

Bank of England PRA

Paper 2: The links between prudential regulation, competitiveness and growth

Background working paper published by the PRA in support of the conference on the role of financial regulation in international competitiveness and economic growth conference 2023

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Executive summary

The Financial Services and Markets Act (FSMA) 2023 (hereafter, the Act) gives the PRA a new secondary objective, which requires the PRA to act, when it can, to facilitate the UK economy's international competitiveness and its growth over the medium to long term, subject to alignment with international standards. The secondary nature of the objective means that the PRA cannot advance it if it conflicts with its primary objectives on safety and soundness and policyholder protection. If different options are available that the PRA judges would equally advance its primary objectives, the PRA will choose the option that, having taken account of the relevant 'have regards', most appropriately promotes its secondary objectives.

The PRA will be proactive in the implementation of this new objective and is therefore further developing its view on how the objective should be interpreted as well as deepening its understanding of the best available research and evidence that links regulation, competitiveness and growth.

To this end, the PRA is hosting an international conference on Tuesday 19 September 2023 to explore the core linkages and relationships. This paper is one of two papers the PRA prepared as background to the conference discussions. The aim of this paper is to set out the PRA's current thinking around the interpretation of the objective based on the available evidence as well as gaps in the literature. The other paper covers initial perspectives on how to measure the PRA's progress against the new objective¹.

The new objective includes several elements that require an appropriate interpretation, which we report in this paper. The success of the financial industry is a consequence of many factors such as a trusted legal system, a competitive tax structure, reliable infrastructure, the self-reinforcing benefits that arise when a skilled workforce and large number of firms converge in one jurisdiction, and even a convenient time zone.² In addition, industry thrives better when trusted public institutions provide foundations upon which the private sector can build, innovate, and succeed and therefore the strengths of the UK as a global financial centre are harnessed. The PRA must do what

¹ See PRA conference paper 1 – How to measure the contribution of prudential regulation to growth and competitiveness.

² See for example Moosa, I, Larry, L and Jiang, R (2016), Determinants of the status of an international financial centre, *The World Economy*, 39(12), pages 2074-2096; Eichengreen, B and Shah, N (2020), The correlates of international financial-center status, *Review of International Economics*, 28(1), pages 62-81.

it can to support these foundations,³ including by strengthening them through our rulemaking. The key foundations are maintaining trust in the PRA and UK prudential framework, effective regulatory processes and engagement, and tailoring rules to UK circumstances.⁴

In developing our thinking on the new secondary objective, we have taken into consideration the insights from the available economic literature. First and foremost, we found that the financial services sector (FSS) can negatively affect economic activity through the frequency, duration and scale of financial crises. In contrast, stronger financial institutions can better support the economy during stress. Secondly, better functioning financial systems can foster growth by improving resource allocation and technological change. Finally, the FSS can also directly increase economic activity by exporting financial services abroad and attracting foreign capital to be invested in the UK economy.

The available evidence, supported by our own empirical findings,⁵ indicates that strong standards, measured typically by higher capital ratios, improve financial stability and help sustain bank lending, ultimately exerting a positive influence on the expansion of economic activity over the medium to long term (the UK economy's *growth* over the medium and long term). The formulation of the objective also includes a role for the PRA to facilitate the UK's international competitiveness, raising an interpretation issue of whether the objective could support actions that boost the competitiveness of PRA-regulated firms at the expense of the UK economy's growth in the medium to long term ('the UK economy's *competitiveness* and growth over the medium to long-term'). We interpret the objective to mean that it supports prudential standard setting aimed at boosting the competitiveness of PRA-regulated firms, providing that such actions would be consistent with not harming (and preferably advancing) the growth of the UK in the medium to long term, which requires strong standards reducing the risks of financial instability. An alternative approach would be detrimental to medium to long-term economic growth because of the increased risk of financial instabilities, thus also being

³ The MPC (Monetary Policy Committee) and FPC (Financial Policy Committee) have already important secondary objectives in relation to economic growth and the Bank of England as a Financial Market Infrastructure regulator is likely to acquire a new secondary objective in relation to innovation. This speech is focussed on the PRA.

⁴ For an initial articulation of the regulatory foundations that support the new objective, see The regulatory foundations of international competitiveness and growth – speech by Vicky Saporta, February 2023: www.bankofengland.co.uk/speech/2023/february/victoria-saporta-speech-on-financial-regulation-and-competitiveness-and-growth.

⁵ Presented in Annex 1.

contrary to our primary objectives.⁶ In addition, it would also risk undermining the reputation of the PRA as a trusted regulator that provides a stable and predictable regulatory environment, thus ultimately undermining the trust stakeholders have in the UK as a good place to do financial services business.

While there is sufficient evidence showing that robust prudential standards are positively associated with economic activity over the medium to long term, the link between the competitiveness of a global financial centre and prudential standards is not well understood. To address some of the current gaps in the academic literature and existing survey evidence, the PRA launched in 2023 its own survey on the extent to which the PRA's regulatory framework is advancing the new objective and how the PRA can further facilitate its implementation in the future.⁷ The results provide clear evidence that external stakeholders care about the reputation of the prudential regulator to preside over a stable and predictable prudential regulatory framework that can withstand episodes of financial stress.

The other attributes under the control of the prudential regulator that are considered important are:

- operational efficiency (eg, in assessing requests for regulatory approvals or authorisation);
- accessibility of the rulebook (ie, making rules less complex and thus less costly to comply with); and
- responsiveness to new developments to support industry innovation efforts.

These findings are significant, in particular by providing supporting evidence of the importance of regulatory frameworks fostering innovation, as an important driver of productivity.

Therefore, we intend for our approach to emphasise innovation and we will explore opportunities for the PRA to implement solutions that advance it.

Finally, the new objective is distinct but complementary to the other secondary objective to facilitate effective competition. Effective competition can be facilitated by allowing foreign firms to compete in the UK via branches and subsidiaries. However, for

⁶ See Growth and competitiveness – speech by Sam Woods, October 2022:

www.bankofengland.co.uk/speech/2022/october/sam-woods-speech-at-mansion-house.

