argument for a regulator to monitor firms' safety and soundness, where customers cannot. The existence of the regulator helps avoid significant duplication and creates economies of scale.[73] In the insurance industry this central monitoring role for the regulator has been compared to that of a 'tough claims holder'.[74]

Regardless of whether the private benefits of a regulatory change are related to PRA's objectives, these are still economic benefits and the PRA may consider them in its CBAs.

---

72 See: **Bank failures - speech by Sam Woods** (October 2023), CEO Prudential Regulation Authority.

73 Llewelyn (1999), Occasional Paper Series: The Economic Rationale for Financial Regulation, Financial Services Authority.

74 Guillaume Plantin and Jean-Charles Rochet (2007), When Insurers Go Bust: An Economic Analysis of the Role and Design of Prudential Regulation.

Costs of regulation and unintended consequences

Because regulation serves society overall, the PRA considers not just the impacts its policy actions have on regulated firms (and their shareholders, employees, and counterparties), but also the more material wider costs they impose on society. From a public policy perspective, the costs of regulation that are particularly relevant are those which arise if the regulations impede the ability of the financial system to fulfil its primary economic functions: financial intermediation, payment services risk transformation and insurance. This means that not all policy actions, even if they reduce market failures, will necessarily be net beneficial, if they detract from the stability and efficiency of the financial system.

The PRA recognises that these wider ('societal') costs of regulation can arise in several forms. These negative consequences can be difficult to predict in a dynamic market environment in which financial intermediaries are responding to broader economic, societal, and technological changes. This subsection discusses a few of the more prominent ways in which prudential regulation can give rise to such wider social costs and have adverse implications for: (i) borrowing costs and economic output; (ii) competition in banking and insurance markets; (iii) competitiveness of the UK financial services sector; (iv) financial stability through risk-shifting outside the regulatory perimeter; and (v) reduced market discipline through the creation of moral hazard.[75]

Borrowing costs and economic output

Regulation can impose costs on PRA firms, their customers and counterparties and negatively impact outcomes in particular markets or the economy as a whole. There is an extensive economic literature on how bank capital and liquidity requirements can impact the price and volume of bank lending and the level of economic output as set out in, eg, Boisay et al (2019). We provide further details of our own approaches in Annex C, showing how the costs of regulation can act as a drag on investment and consumer spending that, in turn, affect economic activity more broadly.

Competition and efficiency

Regulation can also affect competition because, when it takes effect at a certain firm size threshold, it can create barriers to growth (Alvero et al, 2022).[76] This effect has been observed to limit the growth of small innovative firms (Aghion et al, 2023), which may be a

[75] This section is not intended to be an exhaustive review of the costs of regulation. For a more comprehensive review, see **EUR-Lex - 52014SC0158 - EN (europa.eu)**.

[76] Alvero, A., Ando, S., Xioa, K., Watch What They Do, Not What They Say: Estimating Regulatory Costs from Revealed Preferences, The Review of Financial Studies, Volume 36, Issue 6, June 2023.

concern for economic growth.[77] Thresholds can also restrict the amount of business firms are willing to do with individual clients (Corell and Papoutsi, 2024).[78] Regulation can also harm competition by favouring large firms over smaller firms. For example, in 2016 the UK Competition and Markets Authority noted that larger firms using internal models to calculate their capital requirements benefitted relative to smaller firms using the Standardised Approach (CMA 2016).[79] This impeded the ability of smaller firms using the standardised approach to compete with those using internal models to calculate the capital requirements in respect of this business. The Basel 3.1 changes to regulation aimed to address this problem, among others.

UK competitiveness and economic growth

Prudential regulation can impact international competitiveness both positively, by increasing trust, and negatively, by increasing costs (Siciliani et al., 2023).[80] There is, for example, evidence that higher host country capital requirements reduce financial services firms' willingness to choose that location (Merz et al., 2017) in which to operate.[81] This can have adverse ramifications for the efficient allocation of capital and for economic growth.

Regulatory arbitrage and shift of activities to less regulated sectors

Financial institutions may respond to prudential reforms by changing their behaviour to avoid or mitigate requirements. There are several ways in which industry may respond to circumvent the rules: through financial engineering (deploying new products to sidestep regulatory rules); through supervisory arbitrage, by shifting activity across jurisdictions (ie, depending on how strictly prudential supervision is exercised); and by shifting activities to less regulated parts of the financial system. If done on a large scale, these may render the reforms less effective and lead to new risks, with potentially adverse implications for financial stability and costs to the economy. For example, Reinhardt and Sowerbutts (2015) found that foreign banks expand their lending into host countries where regulation is tightened, provided the regulations do not apply also to them.[82]

Moral hazard and market discipline

---

77 Aghion, P., Bergeaud, B., Van Reenen, J., The Impact of Regulation on Innovation, American Economic Review 2023.

78 Corell F.C., and Papoutsi, M., Borrowing Beyond Bounds: How Banks Pass On Regulatory Compliance Costs, American Economic Review Annual Meeting, 2024.

