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Improving productivity measurement in the UK financial services sector

FCA Economic Research Competition

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Disclaimer

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Executive summary

The UK economy has struggled with low productivity growth since the global financial crisis (GFC) of 2007-09, significantly lagging peer countries. The financial services sector, which can be a strong driver of productivity, has seen a notable decline, exacerbated by Brexit-related relocations and regulatory shifts. Prior to the GFC, the UK had the second-highest financial sector productivity growth rate among G7 peers. But post-crisis, the country's financial productivity growth has fallen behind those of Canada, Germany and France (as well as Spain). Since 2015, financial sector productivity growth in the UK has been among the slowest in the G7, with only Italy performing worse.

This report examines the measurement challenges associated with financial sector productivity. The first section outlines the UK's productivity challenges and the experience of the financial services sector. The second section sets out the most common productivity measurements and the limitations of these approaches. It also details financial functions used in the UK and how the sector manages its financial resources to generate profits. Section 3 discusses findings from stakeholder and academic interviews as well as survey interpretation. Section 4 conducts a risk-mapping exercise and explores the risks and transmission mechanisms for financial risks. Section 5 concludes with a discussion of the global and domestic impact of risks and regulation on sustainable growth.

The report uses quantitative analysis alongside interviews with practitioners and academics to explore these issues. The research has led to the following findings.

Key findings

1. Limitations to existing productivity measures. Traditional productivity metrics fail to capture fully the contributions of the sector, given its intangible outputs and complex intermediation activities. While labour productivity remains relatively high, multifactor productivity trends reveal structural inefficiencies.

2. Low investment levels across the industry. While the financial sector in the UK is larger than in most G7 countries, its total investment levels are not nearly as proportional. This contributes to the overall lack of investment in the UK economy, which has exacerbated the slowdown in productivity growth. Regional disparities further indicate a concentration of financial sector productivity in London, with lower investment levels across the broader industry. Furthermore, sub-sector analysis reveals that insurance and pension funding have driven recent productivity gains, whereas other financial activities lag.

3. Sector-specific productivity measures. Interview and survey findings reveal that while firms actively track productivity, barriers such as compliance costs,

resistance to technological change and dated infrastructure hinder improvements. The increasing adoption of artificial intelligence (AI) and automation presents opportunities for efficiency gains, but also introduces new risks. A refined approach to measuring financial sector productivity could enhance policy effectiveness.

The most practical approach to enhancing productivity measures of the financial sector would be a middle path between granular data used by practitioners and a sharper measure of productivity than gross value added (GVA). But as the Office for National Statistics (ONS) must adhere to international guidelines, adjustments must align with established frameworks. Recognising both the need for standardisation and the limitations of existing measures can help to refine methodologies and introduce complementary indicators that capture financial sector productivity more effectively.

4. The need for balanced regulatory oversight. A key concern is the relationship between financial regulation and productivity. Post-GFC reforms have bolstered financial stability, but they may have constrained sectoral growth and competitiveness. Certain indicators suggest that regulatory pressure is high, making compliance increasingly challenging. Balancing regulatory oversight with economic dynamism remains a critical challenge.

This report emphasises the need for a proactive and adaptive regulatory framework that integrates microprudential and macroprudential policies, supports efficient capital allocation, enhances capital market efficiency, incentivises investment and mitigates systemic risks.

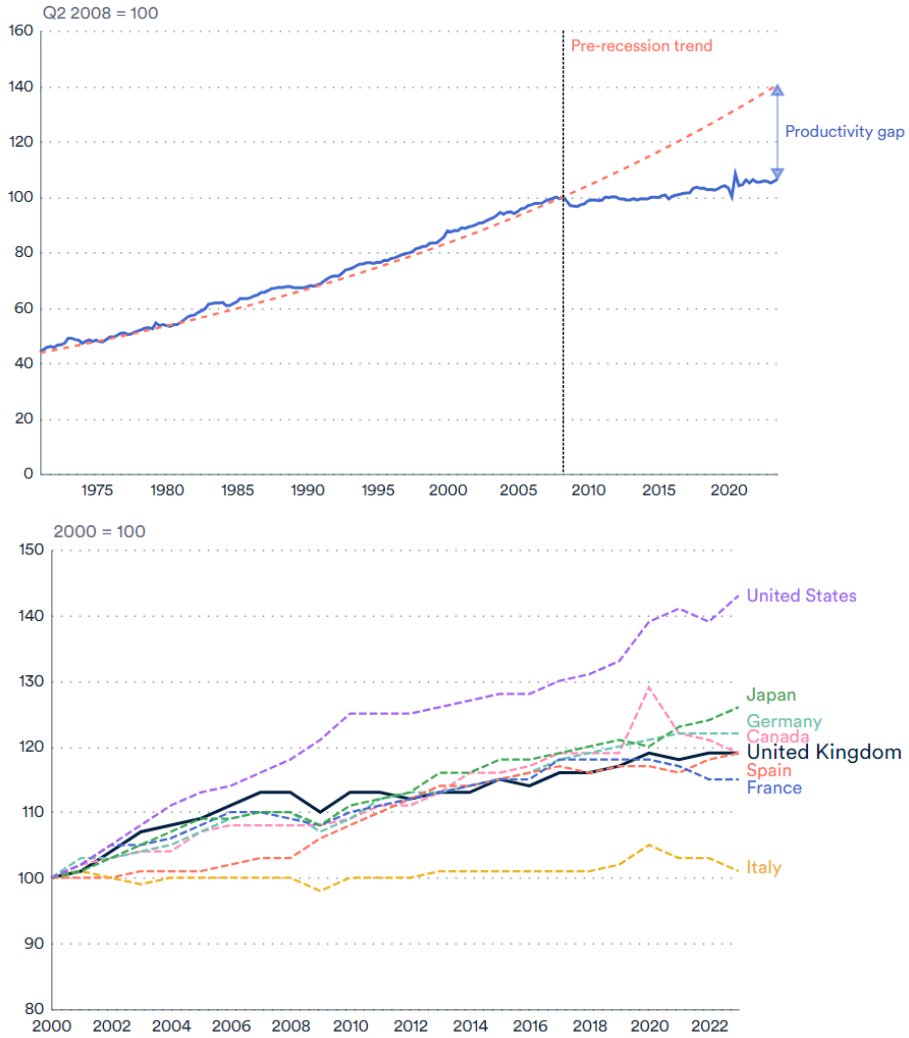
Ultimately, achieving sustainable productivity growth in the financial sector requires a nuanced, evidence-based policy approach. By refining productivity measurement frameworks, fostering innovation and ensuring a balanced regulatory environment, the UK can enhance financial sector efficiency, support long-term economic resilience, and maintain its global competitiveness.

7 Improving productivity measurement in the UK financial services sector

1 Introduction

The UK economy has been facing persistent challenges related to low productivity, regional inequality and a lack of investment, all of which have contributed to sluggish productivity growth. Since the global financial crisis (GFC) of 2007-09, UK productivity growth has significantly lagged behind that of its peer countries[1] (Figure 1.1). Over the past decade, the country's average productivity growth has been only 0.5% per year, a stark contrast to the historical average of nearly 2%.

Figure 1.1: Productivity growth in the UK: trend and comparison with peer countries

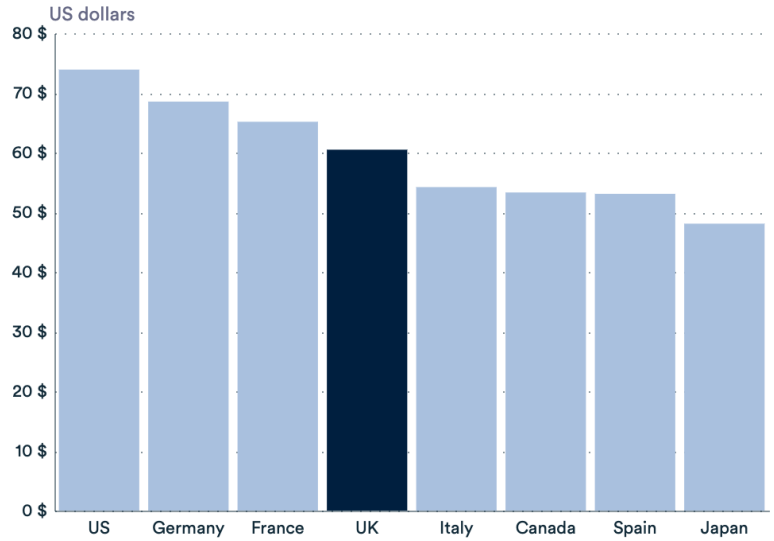


Source: Authors' elaboration based on (Kilfoyle, 2024) *and OECD data.*
Note: Total productivity is measured as GDP per hour.

[1] The G7 plus Spain.

Despite maintaining an average productivity[2] level of $60 per hour worked (in exchange-rate adjusted US dollars), the UK remains behind key comparable economies such as the United States ($74), Germany ($68) and France ($65) (Figure 1.2). At the current productivity growth rate of 0.5% per year, it is estimated that the UK will take approximately 21 years to reach Germany's current productivity level and about 32 years to catch up with the United States (Davies et al, 2024).

Figure 1.2: Productivity level in the UK and peer countries



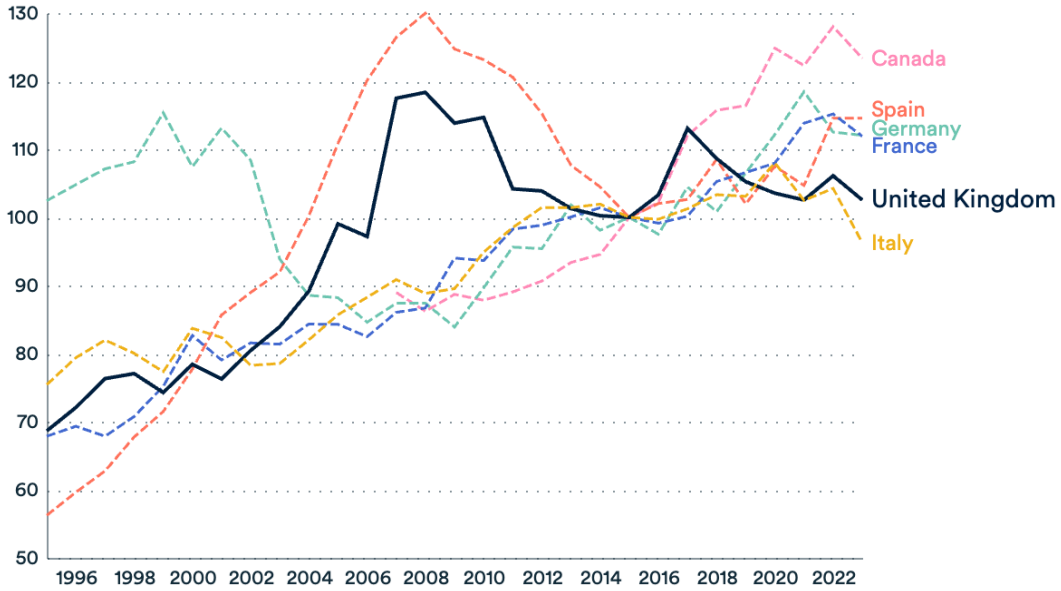
Note: Productivity measured as GVA per hour worked, values given in exchange rate-adjusted US dollars.

Source: Authors' elaboration using OECD data, 2022.

The financial sector, which is traditionally one of the strongest contributors to the UK's productivity, has seen a significant slowdown in productivity growth. Until the GFC, the UK had the highest financial sector productivity growth among G7 countries (relative to the 2015 base), second only to Spain, driven by deregulation and financial innovation. But following the GFC, the UK's financial services productivity declined sharply, more than in any other G7 country except Spain. While there was a brief recovery in 2015, the UK experienced the steepest productivity growth decline in the G7 and Spain after 2016, possibly due to financial services relocations following the Brexit referendum. Since 2015, Britain's financial sector productivity growth has been the slowest among G7 countries, ahead of only Italy, and has lagged behind Canada, Spain, Germany and France (Figure 1.3). Despite this slowdown, the UK remains a global financial hub, with the highest financial services GVA-to-GDP ratio among G7 countries (tied with the US), though its productivity growth advantage has eroded over the past decade.

[2] Productivity measure as GDP per hour is best to analyse overall economic productivity and international comparisons, while productivity measure as GVA per hour is best to analyse productivity at the industry level, avoiding distortions from government-imposed taxes and subsidies.

Figure 1.3: Financial sector GVA per hour worked in the UK and peer countries



Source: Authors' elaboration using OECD data.
Note: Index 2015 = 100. This figure does not include the United States due to the unavailability of data. This data is indexed so must be read as relative values (evolutions) rather than absolute values.

This slowdown in both aggregate productivity and financial sector productivity raises critical questions about measurement accuracy, the sector's contribution to economic growth, and its broader economic implications. Given the financial sector's pivotal role, understanding its productivity dynamics is essential not only for assessing its direct impact on the economy but also for identifying systemic risks and ensuring financial stability. Inaccurate productivity measures can lead to misinformed policy decisions, potentially exacerbating economic inefficiencies and risk exposure.