⁷ In 2023, the PRA ran a pilot survey to gather feedback on the extent to which the PRA's regulatory framework is advancing the new objective and how the PRA can further facilitate its implementation in the future. The survey was sent to all conference invitees and responses were collected between 18th May and 30th June 2023. The sample size is 145, across banks, insurers and others (building societies, academics, trade associations, think tanks, asset managers, industry professional services and advisers).

this to be the case, it is important to prevent foreign firms from taking advantage of comparatively lower requirements to outcompete UK firms. Effective competition is the key driver of efficient financial intermediation, which in turn supports growth of the overall economy, especially when it unlocks innovation not only in the rest of the economy, but also within the financial services sector. Therefore, effective competition is instrumental to a vibrant and innovative UK FSS that efficiently serves the rest of the UK economy.

Background

The Act received Royal Assent on 29 June 2023. In part, it repeals retained EU law in financial services and gives the PRA additional responsibilities and wider rule making powers. HM Treasury (HMT) views the Act as ‘central to delivering the Government’s vision to grow the economy and create an open, sustainable, and technologically advanced financial services sector’ and ‘bolsters the competitiveness of the UK as a global financial centre and delivers better outcomes for consumers and businesses’.⁸

The Act retains the PRA’s general objective to promote the safety and soundness of the firms it regulates; specifically for insurers, to contribute to the securing of an appropriate degree of protection of those who are or may become insurance policyholders; and the current secondary objective to facilitate effective competition (hereafter, SCO). However, as part of the Act’s emphasis on competitiveness and growth, the PRA has been given a new secondary competitiveness and growth objective (hereafter, SCGO). The SCGO is to facilitate, subject to alignment with international standards, the international competitiveness of the UK economy (including in particular the financial services sector through the contribution of PRA-authorized persons), and its growth over the medium to long term. The secondary nature of the SCGO means that the PRA cannot advance it if it conflicts with safety and soundness, but it does mean that amongst policy options that advance the primary objective the PRA should opt for those that also facilitate competitiveness and growth.

The PRA will be proactive in its approach to implementing the SCGO, including prioritising projects that seek to advance it.⁹ To date, the contribution of prudential regulation to international competitiveness has not been a focus of research in academia or the regulatory community, so there is limited research to draw on, although there is more research around the broader issue of the contribution of the financial sector to growth.

Against this backdrop, the implementation of the SCGO would benefit from developing a deeper understanding of questions including: what determines the contribution of finance to growth and international competitiveness of an economy, what makes for a

⁸ Rocket boost for UK economy as Financial Services and Markets Bill receives Royal Assent: www.gov.uk/government/news/rocket-boost-for-uk-economy-as-financial-services-and-markets-bill-receives-royal-assent.

⁹ The Prudential Regulation Authority’s future approach to policy, September 2022: www.bankofengland.co.uk/prudential-regulation/publication/2022/september/pru-approach-to-policy.

successful global financial centre, and how does it retain competitive advantage, how to measure the contribution of financial services to the economy, and how can we measure the contribution of prudential regulation to the competitiveness and growth of the economy. This is why the PRA is hosting an international conference on Tuesday 19 September 2023, to explore the core linkages and relationships, which will enable it to better implement the objective.

This paper sets out the PRA's current thinking in this area, to be explored and discussed further through the conference. It focuses on two aspects:

Section 2 provides a brief discussion of the specifics of the SCGO, including the interpretation of international competitiveness, medium to long term growth and alignment with international standards.

Section 3 gives a high-level summary of what is known about the drivers of competitiveness and growth, the contribution of the FSS to economic growth, and the impact of prudential regulation on economic growth and FSS international competitiveness.

There is a separate paper prepared by the PRA which covers considerations on how to hold the PRA accountable for implementing the new objective.¹⁰

As indicated, the SCGO sits alongside the secondary competition objective (SCO), which came into force almost a decade ago. It is worth noting the experience of the SCO, because a concern raised by some stakeholders is whether the PRA will be able to advance the new secondary objective without endangering the primary objectives of safety and soundness and protection of policyholders. Since its inception, the evidence has shown that the PRA has been able to successfully advance the SCO without undermining its primary objectives.¹¹ A good current example of the ability to implement policies that simultaneously meet both secondary and primary objectives is the ongoing Strong and Simple initiative, targeted at an equally strong but less complex regulatory regime for small banks and building societies.¹² The PRA is confident that the new

¹⁰ See PRA conference paper 1 – How to measure the contribution of prudential regulation to growth and competitiveness.

¹¹ Our secondary objectives: www.bankofengland.co.uk/prudential-regulation/secondary-competition-objective.

¹² This is changing the regulatory framework for smaller banks and building societies, which will mitigate the 'complexity problem' that can arise when the same prudential requirements are applied to all firms. By creating a framework that is specifically tailored for non-systemic domestic banks and building societies, the new policy will be able to simplify the prudential framework for these banks and building societies, while ensuring their resilience is maintained.

secondary objective will lead to significant changes in how we make rules, while maintaining the safety and soundness of PRA regulated firms and protection of policyholders.

The PRA's interpretation of the new objective

There has been an active debate in Parliament about the status of the SCGO, on the approach the PRA should take in advancing it and on how to measure the PRA's performance against it. Against this backdrop, it is vital that the PRA gains a good understanding of the links between finance and growth, and how they influence international competitiveness, in particular of the FSS, and how prudential regulation of the banking and insurance sectors can affect FSS competitiveness and economic growth.

To this end, it is helpful to first look at the defining elements of the new objective.

- **Medium to long-term growth** is conventionally understood to mean the increase in the level of economic activity over a five to ten year horizon as measured by gross domestic product (GDP). This definition should not be conflated with what macroeconomists conventionally mean with 'trend growth', that is, the long term non-inflationary increase in GDP caused by an increase in a country's productive capacity. This is the growth rate to which an economy would converge to in the absence of any new shocks. While it is very hard for prudential regulation to influence 'trend growth', we consider that Parliament intended to focus the PRA on facilitating the level of economic activity in the medium to long term and that the term 'growth' is shorthand for that. Importantly, the inclusion of 'medium to long-term' means that any action that would temporarily elevate economic activity, but at the expense of medium-term growth, is inconsistent with the new objective.
- **Alignment to international standards**, such as those agreed in Basel, is beneficial to internationally active firms as it is easier to follow one global rulebook instead of having to meet the expense of adapting to a patchwork of local standards. It is also one reason why aligning with international standards makes the United Kingdom an attractive place for international firms to do business, a point our new secondary objective explicitly recognises. That said, faithful implementation of international standards leaves significant scope for national authorities to tailor rules to UK circumstances by making decisions about specific rules, and about risks not covered by those standards, while making sure we remain largely compliant overall.