79 Competition and Markets Authority, **Retail banking market investigation**, Final report, 2016.

80 Siciliani, P., Eccles, P., Netto, F., Vitello, E., Sivanathan, V., van Hasselt, I., **The links between prudential regulation, competitiveness and growth**, Bank of England background working paper, 2023.

81 Merz, J, Overesch, M and Wamser, G (2017), The location of financial sector FDI: Tax and regulation policy, Journal of Banking & Finance, 78.

82 Reinhardt, D., and Sowerbutts, R., **Regulatory arbitrage in action: evidence from banking flows and macroprudential policy**, Bank of England Working Paper No. 546, 2015.

Prudential regulation which leads customers to believe they are protected from loss by regulation can lead them to pay insufficient care to the resilience of the banks or insurers with which they transact. In this way, prudential regulation can blunt the incentives of financial firms to manage risk. This can encourage risk taking which could reduce firms' resilience and have a negative impact on confidence or even financial stability if it contributed to the disorderly failure of a firm. For example, deposit insurance is widely considered to increase moral hazard by reducing incentives for customers to avoid making deposits in riskier banks. While this concern is supported by theory the empirical evidence is mixed.83 In any case, the scope of deposit schemes, and the level of deposits they protect, are generally designed to exclude larger and more sophisticated customers which are able to assess the resilience of the financial firms and exert market discipline upon them.

83 Danisewicz, P., Lee, C.H., Schaeck, K., Private deposit insurance, deposit flows, bank lending, and moral hazard, Journal of Financial Intermediation, Volume 52, October 2022.

Annex B: Modigliani and Miller offset

Modigliani and Miller (1958) showed that, under certain conditions, a firm's value is independent of how that firm is financed. This is because as more equity capital is used, return on equity becomes less volatile and debt becomes safer, lowering the required rate of return on both debt and equity funding, which can leave the overall weighted average cost of funds unchanged. This situation represents the case where there is a complete (100%) offset in relative funding costs as the debt and equity compositions change.

The Modigliani and Miller (MM) theorem holds under certain conditions including perfect markets with no taxes; bankruptcy costs; misalignment of the interests of firms' shareholders and management; or barriers to investors correctly interpreting firms' balance sheets. These conditions, however, do not hold in most cases, especially for financial firms given presence of significant information problems and explicit or implicit government guarantees. The extent to which the MM theorem holds in practice – and, therefore what the offsetting effect is – is an empirical question.

Using standard asset pricing models (eg Capital Asset Pricing Model), several studies find evidence of MM offsets for banks. The table below shows that these offsets are relatively variable, ranging range 15% to 100%. Of note, two studies focused exclusively on UK banking data, Miles et al (2013) and Brooke et al (2015), found offsets of 45% and 53%, respectively. These estimates suggest that the MM holds partially in the UK. They also indicate that any increase in UK banks' overall funding costs due to higher capital requirements is roughly 50% lower than it would have been in the absence of MM offsets. Studies such as Clark et al (2023) note that the assumption of zero debt betas puts a downward bias on MM offsets estimates, and that estimates for the post-crisis period are higher. Studies using implied cost of capital as the measure of the cost of equity find evidence consistent with MM irrelevance proposition holding fully (eg Mantecon et al, 2023).

Research paper	**Country, time period**	**MM offset**
ECB (2011)	54 large international banks (1995-2011)	41-73%
Junge and Kugler (2012)	Swiss banks, 1999-2010	36%
Miles et al (2013)	UK banks, 1997-2010	45%
Toader (2014)	European banks, 1997-2011	42%
Clark et al (2015)	US banks, 1996-2012	43-100%
Brooke et al (2015)	UK banks, 1997-2014	53%

Clark et al (2023)	US banks, 1996-2019	15-49% full sample; 36-90% post-GFC
Mantecon et al (2023)	US banks, 1996-2013	100%