This paper focuses on improving productivity measurement in the financial services sector (FSS) to gain a clearer understanding of its role within the broader productivity landscape. Additionally, it examines the relationship between financial sector productivity and economic stability, particularly considering past financial crises. Finally, it explores the role of regulation in fostering sustainable productivity growth while mitigating risks. By addressing these issues, this research aims to contribute to the development of policies that enhance economic resilience and long-term growth.

2 Productivity measurements

Productivity is defined as a ratio between the volume of output and the volume of inputs. In other words, it measures how efficiently production inputs, such as labour and capital, are being used in an economy to produce a given level of output (OECD, 2024).

Measuring productivity in the FSS presents unique challenges due to the sector's intangible outputs and complex intermediation activities. The primary measure of productivity is labour productivity, which is typically expressed as gross value added (GVA) per hour worked. This measure is used mostly in the financial sector for banks and building societies and considers direct prices such as fees and commissions, net spread earnings, and other operating income. But most services provided by banks and building societies are not directly measured. For this reason, another way to measure productivity is using the financial intermediation services indirectly measured (FISIM), which captures the value of financial services that are not directly charged for, such as bank lending and deposit-taking. FISIM uses the margin between the interest rate offered by the banks and a reference rate (the Bank rate in the case of the UK) to estimate the value of financial services that do not have direct prices. Around 40% of output is measured using the direct prices approach, whereas 60% is captured by FISIM (Burgess, 2011).

Employment in the sector is another crucial component of productivity analysis. Employment per hour measures the labour input in relation to the total hours worked. In the UK, financial services employment levels are primarily derived from the Labour Force Survey (LFS), which provides quarterly data on workforce participation, hours worked, and sectoral employment trends (ONS, 2024). Notably, historical data suggests that while financial sector output grew significantly between 1997 and 2007, employment levels remained relatively stable, leading to exceptionally high measured productivity growth (Burgess, 2011). But there are concerns that conventional national accounting methods may have overstated financial sector output during this period, highlighting the need for refined measurement approaches.

Another way to measure productivity in the financial sector is by using the multifactor productivity approach (MFP), which measures how effectively labour and capital are used together in the production process. The ONS estimates MFP annually, stating that changes in MFP can be attributed to various factors, such as improvements in management practices, technological advancements, organisational changes and economies of scale (ONS, 2018).

Beyond traditional labour productivity metrics, some research emphasises the role of financial sector efficiency in driving broader economic productivity. Studies suggest that while finance plays a critical role in capital allocation and economic expansion, financial frictions—such as credit constraints, inefficient insolvency regimes, and

excessive debt financing—can hinder optimal resource allocation and dampen productivity growth (Heil, 2017). Additionally, alternative financing mechanisms, including venture capital and equity finance, have been identified as key enablers of innovation and productivity improvements, particularly for high-growth firms.

The following sections will delve into these aspects in greater detail, exploring the evolving landscape of productivity measurement in financial services and its broader limitations.

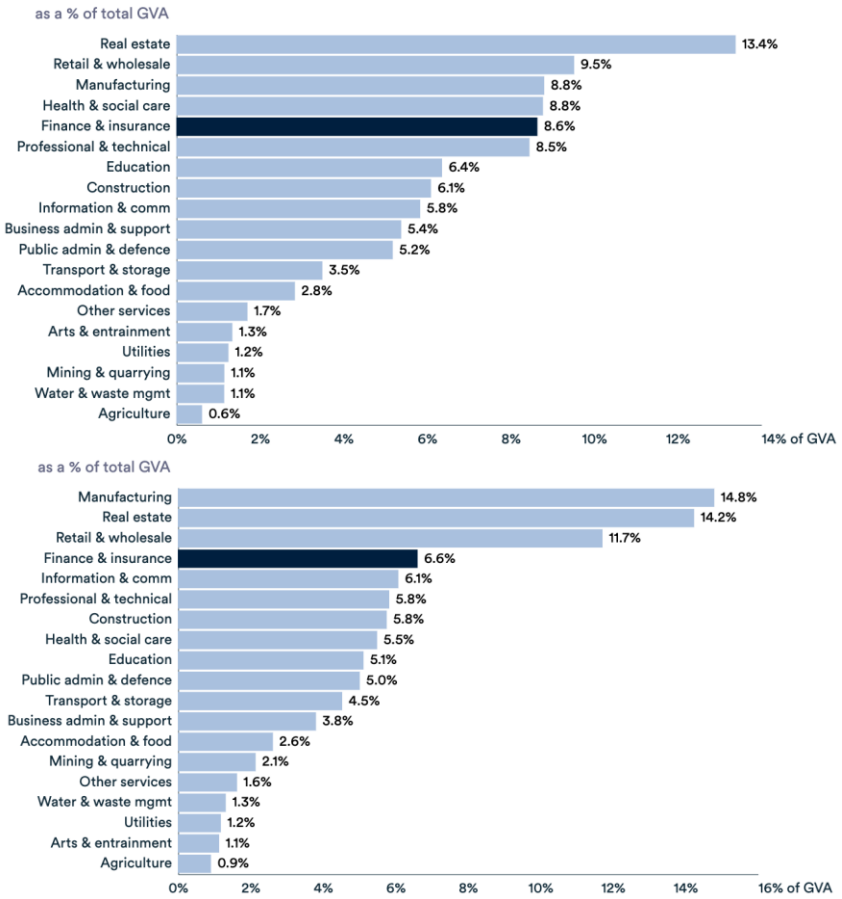
2.1 Output approach

The economic output by industries is typically measured by GVA. This is calculated as the value of the industry's gross outputs minus the value of the intermediate inputs used in the production process (Walton and Dey-Chowdhury, 2018; Hutton and Zaidi, 2024). For example, services used as intermediate inputs for the FSS such as legal advice and IT services do not count towards FSS GVA as they would be counted twice in production accounts (Burgess, 2011). The ONS use the gross value added (GVA) as a proxy for GDP.

The financial sector is Britain's fifth most important in terms of economic output. The industry's GVA was over £200bn in 2024, representing 8.6% of total GVA, up from 6.6% in 2000 (Figure 2.1). The weight of the financial sector GVA relative to GDP in the UK is among the highest compared with its peer countries (Figure 2.2). In 2022, the sector had the second-to-highest relative contribution to economic output, only surpassed by the United States, while the rest of the peer economies' contribution from the financial sector was between 2.5% and 5% of total GDP.

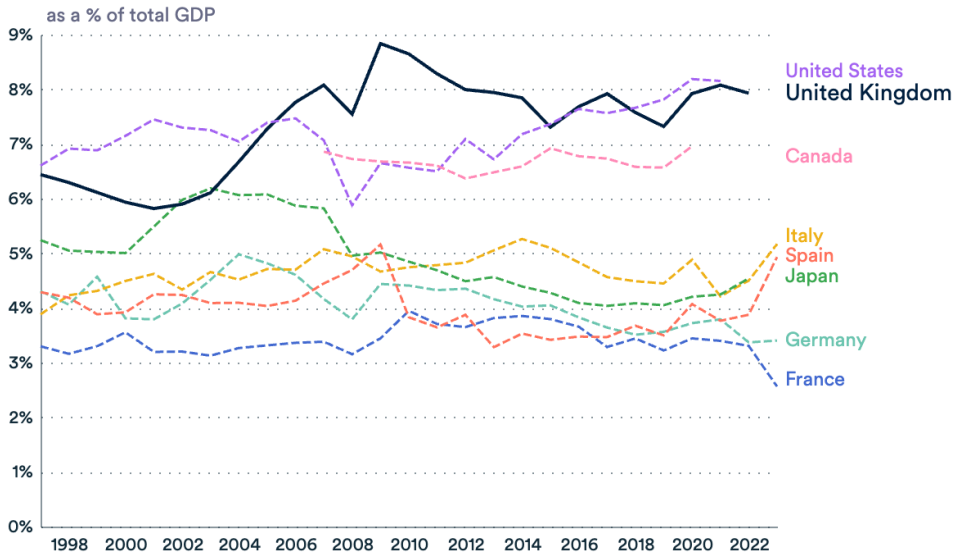
Overall, the UK's financial sector is a strong driver of value added and economic growth in the economy. Additionally, the UK financial sector boasts a higher contribution to total economic output than all other G7 peers, reinforcing its place as a strategic sector at which policies should be aimed to drive future productivity growth and economic growth.

Figure 2.1: UK GVA by sector in 2024 (above) versus 2000 (below)



Source: Authors' elaboration using ONS GDP output approach low-level aggregates statistics.

Figure 2.2: Size of financial sector GVA in the UK and peer countries

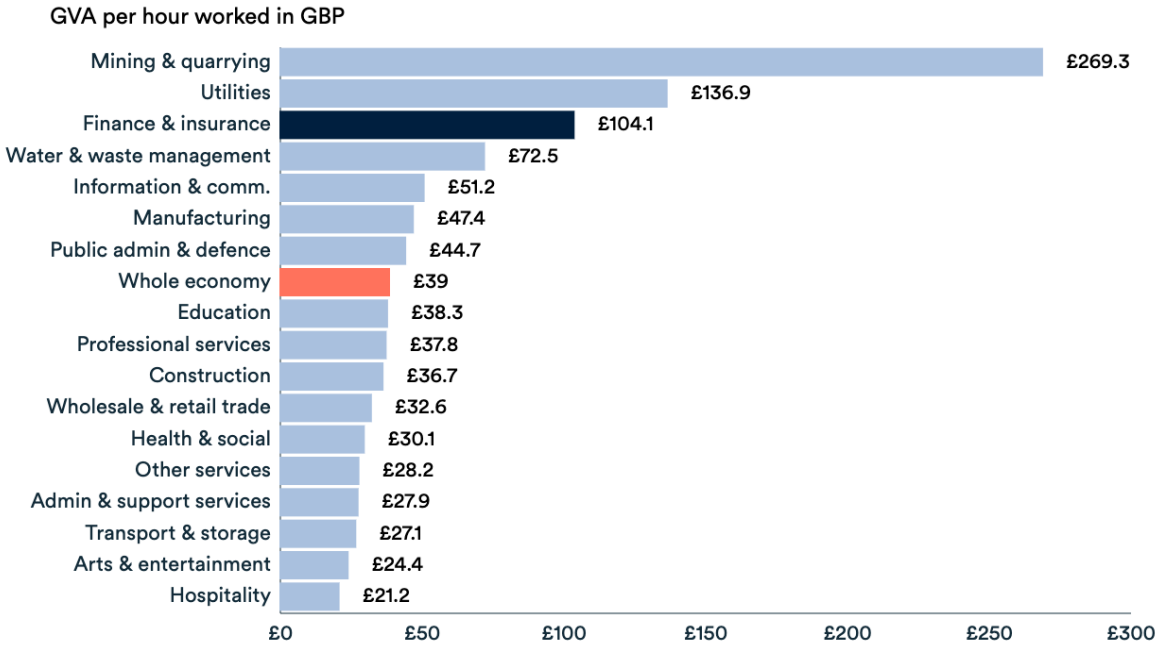


Source: Authors' elaboration using OECD data.

Despite a declining productivity trend after the GFC, the finance industry remains among the most productive in the UK, outperforming manufacturing by twofold and the overall economy by 2.7 times (Figure 2.3). But when looking at productivity growth, the financial sector has severely underperformed in the last decade compared with other sectors of the economy, such as the manufacturing sector, and compared with peer countries (Figure 2.4).