- **International competitiveness** is arguably the least straightforward element to define because there is less consensus on what this means. At the most aggregate level, international competitiveness can refer to the entire macroeconomy: for example, the competitiveness of the UK economy relative to other countries' economies. This view of competitiveness is based on the notion that a fight for the global market share is a zero-sum game where absolute advantage determines trade flows. This zero-sum view has been criticised by some economists, including Paul Krugman.¹³ His central claim is that a country's per capita GDP growth is almost entirely determined by the absolute growth rate of domestic productivity, and not the productivity of certain domestic industries relative to that in other countries.¹⁴

The business literature has further explored the meaning of competitiveness beyond simple cost or comparative advantage concepts. The resource-based view focuses on how competitive advantage is derived from using resources efficiently and is closely associated with the concept of productivity.¹⁵ According to this view, all countries can become more competitive at the same time (if overall productivity increases), and this is more aligned with Krugman's position.

¹³ Krugman, P (1994), Competitiveness: a dangerous obsession, *Foreign Affairs*, 73(2), pages 28–44; Krugman, P (1996), Making sense of the competitiveness debate, *Oxford Review of Economic Policy*, 12(3), pages 17–25.

¹⁴ Some working definitions of international competitiveness appear to mix the views outlined above. For instance, the OECD defines the international competitiveness of a nation as “*the degree to which it can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the longer term*”. The first part seems to relate to world market share while the second relates to GDP per capita which is heavily influenced by productivity. For a taxonomy of different definitions see Berger, T (2008), Concepts of national competitiveness, *Journal of International Business and Economy*, 9(1), pages 91–111; and Kharlamova, G and Vertelieva, O (2013), The international competitiveness of countries: economic-mathematical approach, *Economics & Sociology*, 6(2), pages 39–52.

¹⁵ See Prahalad, C K and Hamel, G (1990) The core competence of the corporation, *Harvard Business Review*, pages 79-91.

Evidence on the relationship between prudential standards and competitiveness and growth

To improve our understanding of the relationship between prudential standards and the competitiveness and growth of the financial services sector and the overall economy we have reviewed the available economic literature.

First and foremost, the financial sector can affect economic activity through the frequency, duration, scale and nature of financial crises. Crises, especially when preceded by credit expansion, have been shown to be associated with deep recessions, slower recoveries and permanent reductions to economic activity.¹⁶ Given the importance of the financial sector relative to the rest of its economy, financial crises can have a particularly severe impact in the UK. Although higher bank capital may not always reduce the *probability* of a crisis, it is clear that it lowers the *cost* of a crisis by sustaining the provision of financial services, especially bank lending, during the resulting recession.¹⁷ Research also suggests that while in the short-term an increase in capital requirements may temporarily reduce credit provision, there is no discernible effect in the long-term.¹⁸ This is consistent with the finding that the current levels of bank regulatory capital does not appear to be negatively correlated with loan growth or GDP growth during “normal” times.¹⁹ All in all, the available evidence indicates that the current levels of capital ratios improve financial stability and help sustain bank lending

¹⁶ See for example Romer, C D and Romer, D H (2017), New evidence on the aftermath of financial crises in advanced countries, *American Economic Review*, 107(10), pages 3072–3118.

¹⁷ On bank capital and the probability of crisis, see for example Jordà, Ò et al. (2021), Bank capital redux: solvency, liquidity, and crisis, *The Review of Economic Studies*, 88(1), pages 260–286; and BCBS Working Paper 37 (2019), The costs and benefits of bank capital – a review of the literature, BCBS.

¹⁸ See Aiyar, S et al. (2014a), The international transmission of bank capital requirements: Evidence from the UK, *Journal of Financial Economics*, 113(3), pages 368–382; Aiyar, S et al. (2014b), Does macro-prudential regulation leak? Evidence from a UK policy experiment, *Journal of Money, Credit and Banking*, 46(1), pages 181–214; Aiyar, S et al. (2016), How does credit supply respond to monetary policy and bank minimum capital requirements?, *European Economic Review*, 82, pages 142–165; de-Ramon, S J A et al (2022), Bank-specific capital requirements and capital management from 1989-2013: Further evidence from the UK, *Journal of Banking & Finance*, 138; Francis, W B and Osborne, M (2012), Capital requirements and bank behavior in the UK: Are there lessons for international capital standards?, *Journal of Banking & Finance*, 36(3), pages 803–816.

¹⁹ See BCBS (2019), above note 15.

during periods of stress, thus ultimately exerting a positive influence on economic activity.²⁰ Our own empirical findings presented in Annex 1 are consistent with this conclusion.

Secondly, better functioning financial systems can foster growth by improving resource allocation and technological change. This is especially important for new and small firms, and sectors that are more reliant on intangible assets and are research/knowledge intensive. In this respect, there is plenty of evidence that improved competition among banks is positive for new business formation and the expansion of small firms, which in turn is an important driver of broad-based innovation and thus productivity improvements.²¹

Besides unlocking innovation in the rest of the economy, a more efficient and vibrant FSS can also generate innovation in financial services. While the role of novel financial instruments in the global financial crisis calls into question whether financial innovation

²⁰ See Klein P-O and Turk-Ariss, R (2022), Bank capital and economic activity, *Journal of Financial Stability* 62, 101068. Of course, it is plausible that, at much higher levels of capital requirements, the costs in terms of reduced lending activity might be higher than the expected benefits in terms of improved resilience during economic downturns/financial crisis.