Annex C: Modelling the macroeconomic impacts of prudential regulation

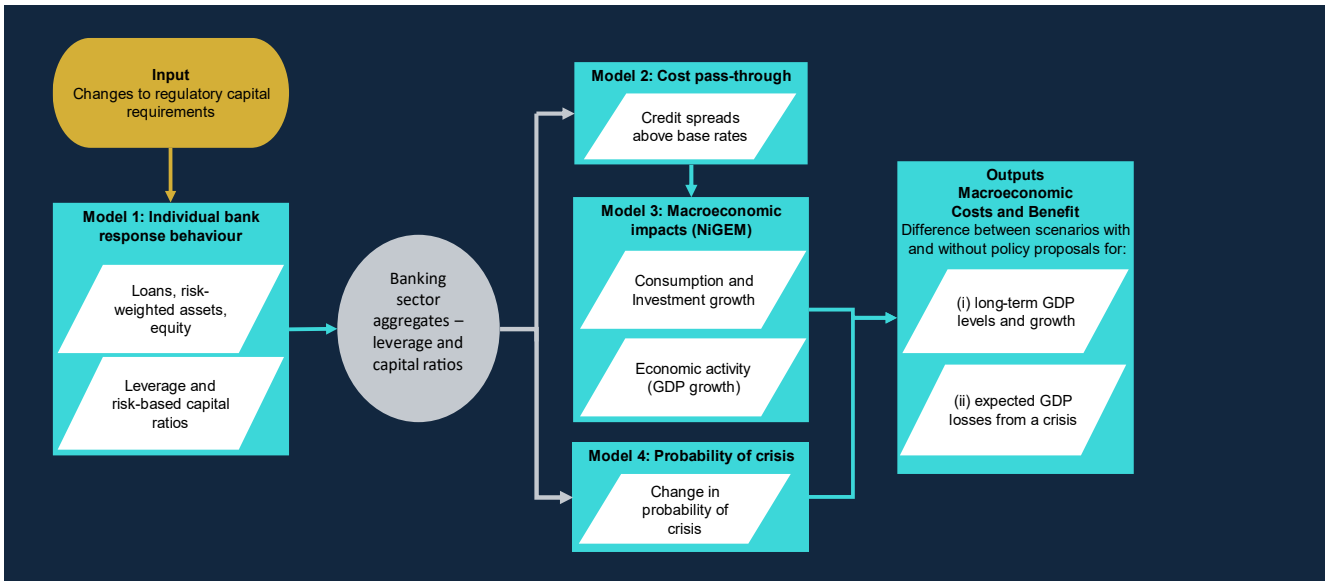
This Annex summarises the PRA's approach to modelling the net benefits of prudential capital regulation to the regulated banking sector and the economy more broadly.[84] We continue to evolve and adapt this approach, including to assess and quantify the sources of systemic risk arising from the insurance sector in particular and to reflect the important interlinkages between the banking and insurance sectors.

The approach consists of four different elements (see Figure 4):

- Model 1: a model of the banking system that estimates how individual firms adjust elements of their balance sheets, including lending (asset side) and target capital levels (liabilities side), following a proposed change to policies;
- Model 2: a model of banking market prices that estimates how much firms alter lending spreads (on household mortgages and non-financial corporate loans) as they pass-through changes in their cost of funding that results from changes in risk-based capital requirements;
- Model 3: a macroeconomic model that (i) translates the changes in lending spreads (from Model 2) into a change in overall economic borrowing costs and (ii) measures the impacts on consumption, investment and economic output more broadly; and
- Model 4: a crisis model that estimates the probability of crisis under different banking sector leverage ratios.

Figure 4: Illustration of the modelling approach

[84] For further information see De-Ramon, S, Z Iscenko, M Osborne, M Straughan and P Andrews, FSA Occasional Paper, no 42, 2012: **Measuring the Impact of Prudential Policy on the Macroeconomy: A Practical Application to Basel III and Other Responses to the Financial Crisis**.



The PRA has used this framework to evaluate the economic impacts of changes to capital regulation. From a practical perspective, the approach uses individual firm data on the immediate, static impact of regulatory changes on firms' balance sheets (eg from a quantitative impact study data provided by firms). The model of the banking system (Model 1) uses this static impact data to estimate how each firm would adjust its balance sheet towards a target capital level. The key assumptions in Model 1 are:

- each firm maintains a target (or desired) capital ratio that depends on the supervisor's prudential requirements and other macroeconomic and individual risk factors (see de-Ramon et al, 202285);
- a change to capital regulations, everything else held constant (ie macro and risk factors do not change), prompts firms to adjust their capital ratios to restore the level of their voluntary capital surplus ratios;
- firms adjust not only their regulatory capital, but also risk-weighted assets, assets, including loans.

The key implication here is that in making these adjustments in response to higher capital requirements, for example, banks alter both the numerator (ie eligible regulatory capital levels) and the denominator (RWAs), with further consequences for lending activity and borrowing costs more widely.