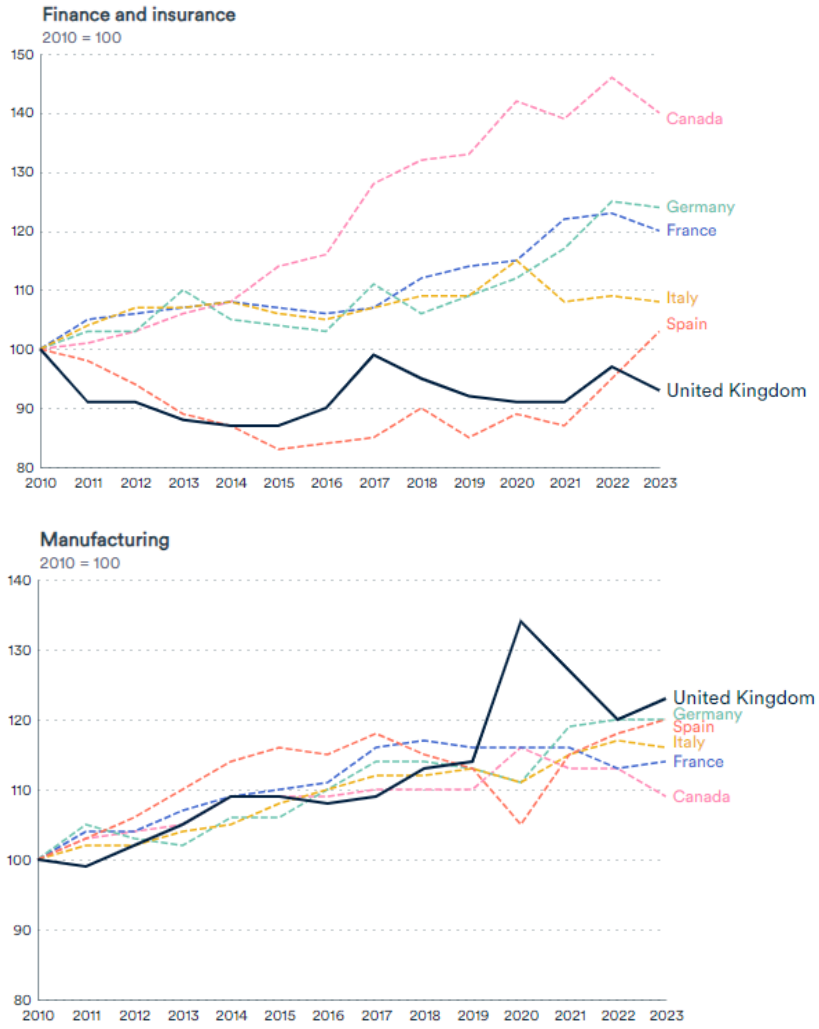
While the UK's financial services sector has historically been a strong driver of productivity growth, it appears productivity gains have been stagnant and has lagged all G7 peer countries since the GFC. The financial sector is now a driver of slow aggregate productivity growth in the UK.

Figure 2.3: Annual GVA per hour worked by industry



Source: Authors' elaboration using ONS data, 2023.

Figure 2.4: Productivity growth by industry in the UK and peer countries



Source: Authors' elaboration using OECD data.

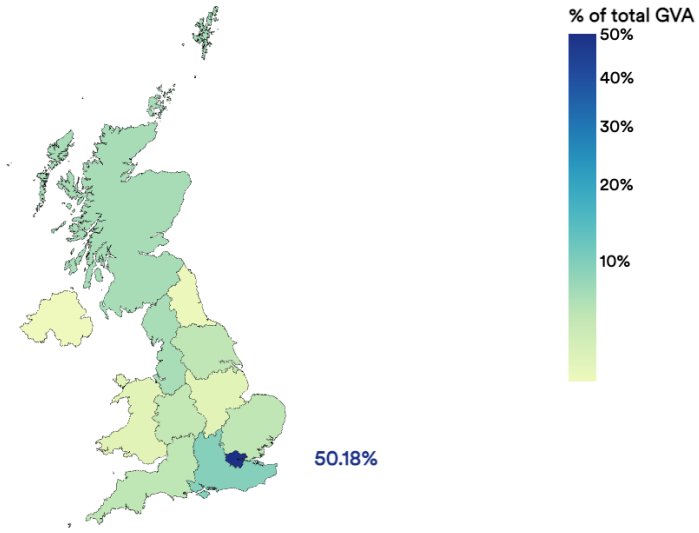
Note: index 2010 = 100

Looking at regional distributions of GVA, financial sector gains are highly unequally distributed across the UK: London represents half of the sector's added value in the country, followed by the South East of England at under 10% of total GVA (Figure 2.5). The GVA of London's financial sector has increased 56% over the past 25 years in absolute terms, rising from over £55bn in 1998 to nearly £86bn in 2022 (Figure 2.6). The City of London and Canary Wharf have grown as global financial centres, concentrating close-to-all gains from the financial industry in Britain. As a comparison, the South East of England, the second largest region in terms of financial GVA, reports under £20bn, nearly five times smaller than London's total financial sector GVA.

It appears the UK's financial sector is a two-tier sector: London drives financial value added while the rest of the economy has a milder economic performance both in absolute and relative terms. Over time, London as the country's main financial sector is

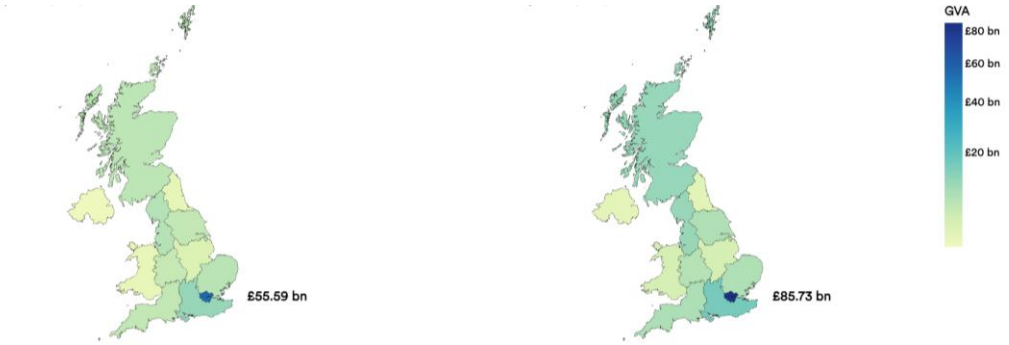
becoming increasingly large.

Figure 2.5: Financial sector GVA size by UK ITL1 regions



Source: Authors' elaboration using ONS Blue Book 2024 data.

Figure 2.6: FSS GVA size by UK ITL1 regions 1998 (left) versus 2022 (right)



Source: Authors' elaboration using ONS Blue Book 2024 data.

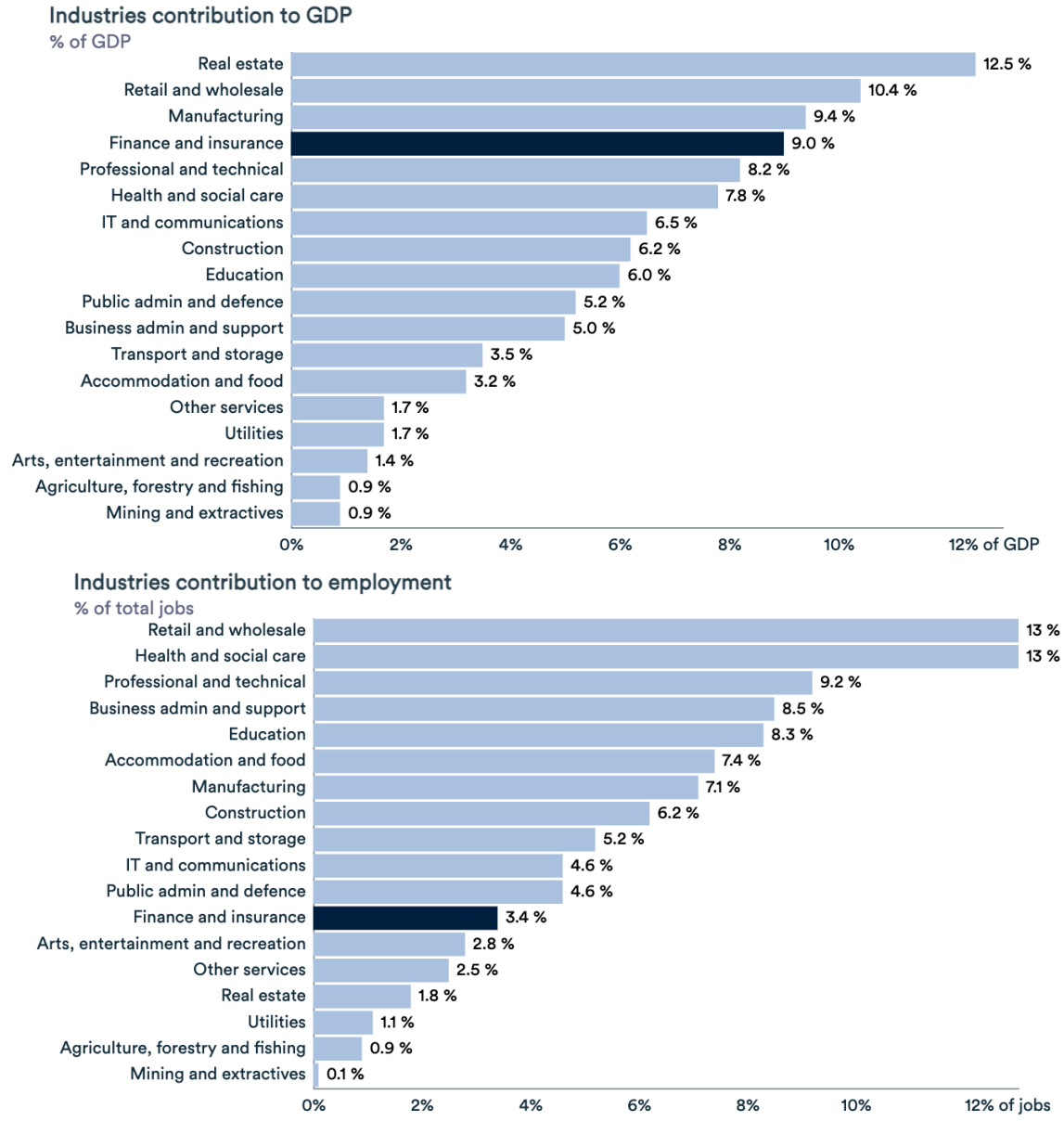
Note: amounts in 2019 money value.

Overall, the output approach shows that the UK's financial services sector is highly productive in the economy, driving a great part of the country's value-added and aggregate productivity. But it has also highlighted that the financial sector has experienced a great productivity slowdown since the GFC, much more than all G7 peer countries, and it is still today marked by large regional inequality among London versus the rest of the country.

2.2 Employment approach

While the financial sector is the fourth highest GDP-contributing sector at 9%, it is the seventh to last contributor to total employment at 3.4% (Figure 2.7), suggesting high productivity per employee. However, it is important to note that there is employment created by the financial sector which will not be accounted for in the financial sector employment data. Additionally, there are persistent challenges in the national accounting methods, specifically around the LFS.

Figure 2.7: UK industries' contribution to GDP and total employment

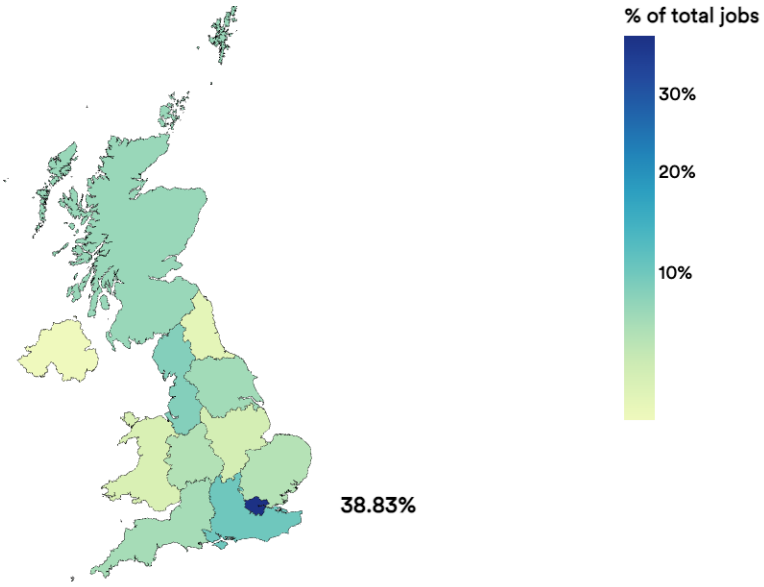


Source: Authors' elaboration based on House of Commons Library – Industries in the UK, 2023

With less than 40% of employment but half of the industry value added, London is more productive than the rest of the UK in terms of GVA per employee (Figure 2.8). But the UK financial sector productivity gains have recently been slower than its peer countries (Figure 2.9). Additionally, while productivity per employee gains were among the highest in the run-up to the GFC, productivity gains have been slower than the G7 average since 2016, surpassing only Italy (Figure 2.9).

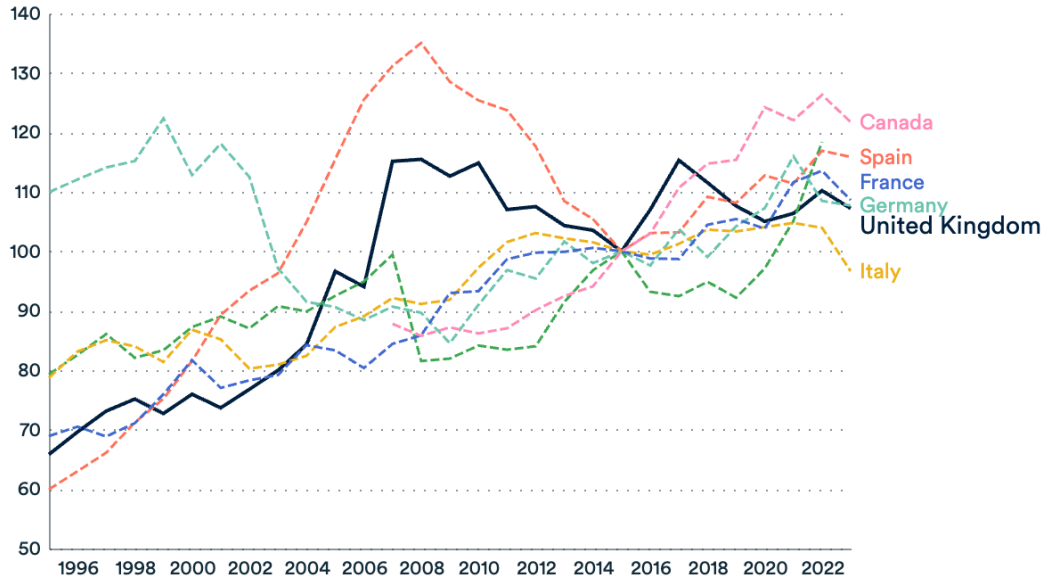
A similar productivity story to the output approach can be advanced here: the financial sector has historically been a strong driver of employment productivity (high share of GVA for a small share of employment), while GVA per employee gains have largely stagnated since the GFC and underperformed all G7 peer countries. Similarly, financial sector employment is unequally distributed, as London represents nearly 40% of financial employment for 13% of the total UK population.