²¹ See for example Jayaratne, J and Strahan, P E (1996), The finance-growth nexus: Evidence from bank branch deregulation, *The Quarterly Journal of Economics*, 111(3), pages 639–670; Cetorelli, N and Gambera, M (2002), Banking market structure, financial dependence and growth: International evidence from industry data, *The Journal of Finance*, 56(2), pages 617–648; Black, S E and Strahan, P E (2001), The division of spoils: rent-sharing and discrimination in a regulated industry, *American Economic Review*, 91(4), pages 814–831; Claessens, S and Laeven, L (2005), Financial dependence, banking sector competition, and economic growth, *Journal of the European Economic Association*, 3(1), pages 179–207; Cetorelli, N and Strahan, P E (2006), Finance as a Barrier to Entry: Bank Competition and Industry Structure in Local U.S. Markets, *The Journal of Finance*, 61(1), pages 437–461; Bertrand, M et al (2007), Banking Deregulation and Industry Structure: Evidence from the French Banking Reforms of 1985, *The Journal of Finance*, 62(2), pages 597–628; Kerr, William R. and Nanda, Ramana (2009), Democratizing entry: Banking deregulations, financing constraints, and entrepreneurship, *Journal of Financial Economics*, 94(1), pages 124–149; Acharya, V V et al. (2011), Finance and efficiency: do bank branching regulations matter?, *Review of Finance*, 15(1), pages 135–172; Amore, M D et al. (2013), Credit supply and corporate innovation, *Journal of Financial Economics*, 109(3), pages 835–855; Chava, S et al. (2013), Banking deregulation and innovation, *Journal of Financial Economics*, 109(3), pages 759–774; Cornaggia, J et al. (2015), Does banking competition affect innovation?, *Journal of Financial Economics*, 115(1), pages 189–209; Hombert, J and Matray, A (2016), The real effects of lending relationships on innovative firms and inventor mobility, *The Review of Financial Studies*, 30(7), pages 2413–2445; Barone, G et al. (2022), Interlocking Directorates and Competition in Banking, *Quaderni - Working Paper DSE No. 1173*; Core, F (2023), Bank Market Power and Firm Creation in Innovative Industries.

is always beneficial,²² financial innovation may be needed to effectively underwrite emerging and more complex technologies and providing mechanisms for trading and managing emergent risk (eg, green finance).²³ More generally, as countries transition from being heavily reliant on traditional asset-intensive sectors to sectors that are based on knowledge and intangible assets, the financial system would be expected to evolve from bank-based to market-based.²⁴ Regarding the causal link, there is some evidence that the financial sector adapts in response to changes in the economic structure of the economy.²⁵

Related to this, some literature finds that excessively large financial centres can slow down growth.²⁶ Broadly speaking, once the level of private credit reaches a high level as a percentage of GDP the positive effect of finance on growth can dissipate. This could be because of a trade-off between growth and fragility due to excessive risk taking, especially when the main driver of credit expansion is through assets that are

²² See Keys, B., T. Mukherjee, A. Seru and V. Vig (2010), 'Did securitization lead to lax screening? evidence from subprime loans', *Quarterly Journal of Economics*, 125(1), 307-362; C.W. Calomiris (2009), 'Financial innovation, regulation, and reform', *Cato Journal*, 29(1), 65-91; and Dwyer, P. (2011), 'Financial innovation and the financial crisis of 2007–2008', Federal Reserve Bank of Atlanta.

²³ See Levine, R (2021), *Finance, Growth and Inequality*, IMF Working Paper No. 2021/164; Beck, T, Tao, C, Chen, L and Song, F M (2016), Financial innovation: the bright and the dark sides, *Journal of Banking and Finance*, 72(1), pages 28-51; Haliassos, M (2013), *Financial Innovation: Too Much or Too Little?*, MIT Press.

²⁴ See Shen, C-H and Lee, C-C (2006), Same Financial Development yet Different Economic Growth-- Why?, *Journal of Money, Credit, and Banking*, 38(7), pages 1907-1944; Demirgüç-Kunt, A, Feyen, E and R. Levine (2013), The Evolving Importance of Banks and Securities Markets, *The World Bank Economic Review*, 27(3), pages 476–490; Gambacorta, L, Yang, J and Konstantinos, T (2014), Financial Structure and Growth, *BIS Quarterly Review*; Hsu, P-H, Tian, X and Xu, Y (2014), Financial development and innovation: Cross-country evidence, *Journal of Financial Economics*, 112(1), pages 116-135; and Langfield, S and Pagano, M (2016), Bank bias in Europe: effects on systemic risk and growth, *Economic Policy*, 31(85), pages 51–106.

²⁵ See Allen F, Bartiloro, L, Gu, X and Kowalewski, O (2018), Does economic structure determine financial structure?, *Journal of International Economics*, 114, pages 389-409.

²⁶ Manganelli, S and Popov, A (2013), Financial dependence, global growth opportunities, and growth revisited, *Economics Letters*, 120(1), pages 123–125; Ductor, L and Grechyna, D (2015), Financial development, real sector, and economic growth, *International Review of Economics & Finance*, 37, pages 393-405; Cournede, B and Denk, O (2015), Finance and Economic Growth in OECD and G20 Countries, *OECD Economics Department Working Papers No. 1223*; Arcand, J L et al. (2015), Too much finance?, *Journal of Economic Growth*, 20(2), pages 105–48; Beck, R et al. (2014), The finance and growth nexus revisited, *Economics Letters*, 124(3), pages 382-385; Bucci, A, Marsiglio, S and Prettnner, C (2020), On the (nonmonotonic) relation between economic growth and finance, *Macroeconomic Dynamics*, 24(1), pages 93-112; Benczúr, P, et al. (2019), Finance and economic growth: Financing structure and non-linear impact, *Journal of Macroeconomics*, 62, 103048; Stephen G C and Enisse, K, Why Does Credit Growth Crowd Out Real Economic Growth?, *The Manchester School*, 87(S1), pages 1-28.

less conducive to economic growth, such as household mortgage finance for existing housing rather than say lending to innovative businesses or to finance infrastructure. We report this for completeness, but the results of this strand of the literature are subject to dispute.

Finally, the financial services sector can also directly increase economic activity by exporting financial services abroad and attracting foreign capital to be invested in the UK economy.²⁷ The provision of international financial services has historically concentrated in a few global hubs due to so-called agglomeration forces, the success of which appears to be a consequence of many factors. A couple of relevant studies that relied on survey evidence found that the general competitive environment (economic freedom, the WEF's global competitiveness index and transparency) boosts financial centre status, as well as equity market capitalisation and the host country's sovereign credit rating. Interestingly, corporate tax rates are positively correlated with the status of the corresponding financial centre.²⁸ This positive correlation indicates that higher tax rates promote stronger institutions, contract enforcement and better insulation from external shocks leading to greater political stability. Technological sophistication and internet usage are also positively correlated factors.