Model 1: Estimating firms' behavioural responses. Model 1 provides two key outputs. First, it provides an estimate of the (absolute) change in capital across the banking sector that is likely to occur in response to changes in prudential capital regulations. Second, Model 1 delivers the expected change in the aggregate risk-based capital and leverage ratios,

85 de-Ramon, S., Francis, W., and Harris, Q. (2022), '**Bank-specific capital requirements and capital management from 1989-2013: further evidence from the UK**,' Journal of Banking and Finance 138.

considering individual firm responses. Calculating individual firm responses is necessary since differences in their business models generate different responses that cannot be calculated from aggregate firm data. Aggregate capital and leverage ratios are then used as inputs for the macroeconomic models in the framework.

Model 2: Estimating the pass-through costs. Model 2 comprises a vector-error-correction (VEC) model of the relationship between lending spreads on two loan types, household mortgages and non-financial corporates, and aggregate risk-based capital ratios (from Model 1). Previous research finds a positive and statistically significant association between lending spreads and capital ratios (de-Ramon and Straughan, 201786). These relationships establish the pass-through rates connecting banking regulation to the broader economy (using the NiGEM model discussed in Model 3).

Model 3: Estimating the macroeconomic impacts. Model 3 consists of the NiGEM model, a collection of sub-models that generates estimates of economic outputs across different sectors within the economy and across global economies. Importantly, the PRA has modified the NiGEM model to incorporate a UK banking sector sub-model, including the VEC model (Model 2), that establishes how lending is repriced over time in response to the change in the aggregate risk-based capital ratio calculated from Model 1. The key assumptions in Model 3 are:

- the change in the aggregate capital ratio affects the capital-debt mix of banks' liabilities and hence their average funding cost;
- banks set lending spreads over central bank base rates to recover the increase in higher funding costs;
- changes in average funding costs are partly offset as banks' equity (capital) and debt investors respond to changes in banks' capital structure (the 'Modigliani-Miller' offset);
- the average spread charged to households adjusts more slowly than to corporates in the short-term, as household loans are dominated by long-term mortgages that cannot be repriced quickly; and
- spreads charged to both the household and corporate lending sectors adjust by the same amount after approximately three years.

Other NiGEM sub-models deliver key macroeconomic outputs, including UK consumption, investment and GDP levels that depend on changes to loan spreads generated in the UK

[86] de-Ramon, S. and Straughan, M. (2017). '**The economic cost of capital: A VECM approach for estimating and testing the banking sector's response to changes in capital ratios**', Bank of England Staff Working Paper No. 663.

banking sector sub-model (for details on the NiGEM model, see Carreras et al, 201887). Additional key assumptions in the NiGEM model are:

- credit spreads affect the non-financial corporate cost of investment, investment growth, the rate of physical capital accumulation, production capacity and, consequently, GDP;
- the cost of other forms of finance (eg, corporate debt issuance) move in line with changes in credit spreads over base rates ensuring there is no arbitrage in the model from non-bank finance sources;
- the UK is an open economy with capital mobility, and which is small enough to assume that its policies do not alter world prices, interest rates, or incomes. Household consumption and the savings rates change, but after an adjustment period, any lasting effects are offset by the current account, foreign assets and incomes from abroad. The savings rate does not affect the productive potential of the economy; and
- elasticities in the model are estimated from dynamic macroeconomic time-series equations.

Overall, the key output from Model 3 is a path for future UK GDP under different assumptions. In particular, Model 3 traces the impact of the proposed policy changes as the difference between (i) GDP output assuming policy is in place; and (ii) GDP output assuming no change in policy.

Model 4: Estimating the probability of crisis. Model 4 links banking industry leverage (and not risk-based capital ratios, as in Model 2) to the probability that a financial crisis occurs. Increases in the aggregate banking sector leverage (equity to assets) ratio reduces the probability of financial crises occurring (other factors being equal). Alongside estimates of the cost of financial crises, estimated from historical data using NiGEM (Model 3), the key output from Model 4 is the change in the expected loss to the UK's GDP arising from changes to the probability of a financial crisis occurring. The key assumptions in Model 4 are:

- drivers of financial crises are high banking sector leverage (ie low equity to asset ratios), low banking sector liquidity, and fast house-price growth; and
- frequency of crises and associated GDP costs are based on OECD country averages (see Barrel et al, 2009).