Figure 2.8: Financial sector employment as a share of total employment



Source: Authors' elaboration using ONS employment and labour market data, 2024.

Figure 2.9: Financial sector GVA per person employed



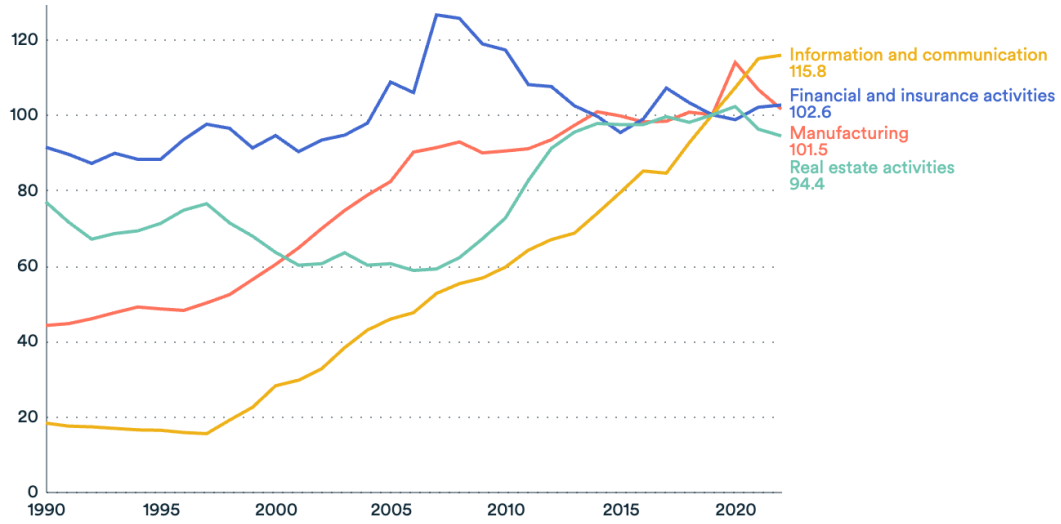
Source: Authors' elaboration using OECD data.

Note: index 2015 = 100.

In terms of multifactor productivity (MFP), the financial sector experienced a sharp MFP decline after the GFC (-24% from 2007-14). Over the same period, other productive sectors in the UK experienced strong MFP increases, showcasing the financial services sector's high exposure to structural risks in the economy (Figure 2.10). The sector was severely affected by the GFC, going from a 40% increase in productivity growth rate between 1990 and 2007 to a decrease of 20% in the productivity growth rate between 2007 and 2022 (Figure 2.11). One explanation for the national productivity and financial sector decline after the GFC is the fall in London's productivity growth rate, the country's 'growth engine', and its high concentration of financial services activities (Ron, 2024).

The financial services sector multifactor productivity has experienced the same slowdown as output and employment productivity trends since the GFC, which serves as a possible explanation to the lasting trend of productivity slowdown in the UK.

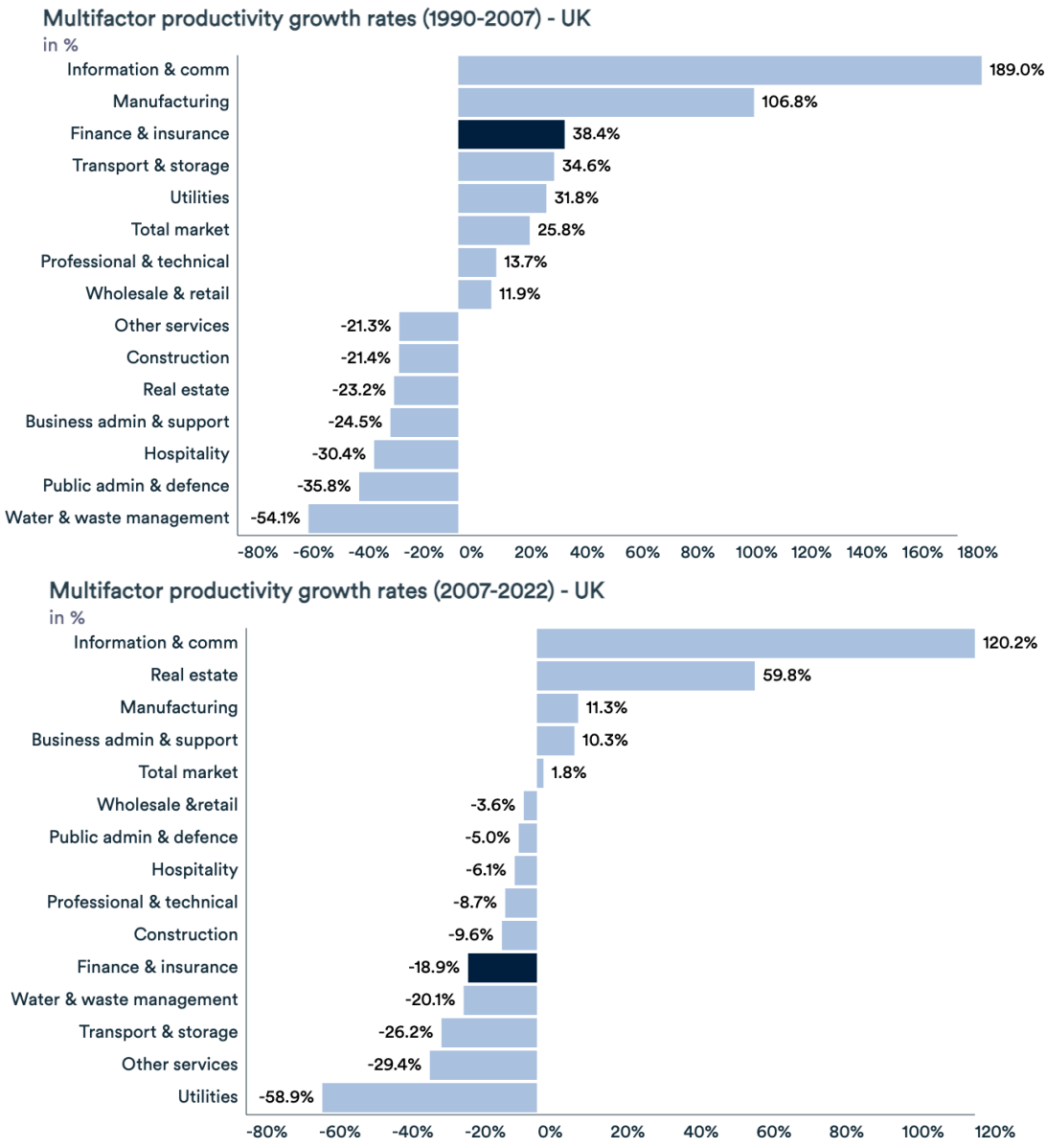
Figure 2.10: Multifactor productivity by industry in the UK



Source: Authors' elaboration using ONS Growth Accounting data.

Note: index 2019 = 100.

Figure 2.11: Multifactor productivity growth rates in the UK, 1990-2007 (above) vs 2007-22 (below)



Source: Authors' elaboration using ONS Growth Accounting data.

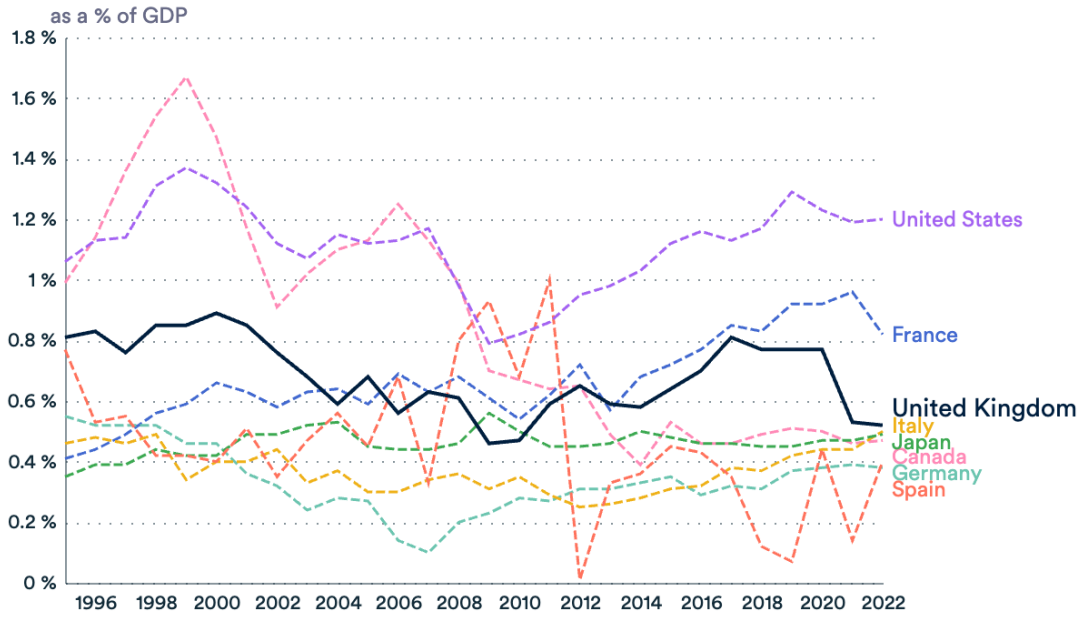
2.3 Financial sector investment and lending functions

The financial sector also contributes to productivity via its investments. Although total gross fixed capital formation (GFCF) from the financial and insurance activities sector relative to GDP is in line with its peer countries, it is strikingly lower than in France and the United States (Figure 2.12). Given the size of the financial sector in the UK, financial corporations' investment should stand nearly twice where it currently stands compared with its peer countries. By sector of investment, the UK's financial services sector has mainly invested in intellectual property products (£59bn), ICT (£42bn), transport (£19bn) and buildings and infrastructure (£17bn), while it does not invest much in

dwellings[3] (Figure 2.13). A decline in investment in all sectors is noticed post-2018, possibly as an effect of Brexit and the Covid-19 pandemic. Since then, financial GFCF flows towards all sectors have recovered except for the buildings and infrastructure sector, which faces low levels of investment in the UK.

The financial sector can be linked to the overall slowdown in economic growth in the UK over the past decades, as the lack of public and private investment is commonly regarded as one of the main causes of the stagnating growth compared with peer countries. The UK's financial sector is larger than that of most G7 countries, but its total investment levels are not nearly as proportional. If policymakers wish to leverage financial services to drive future growth, incentivising financial flows towards strategic investment is a useful place to start.

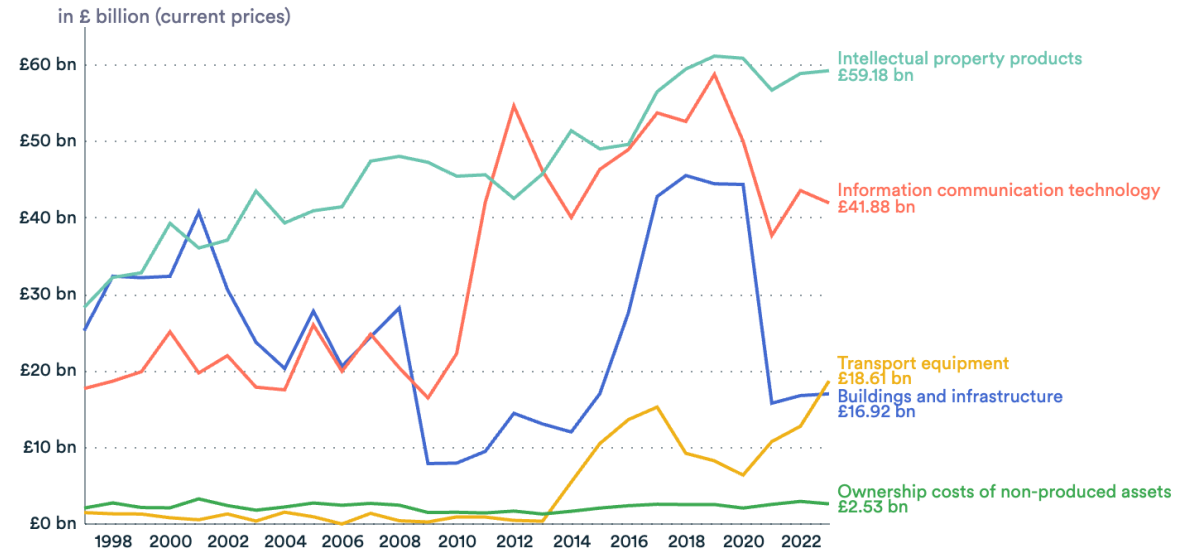
Figure 2.12: Financial sector GFCF in the UK and peer countries



Source: Authors' elaboration using OECD data.