An important caveat here is that these studies typically do not consider the impact of regulatory variables and market access. There is, however, a separate literature which looks at the impact of taxation, regulation and other variables on financial services Foreign Direct Investment (FDI). These types of studies found a negative effect of host

²⁷ In this respect, it is important to point out that measuring the contribution of the financial services sector to GDP and growth is not straightforward. National accounts measures of financial services output are problematic because the output from financial intermediation is not directly measured, nor directly paid for via an explicit price. See Wang, J, C et al. (2008), A general-equilibrium asset-pricing approach to the measurement of nominal and real bank output, NBER Working Paper 14616. For example, for financial intermediation between borrowers and savers, neither pays a direct price for the intermediation services. However, it is important to recognize that non-interest income (fees, trading revenues, etc.) is a material source of income especially for internationally active firms: see Philippon, T (2015), Has the US Finance Industry Become Less Efficient? On the Theory and Measurement of Financial Intermediation, *American Economic Review*, 105(4), pages 1408-38. In the UK, banking sector 'output' is measured by multiplying some interest rate spread between loans and deposits by the size of balance sheets (this is known as financial intermediation services indirectly measured, or FISIM). In addition, counting compensation for risk-taking towards output may be misleading because the part of income that is a risk premium doesn't constitute payment for 'value added' at the aggregate level. In this respect, the ONS estimates that adjusting FISIM output for default risk would have reduced measured output by 15 to 33% in the aftermath of the great financial crisis. See ONS (2017), Financial intermediation services indirectly measured (FISIM) in the UK revisited.

²⁸ See Eichengreen, B and Shah, N (2020), The correlates of international financial-center status, *Review of International Economics*, 28, pages 62-81; and also Moosa, I, Li, L and Jiang, R (2016), Determinants of the Status of an International Financial Centre, *The World Economy*, 39(12), pages 2074-2096.

country taxes and level of capital requirements on probability of financial services firms choosing that location.²⁹ Nevertheless, most of the regressors used in the empirical literature on financial hubs are for the most part not specific to the financial sector. This reflects the difficulty of identifying a proper objective, quantifiable variable to proxy for factors such as regulatory framework and market access.³⁰

We attempted to bridge this gap by running cross-country comparisons using variables that proxy for the robustness of prudential standards and the competitiveness of the FSS. Our findings, presented in Annex 1, are largely inconclusive in the sense that there are weak and contrasting results in terms of association between not only prudential standards and the competitiveness of the FSS, but also the competitiveness of the FSS and economic growth.

The empirical literature discussed so far analyses data over a relatively short sample period of about a decade or even a single year. However, there is also a historical literature on the determinants of international financial centres which adopts a narrative approach and typically looks at changing influences over many decades or centuries. This strand of literature identified three factors that determine the emergence of financial centres.³¹

First is the “economic power” of host countries, noting that since 1780, the leading financial centres of their day (Amsterdam, London and then New York) were each in the dominant national economy of their time.

Second is military factors: the demise of financial hubs is frequently associated with major wars, even if the host country was victorious, and

Third is the role of path dependency: a hub arises as a co-ordination equilibrium for firms, so individual firms have little incentive to relocate away unless others do the same.

Finally, there is some survey-based evidence on which factors finance professionals consider important for the attractiveness of a financial centre. For example, a recent

²⁹ See Merz, J, Overesch, M and Wamser, G (2017), The location of financial sector FDI: Tax and regulation policy, *Journal of Banking & Finance*, 78, pages 14-26; and Huizinga, H, Voget, J and Wagner, W (2014), International Taxation and Cross-Border Banking, *American Economic Journal: Economic Policy*, 6(2), pages 94-125.

³⁰ See Eichengreen, B (2019), The international financial implications of Brexit, *International Economics and Economic Policy*, 16, pages 37–50.

³¹ See Cassis, Y (2006), *Capitals of Capital: A History of International Financial Centres*, Cambridge, pages 1780–2005.

survey undertaken by a major consultancy firm ranked the most important factors as follows:³²

- (1) the liquidity of markets and availability of capital (38%),
- (2) the level of tech adoption by citizens and administrations (35%), and
- (3) the stability of political and regulatory regimes and safety of securing measures to prevent a major crisis (28%).

These results are consistent with the findings from our own survey undertaken to inform our approach to the new objective. Specifically, our own survey results identify the following three most important factors:

- (1) stability and predictability of macroeconomic environment;
- (2) high level of human capital; closely followed by
- (3) prudential framework. Regarding the latter, 91% of respondents agree that the PRA provides a stable and predictable regulatory environment, and 93% agree that the PRA's regulatory framework fosters trust in PRA-regulated firms.

The other attributes under the control of the prudential regulator that are considered important are: operational efficiency (eg, in assessing requests for regulatory approvals or authorisation); accessibility of the rulebook (ie, making rules less complex and thus less costly to comply with); and responsiveness to new developments to support industry innovation efforts. In addition, while stakeholders value the ability to tailor rules to UK circumstances, there is some apprehension regarding the risk of fragmentation across jurisdictions which would tend to increase compliance costs for internationally active firms.

These findings are significant, by providing strong evidence of the importance of regulatory frameworks fostering innovation, as an important driver of productivity. Therefore, we intend for our approach emphasise innovation and we will explore opportunities for the PRA to implement solutions that advance it.

In conclusion, while there is sufficient evidence showing that robust prudential standards are positively associated with economic activity over the medium to long term, it is questionable whether the competitiveness of a global financial centre can benefit from weaker prudential standards. In addition, it is unclear whether the expansion of the financial services sector, especially when it is bank-based and focused on household finance, is always positively associated with sustainable

³² See The UK remains Europe's most attractive destination for financial services investment, extending its lead, June 2023: www.ey.com/en_uk/news/2023/06/uk-remains-europes-most-attractive-destination-for-financial-services-investment.

economic growth over the medium to long term. Our own findings from cross-country comparisons, which are presented in Annex 1, are consistent with these statements.

Given the available evidence, we interpret the new SCGO to mean that it supports prudential standard setting aimed at boosting the competitiveness of PRA-regulated firms, providing that such actions would be consistent with not harming (and preferably advancing) the growth of the UK in the medium to long term, which requires strong standards reducing the risks of financial instability. An alternative approach would be detrimental to medium to long-term economic growth because of the increased risk of financial instabilities, thus also being contrary to our primary objectives.³³ In addition, it would also risk undermining the reputation of the PRA as a trusted regulator that provides a stable and predictable regulatory environment, thus ultimately undermining the trust stakeholders have in the UK as a good place to do financial services business. We aim for this conference to be an occasion to further explore this evidence, incentivise more research in this area and build a consensus on interpretation of the objective and accountability measures.