The overall outputs from Models 3 and 4 are:

87 Carreras et al., **Implementing Macroprudential policy in NiGEM**. NIESR discussion paper No. 490, March 2018.

- the macroeconomic 'cost' of policy proposals reflecting the drag on economic output from higher borrowing costs, calculated as the difference between accumulated changes in GDP output (at present value) with and without the proposed policies from Model 3; and
- the macroeconomic 'benefit' of policy proposals reflecting the avoided cost of crises, calculated as the present value change in expected GDP losses from a reduction in the probability of financial crises from Model 4.

Overall, the models imply a non-linear relationship between banks' levels of capital and liquidity and the probability of crisis: the lower banks' starting levels of capital and liquidity, the greater reduction a given increase in banks' capital or liquidity levels will lead to in the probability of crisis.

The methods set out above have been applied in the context of Basel 3 and Basel 3.1.[88] In these cases, the macroeconomic benefits arising from the reduced risk of financial crisis were found to outweigh the short and medium to long term macro-economic costs.
The model addresses major changes to bank capital. Further research is required to adapt this model in order to apply it to other kinds of policy change – eg to changes in liquidity, management and governance or operational resilience, or changes to encompass insurers. The model could also be developed to reflect society's loss aversion: ie that the predictable and smaller ongoing costs of prudential regulation should be accorded less weight than the very large one-off associated with a financial crisis.

[88] For example, see CP 5/21 – **Implementation of Basel Standards**, February 2021, and CP 16/22 Appendix 7: **Aggregated cost benefit analysis**.

References

Bank of England (2016), **The small bank failures of the early 1990s**, Topical article, March 2016.

Bank of England (2023), **Letter from Andrew Bailey: Andrew Bailey to Harriet Baldwin**, February 2023.

Bank of England (2023) **Statement by the PRA and the Bank of England on Panel appointments**, October 2023.

Barrell, R., Davis, E.P., Fic, T., Holland, D., Kirby, S. & Liadze, I. (2009), **Optimal regulation of bank capital and liquidity: how to calibrate new international standards**, FSA 1Occasional Paper, No. 38.

Boardman (2018), Handbook: Cost-Benefit Analysis Concepts and Practice, Anthony Boardman – Cambridge University Press, 2018.

Bank for International Settlements (2019) **Impact of financial regulations: insights from an online repository of studies**, BIS Quarterly Review, March 2019.

Brooke, M., Bush, O., Edwards, R., Ellis, J., Francis, B., Harimohan, R., Neiss, K., & Siegert, C. (2015) **Measuring the macroeconomic costs and benefits of higher UK bank capital requirements,** Bank of England Financial Stability Paper 35.

de-Ramon, S., Francis, W., and Harris, Q. (2022), **Bank-specific capital requirements and capital management from 1989-2013: further evidence from the UK**, Journal of Banking and Finance 138.

ECB (2021), **Macroprudential stress test of the euro area banking system amid the COVID-19 Pandemic**, Research Paper, October 2021.

ECB (2021), **The growth at risk perspective on the system-wide impact of Basel III finalisation in the euro area**, Occasional paper series No 258, July 2021.

FSA (2012), **Measuring the Impact of Prudential Policy on the Macroeconomy**, Occasional Paper, May 2012.

HM Treasury (2018), **Corporate report: Equitable Life Payments Scheme final report**, Gov.UK, November 2018.

House of Commons (2018), **Bank rescues of 2007-2009: outcomes and cost**, Research Briefing, 8 October 2018.

IMF (2012), **Assessing the cost of financial regulation**, International Monetary Fund Working paper, September 2012.

Lewellyn (1999), '**The Economic Rationale for Financial Regulation**', April 1999.

PRA (2024), **PRA statement on the review of rules**, policy statement (PS) 4/24, February 2024.

PRA (2023), **Implementation of the Basel 3.1 standards near final PS** , PS17/23, Prudential Regulation Authority, December 2023.

PRA (2023), **PRA's Approach to policy**, CP27/23, December 2023.

PRA (2023), **Remuneration; Ratio between fixed and variable components of total remuneration ('bonus cap')**, PS9/23, October 2023.

PRA (2023), **Bank failures**, Speech by Sam Woods, 16 October 2023.

PRA (2022), **The Prudential Regulation Authority's future approach to policy**, discussion paper 4/22, September 2022.

PRA (2021), **Implementation of Basel standards**, CP5/21, February 2021.

Rochet (2007), When Insurers Go Bust; An Economic Analysis of the Role and Design of Prudential Regulation, Princetown University Press.

UK Parliament (2000) Hansard: Financial Services and Markets Bill volume 612, UK Parliament, May 2000.

Wired-Gov (2015), **Update on Independent Insurance Company Limited ('IICL') | FSCS | Official Press Release (wired-gov.net)**, news article, April 2015.