[3] Residential properties.

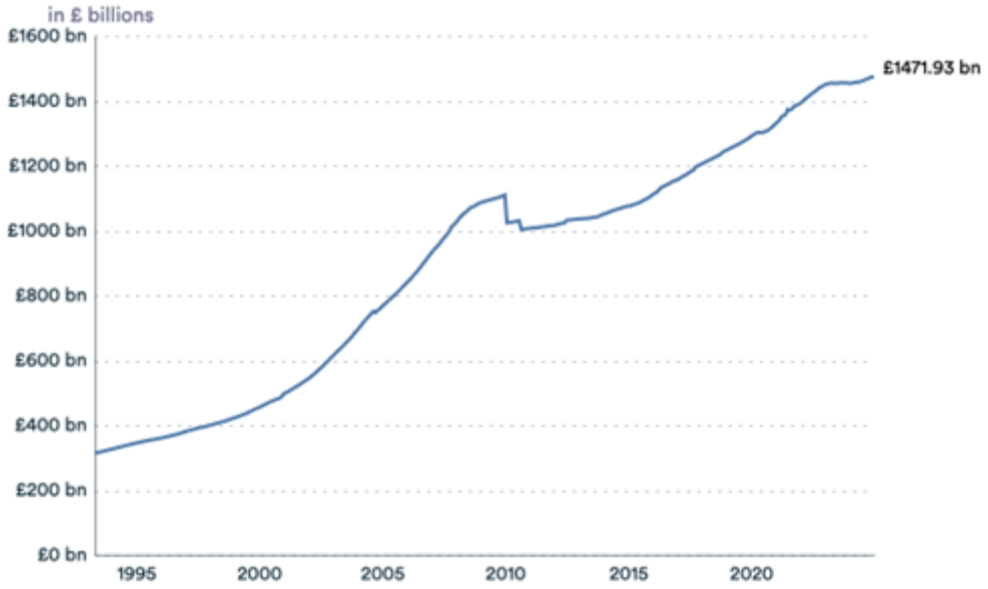
Figure 2.13: Financial sector GFCF by sector in the UK



Source: Authors' elaboration using OECD data.

Furthermore, looking into financial functions enables a deeper understanding of how the FSS manages its financial resources to generate profits. Household mortgage lending plays a central role in this context. Since the early 1990s, monetary financial institutions' mortgage lending to households has increased almost fivefold, from approximately £300bn in 1995 to £1,472bn in 2024, despite a temporary decline during the GFC (Figure 2.14). While this steady increase indicates strong consumer confidence and a robust housing market, contributing to financial services' profitability, it also highlights rising household debt levels and the potential for housing bubbles.

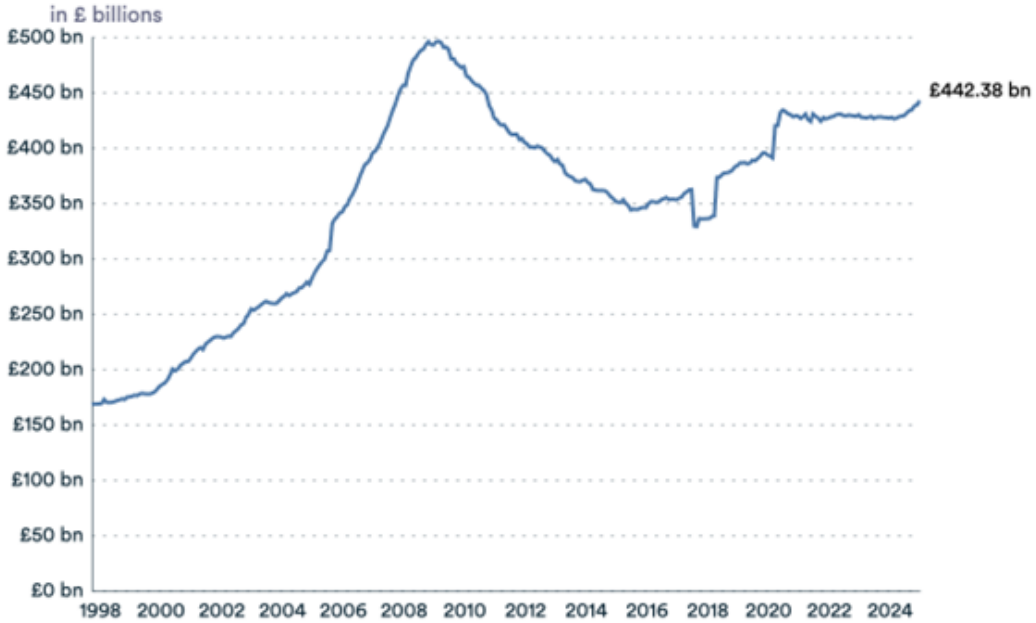
Figure 2.14: Monetary financial institutions mortgage lending to households



Source: Authors' elaboration using FCA & Bank of England Mortgage Lending Statistics 2024.

Looking at the evolution of lending practices from monetary financial institutions (MFI) to private non-financial corporations (PNFC), it appears lending has nearly tripled in absolute terms, up to £442bn in 2024 (Figure 2.15). Despite a strong halt in lending in 2008, lending dynamics have not yet reached their pre-GFC levels.

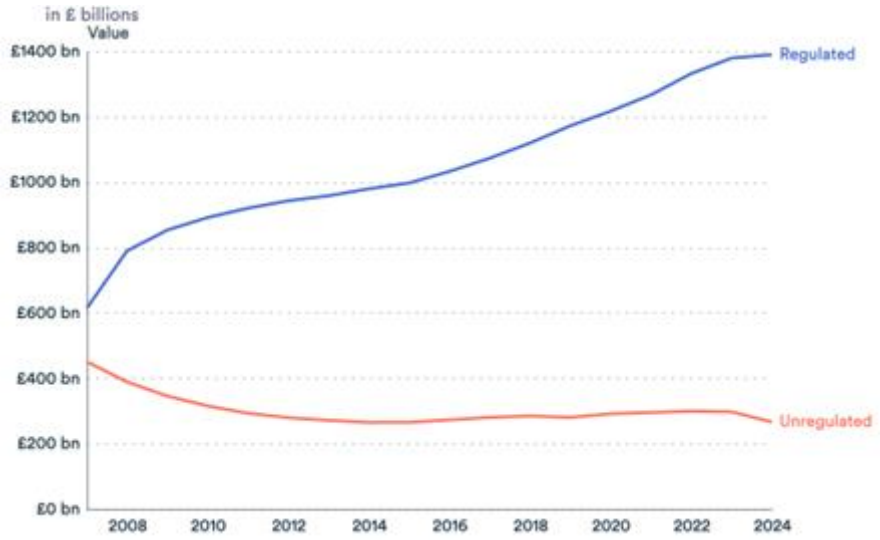
Figure 2.15: Monetary financial institutions lending to private non-financial corporations



Source: Authors' elaboration using OECD Statistics.

There is a clear distinction between regulated and unregulated lending. The twofold surge of regulated mortgage lending in the UK, from £600bn to £1,400bn, along with the slight decrease of unregulated mortgage lending, show that mortgage loans are subject to higher regulatory oversight, decreasing risk on mortgage lending markets (Figure 2.16). This process occurred post-GFC in a context of high concern over financial risks linked to mortgage lending.

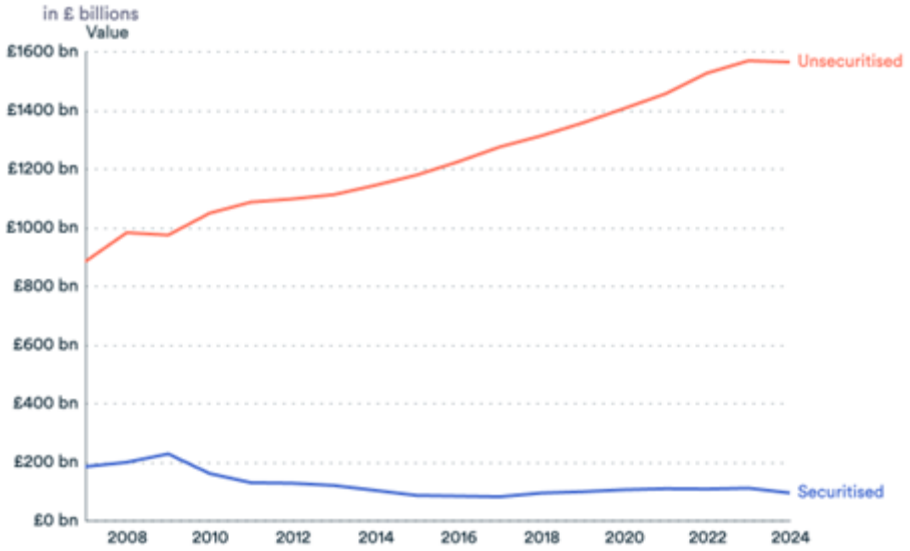
Figure 2.16: UK mortgage lending: regulated versus unregulated



Source: Authors' elaboration using FCA & Bank of England Mortgage Lending Statistics 2024.

Additionally, the high surge in unsecuritised mortgage lending (bearing risk of default) and the face value decrease in securitised mortgage lending (bundled together and sold as securities to investors) means risk in mortgage markets is contained (Figure 2.17). Securitised mortgages spread the risk of default among multiple investors hence, partly obscuring underlying market risks.

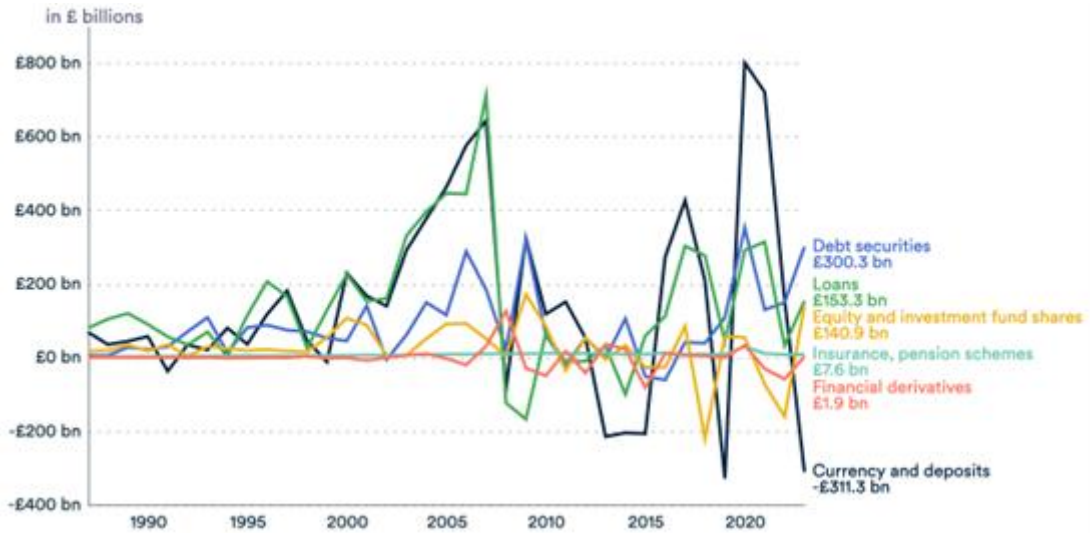
Figure 2.17: UK mortgage lending: securitised vs unsecuritised (in £bns)



Source: Authors' elaboration using FCA & Bank of England Mortgage Lending Statistics 2024.

Turning to UK financial corporations' financial accounts since the early 1980s for the following financial instruments: currency and deposits, debt securities, loans, equity and investment fund shares, insurance and pension schemes, and financial derivatives (Figure 2.18). While all instruments have experienced high volatility from the early 2000s, and large declines following the 2007 GFC (loans in particular), over recent years currency and deposits assets have experienced the highest volatility, reaching its all-time maximum in 2020 (£800bn) and all-time minimum in 2023 (-£300bn). As such, it could be that currency and deposit assets are driving risk and hindering productivity on financial markets.