³³ See Growth and competitiveness – speech by Sam Woods, October 2022:

www.bankofengland.co.uk/speech/2022/october/sam-woods-speech-at-mansion-house.

Annexes

Annex 1

To shed light on the relationships between prudential standards and economic growth, the competitiveness of the FSS, and between the competitiveness of the FSS and economic growth, we have undertaken a number of cross-country comparisons relying on the following indicators:³⁴

- GDP growth rate as a proxy for medium to long-term economic growth;
- Country-level banks' regulatory capital ratios from the [IMF's Financial Indicators Soundness dataset](#) as a proxy for prudential standards;
- The Resolution Reform Index (RRI) from the [Financial Stability Board](#) as an alternative proxy for prudential standards;
- The [Global Financial Centres Index \(GFCI\)](#) as a proxy for FSS competitiveness;³⁵
- Gross exports of financial services from the [IMF's Balance of Payments dataset](#) as an alternative proxy for FSS competitiveness; and
- Country-level banks' overhead costs over total assets from [World Bank's Global Financial Development Dataset](#) as a proxy for firms' efficiency.

Prudential standards and economic growth

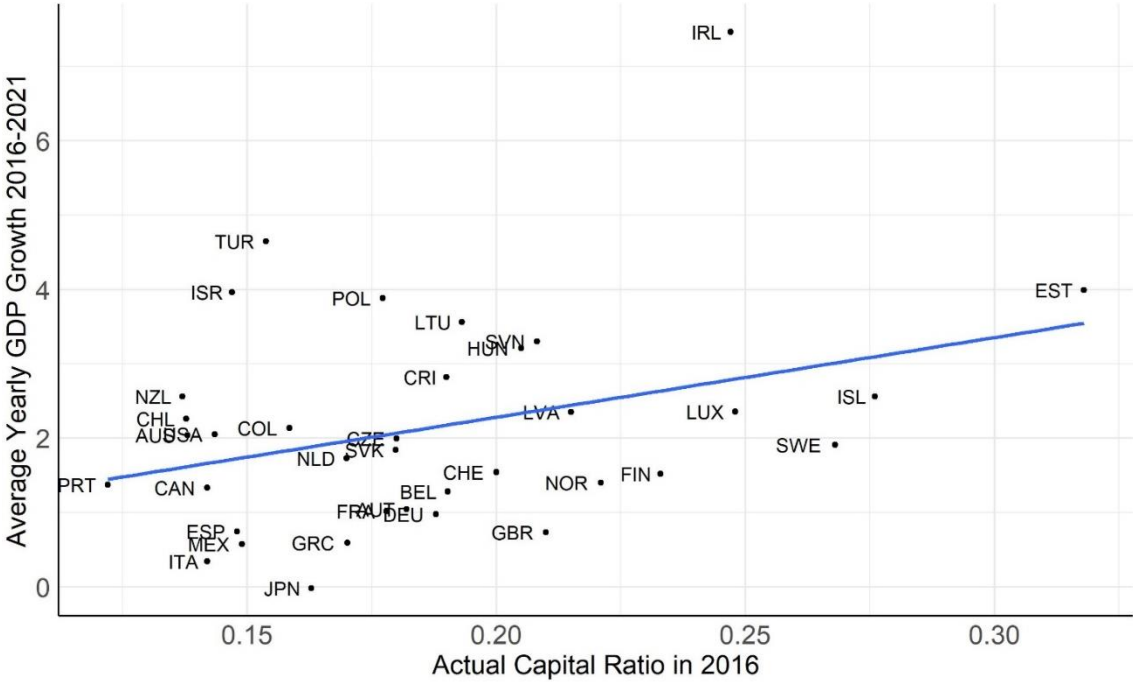
First, we explore whether and how prudential standards are associated with economic growth. Figure A1 below is indicative of a positive association between prudential standards (as measured by the country-level banks' regulatory capital ratios in 2016)

³⁴ We considered other indicators such as: country-level minimum capital requirements from the World Bank's Global Financial Development Database as a proxy for prudential standards; gross exports of insurance services, FDI flows and total assets of the banking and insurance sectors from the IMF as alternative proxies for FSS competitiveness.

³⁵ The GFCI compares the attractiveness of cities in terms of the corresponding financial centres. For countries with more than one city financial centre (eg, the US) to compute a country-level ranking we average the cities' rankings weighted by the corresponding population.

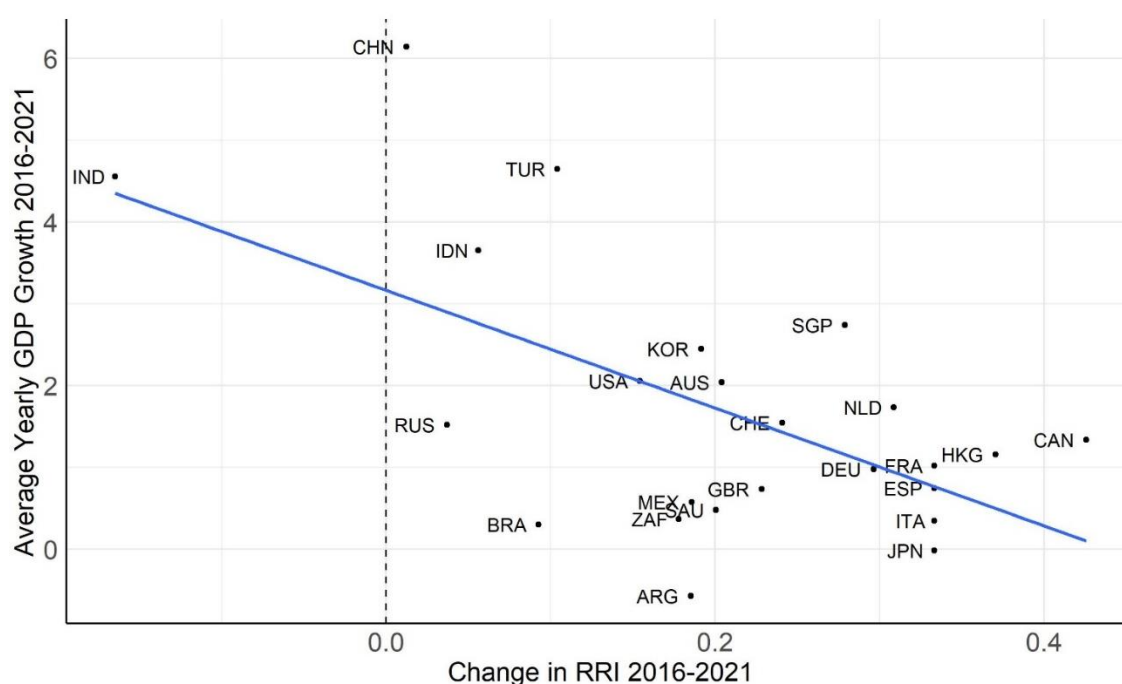
and medium to long-term growth (as measured by average yearly GDP growth over the following 5-year period) for OECD countries.