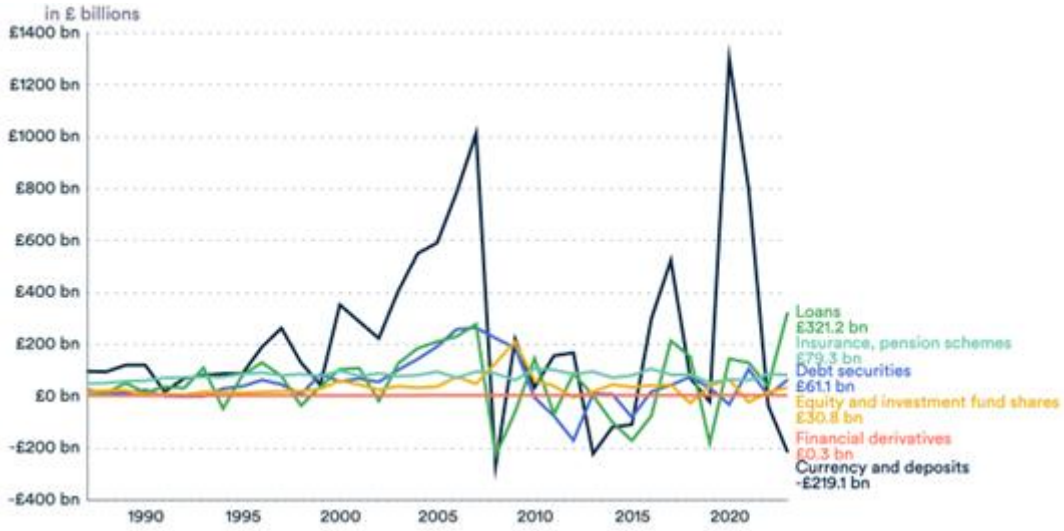
Figure 2.18: UK financial corporations' financial assets



Source: Authors' elaboration using ONS Blue Book 2024.

As for liabilities, it again appears clear that volatility in financial sector liabilities is driven by currency and deposit liabilities, reaching their all-time maximum in 2020 (at £1,300bn) and all-time minimum in 2023 (at -£200bn). Other financial instruments seem to have stable (or little volatile) evolution rates (Figure 2.19).

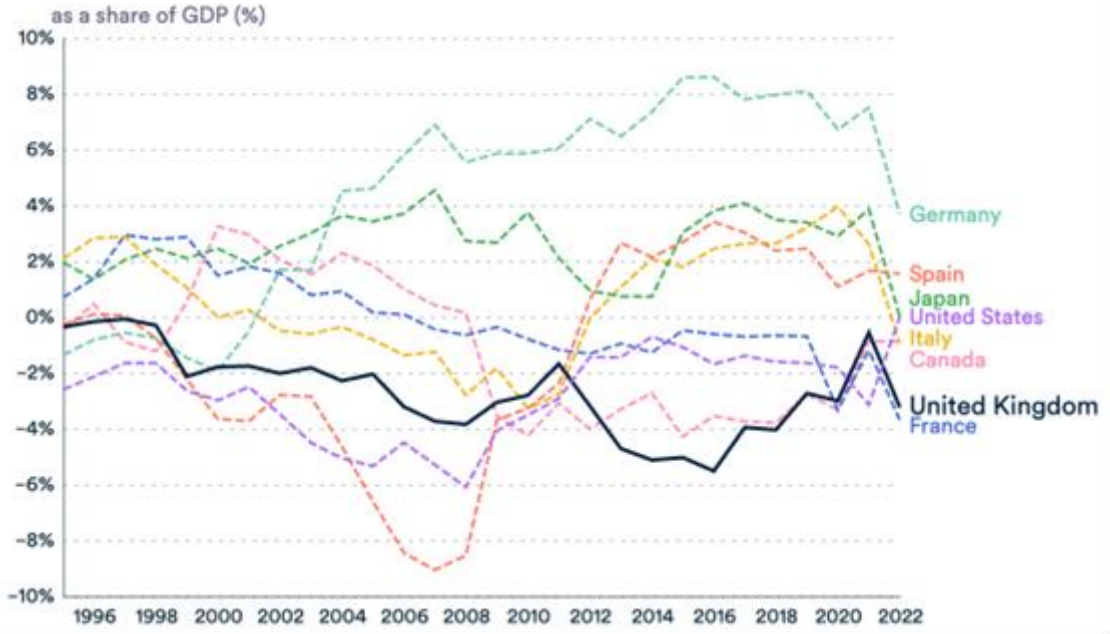
Figure 2.19: UK financial corporations' financial liabilities



Source: Authors' elaboration using ONS Blue Book 2024.

Next, turning to net lending and borrowing for the UK and its peers, an indication of financial sector productivity by measuring if funds are allocated to their most productive uses, leading to high return on investments and hence economic growth. Net returns on lending and borrowing activities seems to be a constraint to productivity and growth for the UK, as the UK boasts the second-highest net borrowing ratio of all peer comparators (G7 and Spain), at over 3.2% of GDP (Figure 2.20). Only France has slightly higher borrowing impediments, at 3.6% of GDP. As such, the UK economy is a strong net borrower compared to its peers, which may indicate financial stress and risk, which financial regulators may attempt to mitigate.

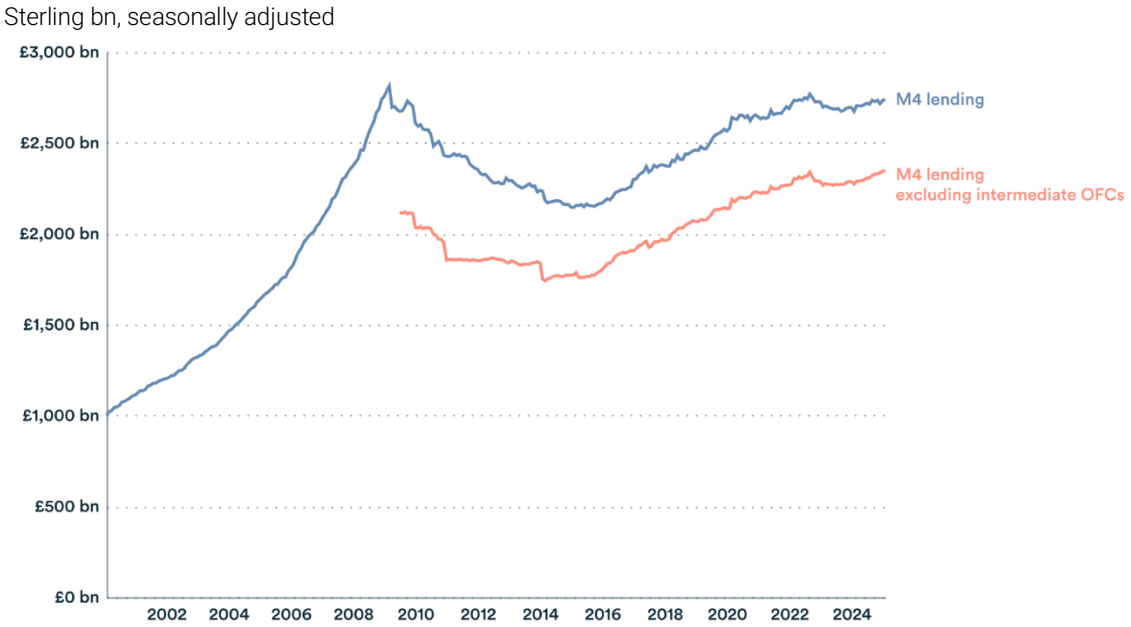
Figure 2.20: Net lending/borrowing, all subjects, in the UK and peer countries



Source: Authors' elaboration using OECD Statistics.

In early 2009, the volume of lending from financial institutions to the UK economy peaked at historic levels. However, following this high point, lending experienced a significant decline until 2015 (Figure 2.21). Since then, a gradual recovery has taken place; however, current lending levels still fall short of the record highs achieved in the past.

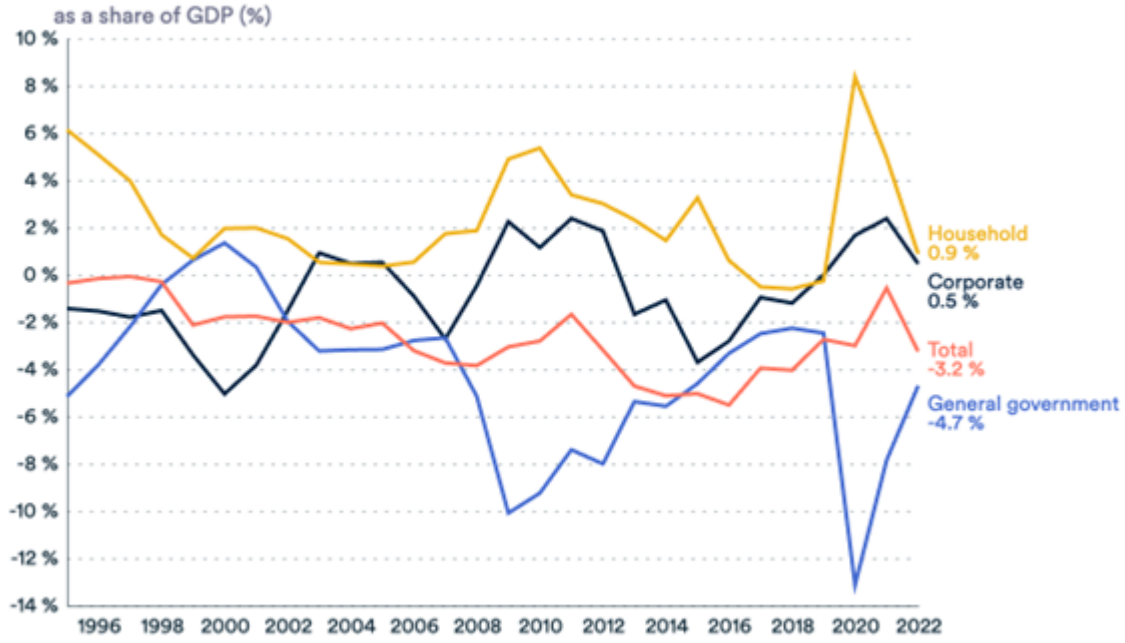
Figure 2.21: Monetary financial institutions' sterling net lending to private sector (M4 lending)



Source: Authors' elaboration based on Bank of England Database.
Note: M4 lending encompasses loans to household sector, private non-financial corporations, and other financial corporations (OFC). Data on M4 lending excluding OFC has been available since July 2009.

When looking deeper into what is driving UK net borrowing, a notable shift can be observed from household net lending to government net borrowing since the 2020 Covid-19 pandemic crisis (Figure 2.22). While the central government's balance sheet is gradually recovering towards lesser borrowing, it is important to note that net lending activities may not always indicate financial health, especially when investment opportunities are not effectively utilised. In this regard, we have discussed earlier that a constraint to UK FSS productivity and economic growth can be linked to low levels of public and private investment, which is a priority that regulators may seek to address.

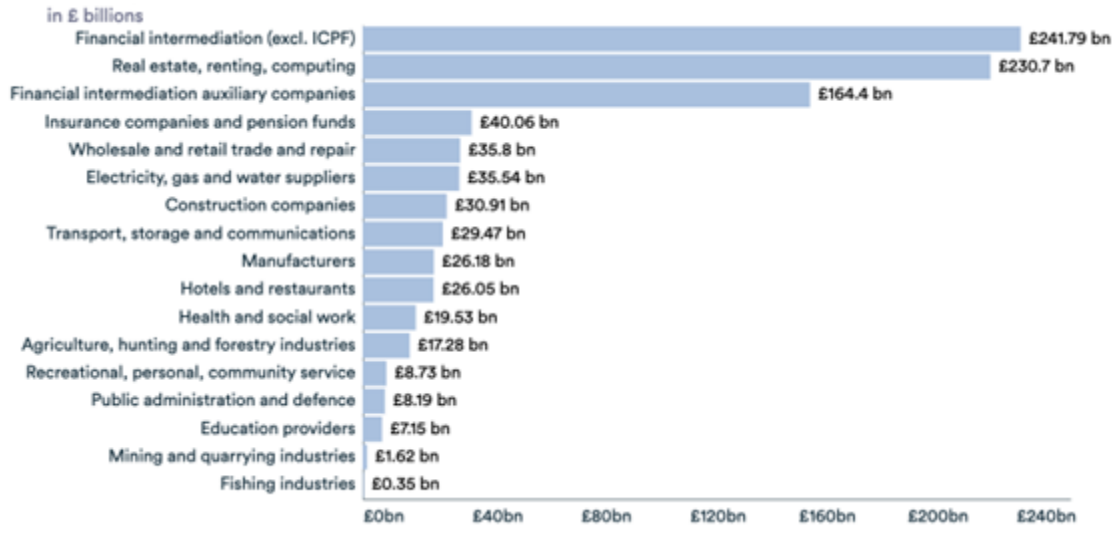
Figure 2.22: Net lending/borrowing by subject



Source: Authors' elaboration using OECD Statistics.

Unsurprisingly, individuals are by far the most reliant upon monetary financial institutions' lending at £1,500bn (Figure 2.23). Differentiated by production sectors, MFI lending primarily benefits financial intermediation, real estate, renting and computing, financial intermediation, and insurance companies and pension funds.