Figure A1: Prudential standards (capital ratios) and medium-term economic growth



In contrast, Figure A2 below is indicative of a negative correlation between prudential standards (as measured by changes in RRI between 2016 and 2021)³⁶ and economic growth in the short-term (as measured by average yearly GDP growth rate over the same period).

³⁶ We prefer to rely on the RRI, rather than the country-level banks' regulatory capital ratios, because it is less subject to endogeneity concerns with the specification based on changes in levels.

Figure A2: prudential standards (RRIs) and short-term economic growth

Both of the above findings are consistent with the findings from the literature review that while an increase in prudential standards might temporarily reduce growth in the short-term, there is no discernible impact over the medium to long-term. If anything, our findings point towards a positive association between prudential standards and medium to long-term growth. Table A1 below presents similar results from slightly different specifications. All correlations presented in the tables that follow are calculated considering a 5-year period (ie, ending in the year listed in the first column).³⁷ Correlation coefficients in bold are statistically significant at the 5% level.

Table A1: prudential standards and economic growth

Year	Correlation Between Average GDP Growth and Bank Capital	Correlation Between Average GDP Growth and Bank Capital (OECD Only)	Correlation Between Average GDP Growth and Δ (Bank Capital) (OECD Only)	Correlation Between Average GDP Growth and Δ (RRI) (OECD Only)
2008	-0.01867	0.36753	--	--
2009	--	--	--	--
2010	--	--	--	--
2011	--	--	--	--
2012	0.16959	0.22259	0.05604	--
2013	0.21886	0.28867	-0.21308	--
2014	0.00995	0.32439	-0.33207	--
2015	-0.00726	0.34687	-0.17026	-0.51948
2016	0.11418	0.60883	-0.34033	-0.45046

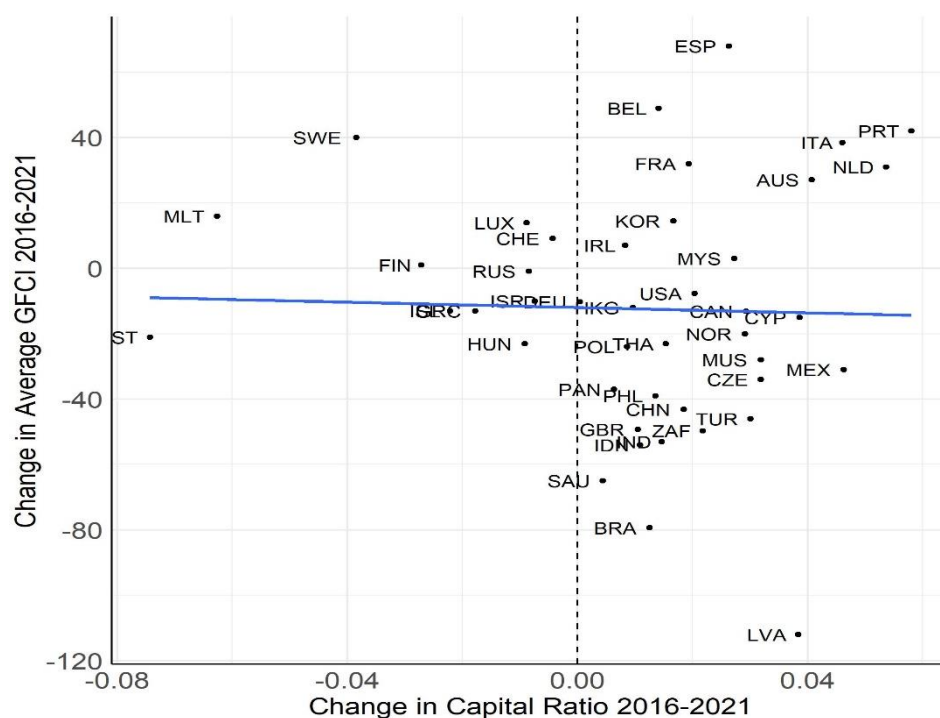
³⁷ We have run alternative specifications with a shorter / longer timeframe obtaining qualitatively similar results.

2017	0.19072	0.39500	-0.13583	-0.40486
2018	0.06366	0.27174	-0.00595	-0.41218
2019	0.11687	0.30929	-0.14421	-0.43460
2020	0.05006	0.32237	-0.08135	-0.50873
2021	0.01547	0.32979	-0.24991	-0.59218

Prudential standards and FSS competitiveness

Next, we explore the relationship between prudential standards and FSS competitiveness. This is an area that constitutes a gap in the literature and will be a research priority for the PRA going forward. Figure A3 below shows a weak negative correlation between prudential standards (as measured by changes in country-level banks' regulatory capital ratios between 2016 and 2021) and FSS competitiveness (as measured by changes in the country-level GFIs over the same period).³⁸

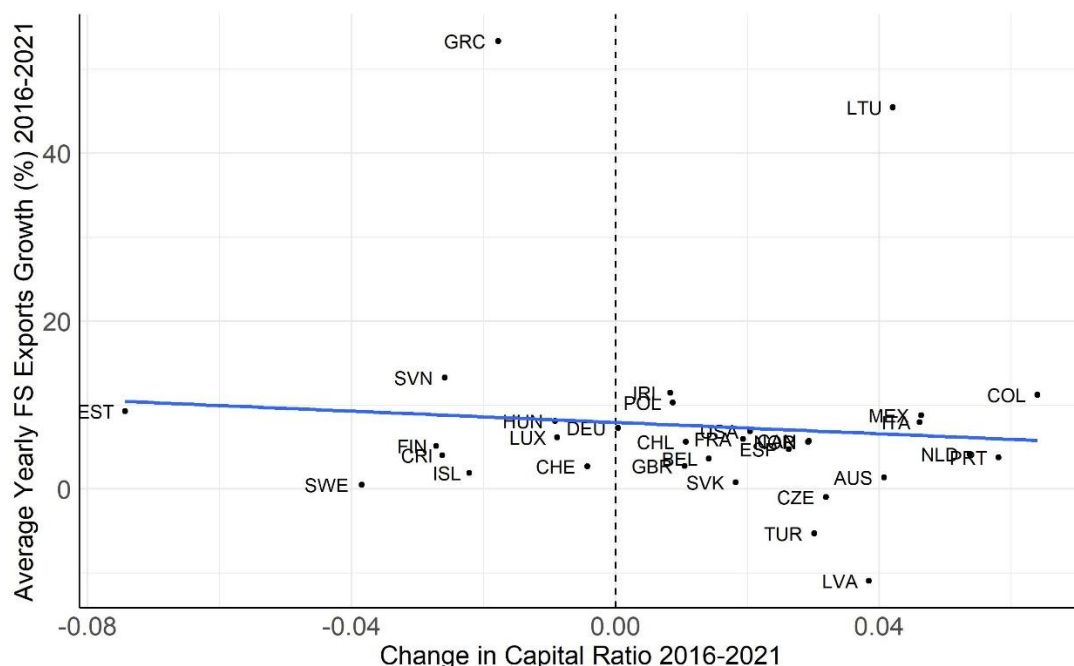
Figure A3: prudential standards (capital ratios) and FSS competitiveness



Similarly, figure A4 below shows a weakly negative correlation under the alternative proxy for FSS competitiveness based on average yearly financial services exports over the same period.

³⁸ We also assessed the 5-year changes in country-level GFCI against the level of banks' regulatory capital ratio in the year prior, obtaining qualitatively similar results.

Figure A4: prudential standards (capital ratios) and FSS competitiveness (gross FS exports)



In contrast, Figure A5 below shows a positive correlation with the alternative proxy for prudential standards (changes in RRI between 2016 and 2021).

Figure A5: prudential standards (RRIs) and FSS competitiveness (GFCI)

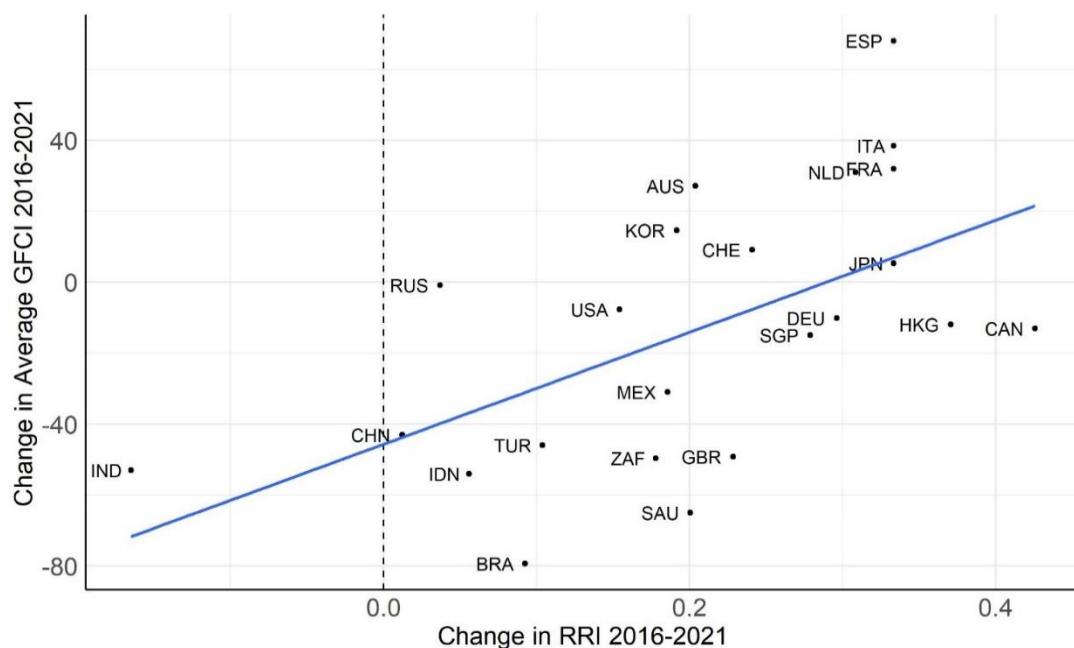


Table A2 below shows similar inconclusive correlation results. Combined with the lack of evidence from the extant literature, it is fair to conclude that there is uncertainty regarding the relationship between prudential standards and FSS competitiveness.

Table A2: prudential standards and FSS competitiveness

Year	Correlation between Δ (bank capital) and Δ (GFCI Rating)	Correlation between Δ (RRI) and Δ (GFCI rating)	Correlation between Δ (Bank Capital) and average FS exports growth
2008	--	--	--
2009	--	--	--
2010	--	--	--
2011	--	--	--
2012	--	--	-0.29837
2013	--	--	-0.30992
2014	--	--	-0.17024
2015	-0.32160	-0.51818	-0.25932
2016	0.22181	-0.47377	-0.05184
2017	0.01001	-0.01812	0.10293
2018	0.03555	0.41072	0.02836
2019	-0.08907	0.28172	0.02910
2020	0.11265	0.24100	-0.10226
2021	-0.03091	0.57253	-0.08816

FSS competitiveness and economic growth

Finally, we explore the relationship between FSS competitiveness and economic growth. Table A3 below confirms that there is limited evidence of a positive correlation between FSS competitiveness and economic growth, especially when the proxy for FSS competitiveness is growth of financial services exports.

Table A3: Competitiveness and Economic Growth

Year	Correlation between average GDP growth and Δ (GFCI rating) (OECD only)	Correlation between average GDP growth and average FS exports growth (OECD only)
2008	--	0.39134
2009	--	0.15185
2010	--	0.16963
2011	--	0.15154
2012	0.04618	0.20678
2013	0.08729	0.37441
2014	0.09836	0.34897
2015	0.54340	0.33509
2016	0.25240	0.18742
2017	0.24807	0.26756
2018	0.16275	0.10770
2019	0.17503	0.04615

2020		0.07710		0.02547
2021		-0.21496		0.03003