Figure 2.23: Monetary financial institutions lending by sector



Source: Authors elaboration using OECD Statistics, 2024

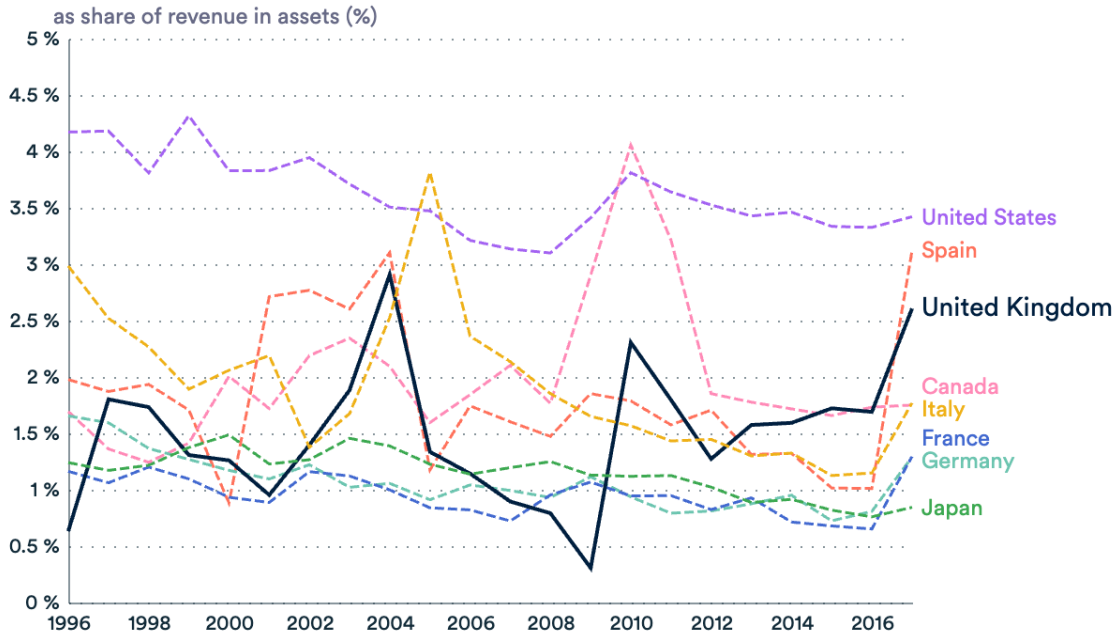
2.4 Financial sector profitability functions

The profitability of the banking sector is also a good way to measure the productivity of this sub-sector. But profitability measures are only relevant for lending activities so would not reflect the productivity in other sub sectors.

The first measure of profitability is the Net Interest Margin (NIM), which measures the profitability of banks' lending activities, that is the difference between interest income generated from loans and interest paid to depositors, relative to interest-earning assets. Britain boasts the third-highest NIM in the G7 (Figure 2.24), meaning that it effectively manages its lending and borrowing activities, generating high income from assets and enhancing its ability to absorb financial shocks.

While NIM is not a direct measure of competition, it can reflect the competitive dynamics within the UK banking sector. In a highly competitive market, the pressure to offer lower lending rates and higher deposit rates can compress NIMs, suggesting intense competition. Conversely, high NIM figures in the UK compared with other EU countries in the aftermath of the GFC may indicate a lack of competition. But NIM is also influenced by broader economic and regulatory factors, such as central bank policies and market conditions. To evaluate market competitiveness comprehensively, NIM should be analysed alongside other indicators, including market concentration, consumer switching rates, and product innovation.

Figure 2.24: Bank NIM in the UK and peer countries

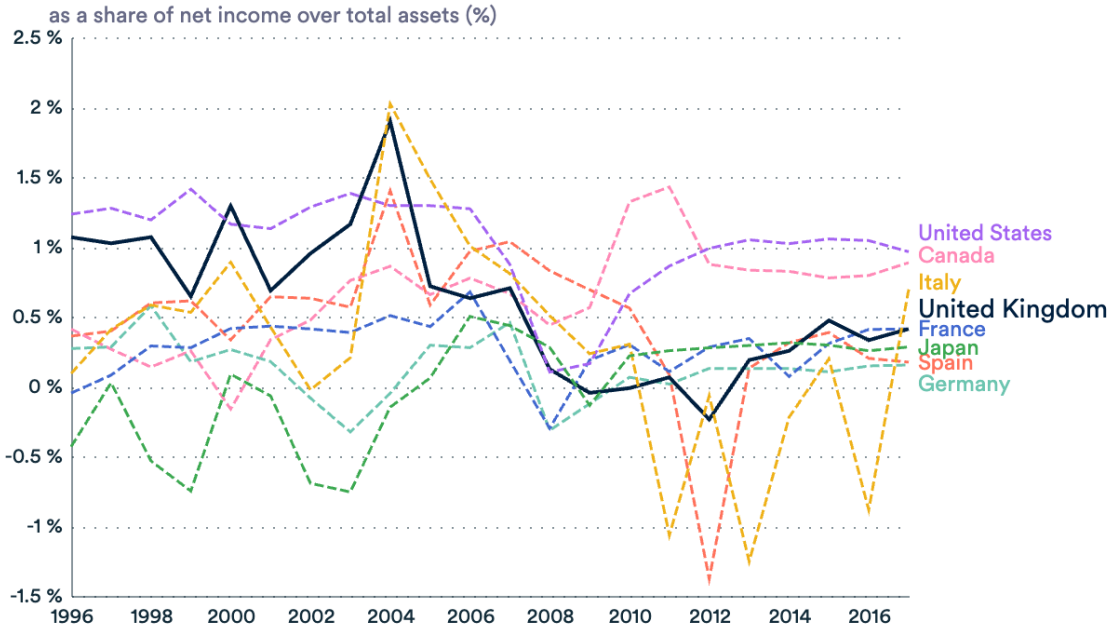


Source: Authors' elaboration using World Bank Financial Structure Database 2019.

The next measures are the average bank return on assets (ROA) and the average bank return on equity (ROE). ROA measures the profitability of banks relative to total assets.

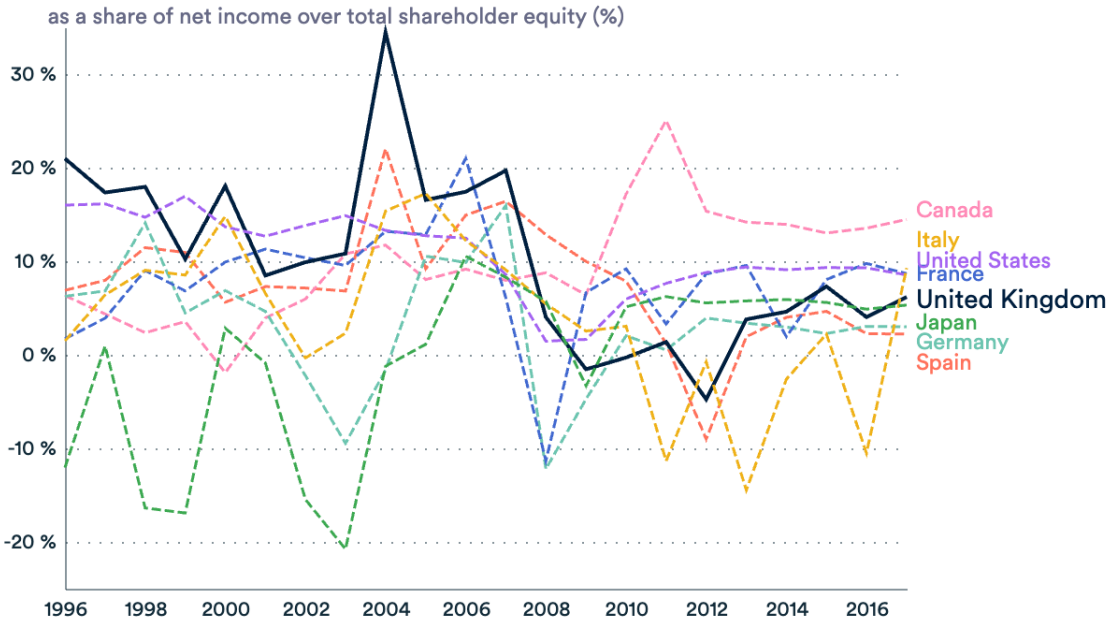
While the UK is in the G7 average, its ROA has continuously decreased since 2005, when it reached its maximum (Figure 2.25). While some economies have since regained their pre-GFC levels, such as Canada and the United States, the UK is still behind and it is still struggling to regain its previous levels. ROE measures bank profitability relative to shareholder equity, indicating how effectively banks leverage equity to generate profits. While the UK boasted the all-time highest ROE out of all G7 countries pre-GFC, reaching 35% in 2005, its investor confidence experienced the largest drop out of all peers, currently at around 6% (Figure 2.26). While now the UK is positioned in the G7 average, this indicates that banks may be ineffectively using equity to generate profits, deterring potential investors and impacting the ability to raise capital.

Figure 2.25: Bank ROA in the UK and peer countries



Source: Authors' elaboration using World Bank Financial Structure Database 2019.

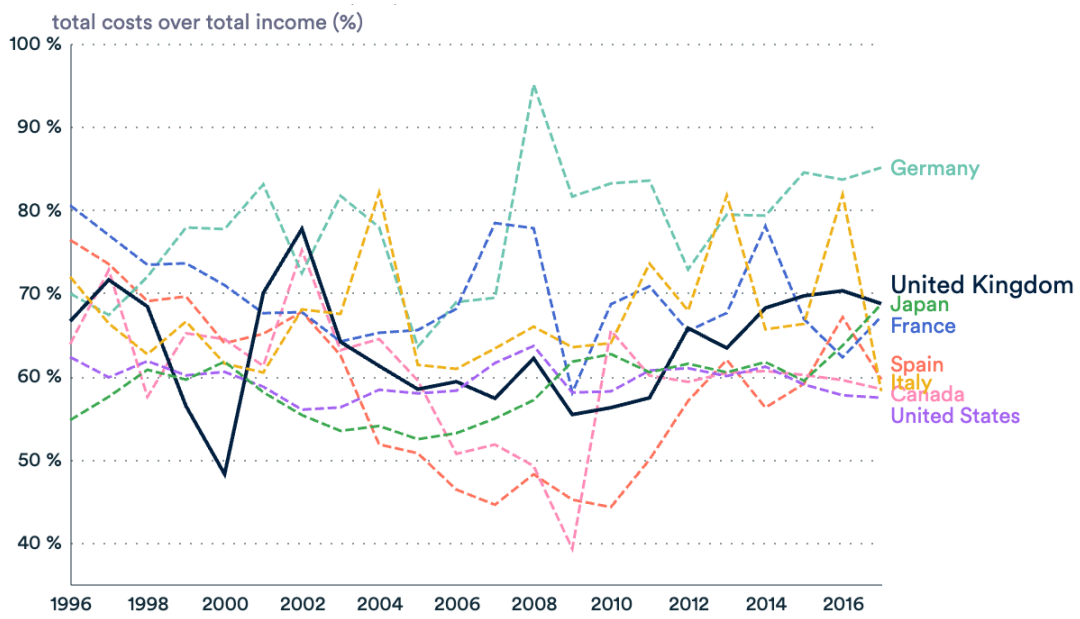
Figure 2.26: Bank ROE in the UK and peer countries



Source: Authors' elaboration using World Bank Financial Structure Database 2019.

Finally, the cost-to-income (CTI) ratio measures the efficiency of banks by comparing operating costs to operating income. While the UK reached the lowest CTI ratio in 2000, indicating high operational resilience and profitability of the financial sector, the UK's CTI is now the second highest in the G7, behind Germany (Figure 2.27). This indicates high operating costs relative to income, increasing vulnerability to economic fluctuations. It is worth noting that while Southern European economies (Italy, Spain, France) were harshly hit by the EU sovereign debt crisis in 2011-12, increasing their CTI, these economies have since shown lower rates than the UK, for which financial activities remain more costly relative to income than its G7 peers.

Figure 2.27: Bank CTI ratio in the UK and peer countries



Source: Authors' elaboration using World Bank Financial Structure Database 2019.

Overall, these measures of banking sector profitability, while not directly accounting for production outputs (GVA) or inputs (share of employment, MFP), primarily assess the sector's efficiency in using capital and economic resources. They serve as an indicator of how much of the value generated through productivity the firm retains as profit. Despite high bank profitability measures in the run-up to the GFC and a strong NIM to date, it appears the UK's financial sector suffered from the largest drop in bank returns (ROA, ROE) and the second-highest CTI ratio of all G7 countries. This may hinder the sector's future productivity gains.

At the same time, these measures are closely related to the competitiveness of the financial sector. A competitive financial sector plays a crucial role in driving economic growth, as higher productivity enables more efficient resource allocation, fosters deep and well-functioning capital markets, drives innovation, and enhances overall economic dynamism (Siciliani et al., 2023). But the UK and Europe in general have struggled to maintain their competitiveness against the United States, with significant implications for productivity. Over the past 15 years, the European financial services industry has lost market share to the United States and Asia. The United States benefits from a more unified domestic capital market, allowing Wall Street to leverage agglomeration effects and build scale, while its entrepreneurial and risk-seeking culture encourages diversified investments. Additionally, long-standing government initiatives, such as 401k savings programs, have nurtured a strong capital markets culture since the 1930s (Horwood, Sanghani, and Pearce, 2024). As a result, US banks enjoy higher market valuations than their European counterparts.

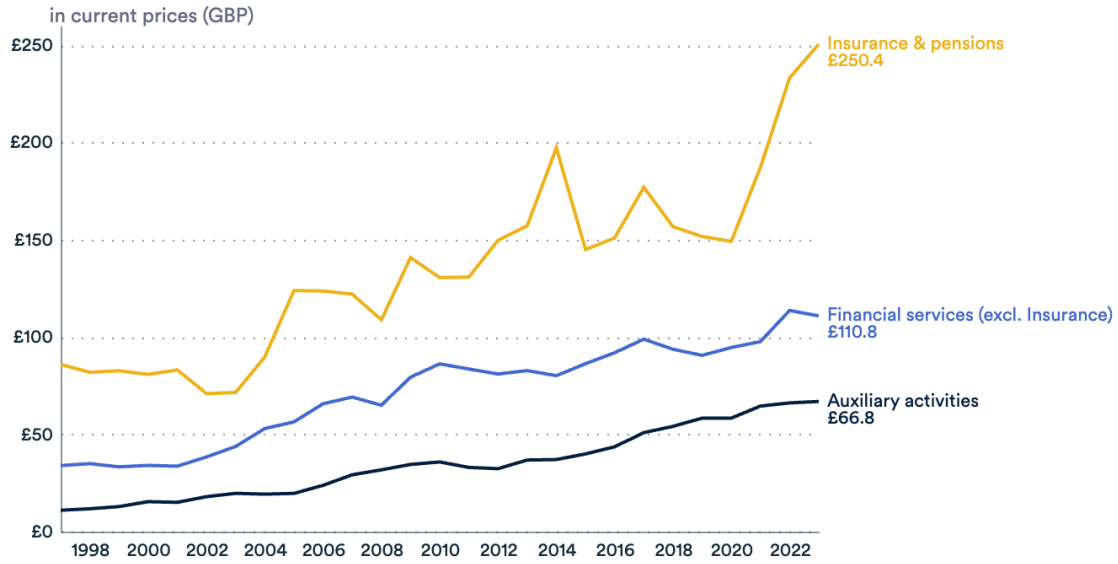
While regulatory frameworks play a crucial role in fostering financial sector innovation, the UK and Europe face challenges in striking a balance between prudential standards and financial sector competitiveness. Without targeted reforms to enhance capital market efficiency, regulatory adaptability, and investment incentives, the UK and Europe risk falling further behind in global financial competitiveness, which could further constrain productivity growth.

2.5 Productivity in financial sector sub-sectors

The insurance, reinsurance and pension funding sub-sector demonstrates the highest productivity levels in the UK in nominal terms (Figure 2.28). One hour of insurance work generates approximately £250 per hour in current GBP prices, against £110 for financial activities and £66 for auxiliary activities (ONS Blue Book, 2024). Looking at productivity growth by sub-industries measured as output per hour growth (relative to the 2022 base), financial activities both experienced the highest productivity growth pre-2007 and the largest productivity decline post-2007 (Figure 2.29). In real terms, financial sector productivity growth (excluding insurance and auxiliary services) has declined since the GFC (Figure 2.29).

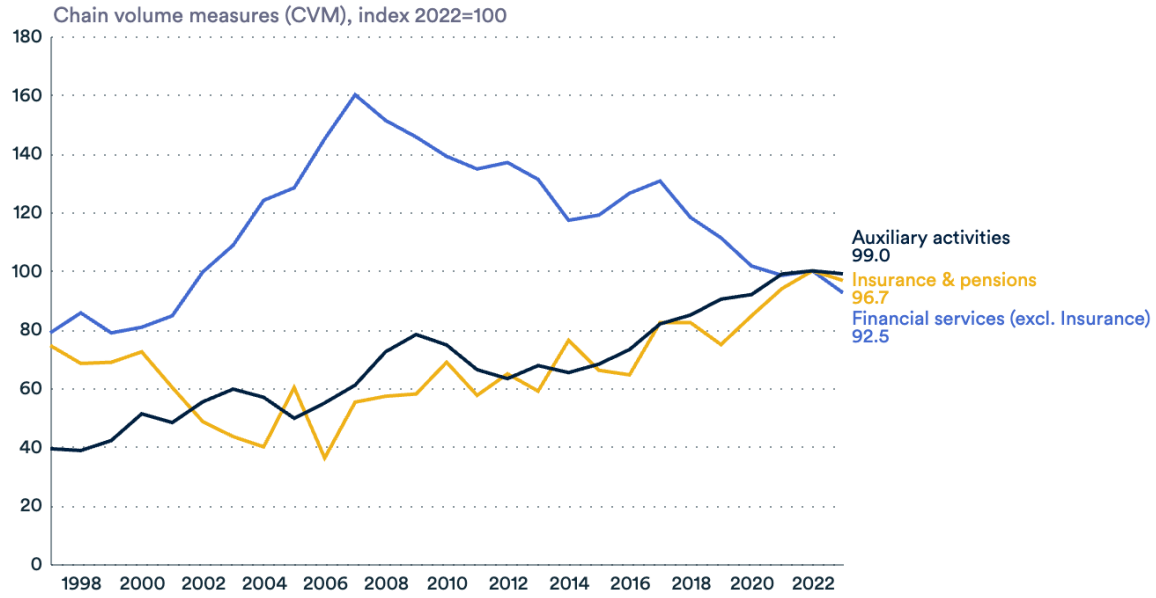
While the aggregate financial services sector is commonly depicted as one of the economy's most productive sectors, financial activities appear less productive when excluding other sub-industries such as insurance and pension funding.

Figure 2.28: Annual output per hour worked in the financial sector sub-industries



Source: Authors' elaboration using ONS Statistics.
Note: Full ONS labels are: 'Financial service activities, except insurance and pension funding', 'Insurance, reinsurance and pension funding, except compulsory social security', and 'Auxiliary activities to financial services and insurance activities'. Auxiliary activities are those closely related to financial services but not themselves providing financial services. For example, financial transactions and settlement processing activities. Figures are given in current GBP prices.

Figure 2.29: Annual output per hour worked growth in the financial sector sub-industries



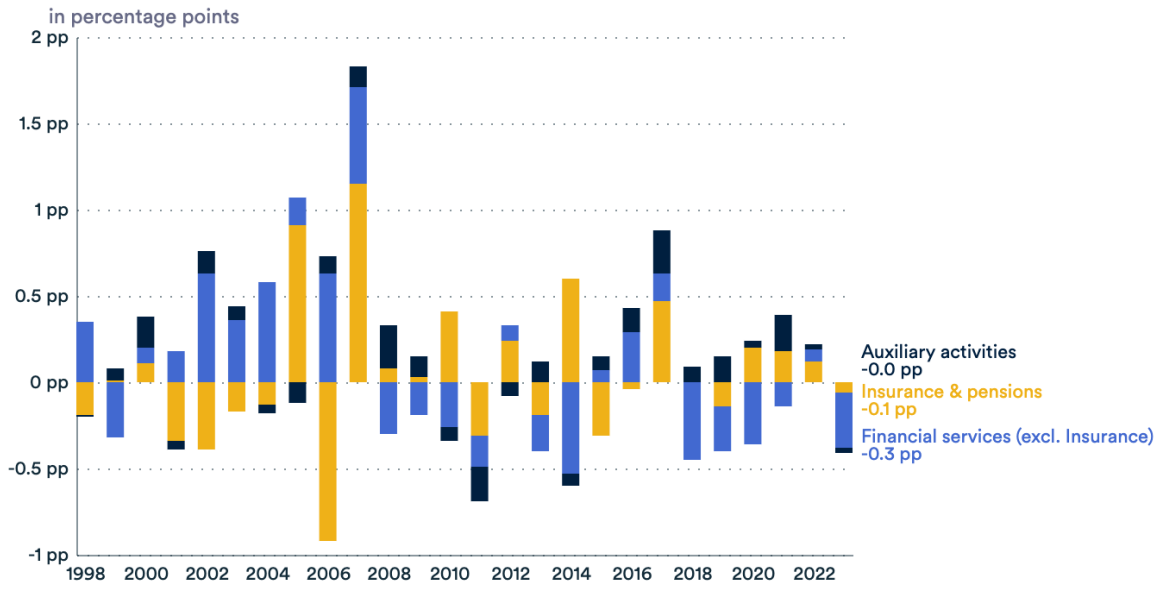
Source: Authors' elaboration using ONS Statistics.
Note: Full ONS labels are: 'Financial service activities, except insurance and pension funding', 'Insurance, reinsurance and pension funding, except compulsory social security', and 'Auxiliary activities to financial services and insurance activities'. Auxiliary activities are those closely related to financial services but not themselves providing financial services. For example, financial transactions and settlement processing activities. Figures are given in chained volume measures (CVM), index 2022=100. This data is indexed so must be read as relative values (evolutions) rather than absolute values.

In terms of the contribution of financial sector sub-industries to annual productivity growth, the insurance, reinsurance and pension funding sub-sector boasts the highest contribution to financial services productivity growth. The sole financial services sector (excluding insurance and auxiliary activities) entailed the most negative contribution (-0.3pp) to productivity growth among financial services sub-sectors in 2023 (Figure 2.30). While insurance and pension funding productivity have driven financial services productivity to high levels, other financial activities are lagging in terms of productivity and productivity growth.

There are a number of possible explanations for the large productivity growth of the insurance and pension funding. First, the reliance of this sub-sector on automation and actuarial models to assess risk and manage portfolios. Second, the investment in long-term, reliable and stable assets that generate steady returns and reduce costs of constant trading. Third, regulatory stability as sectoral regulation encourages capital efficiency and prudent investment without facing strict capital reserve requirements due to highly predictable income streams. Finally, higher asset-to-labour ratios, meaning that the sector manages a large amount of financial assets relative to the workforce, lead to higher productivity per worker.

As the insurance, reinsurance and pension funding sub-sector has experienced much faster and more acute productivity gains than the financial services activities sub-sector, aiming for policies that promote productivity in the financial services activities is crucial to drive sustained productivity gains.

Figure 2.30: UK FSS sub-industries' contributions to year-on-year output per hour growth



Source: Authors' elaboration using ONS Statistics.
Note: Note: Full ONS labels are: 'Financial service activities, except insurance and pension funding', 'Insurance, reinsurance and pension funding, except compulsory social security', and 'Auxiliary activities to financial services and insurance activities'. Auxiliary activities are those closely related to financial services but not themselves providing financial services. For example, financial transactions and settlement processing activities. Figures are given in percentage points.

2.6 Limitations of traditional productivity measures

Traditional approaches often fail to capture the full scope of financial activities. Key metrics, such as GVA, FISIM and data from the LFS, have methodological limitations that can distort productivity assessments. For example, FISIM relies on interest rate margins that may not accurately reflect productive financial services. Similarly, LFS data is constrained by sampling limitations that reduce industry-specific accuracy (Table 2.1).

These shortcomings underscore the need for additional research and discussion on the methodology and measurement techniques that more accurately reflect the complexities of financial sector productivity.

It is important to recognise that the ONS, like all statistical authorities, follows international guidelines in compiling national accounts. Metrics such as GVA and FISIM are strictly defined within this framework, meaning adjustments must align with established methodologies. While these guidelines ensure consistency and comparability across countries and industries, they also present inherent limitations in capturing the full breadth of financial sector productivity. Acknowledging both the necessity of these standards and their constraints can help to inform discussions on potential refinements or complementary measures to improve financial productivity assessments.

Table 2.1: Productivity metrics and empirical limitations

Productivity metric	Limitations
GVA	This methodology uses different approaches for each sub-sector of financial services: • Banks and building societies: output is estimated based on FISIM, fees and commissions, net spread earnings and other operating income • Insurance and pension providers: output was estimated based on employee numbers and compensation (derived from LFS) until June 2022. Post June 2022, output estimation uses premiums paid by policyholders (for the insurance sub-sector) and service charges and fees levied by pension scheme administrators (for the pension sub-sector) • Auxiliary financial services providers: output estimated based on employee numbers and compensation Accordingly, potential issues include: • Profits and losses from banks' assets are not counted as output, like other parts of the national accounts. Trading only affects measured outputs if customers pay fees or commissions, or if banks buy or sell assets at prices different from the market's mid-price (Burgess, 2011). • Employee numbers are not a good proxy for productivity in auxiliary financial services sectors
FISIM	Indirect measures of productivity may be only a proxy of the services they intend to capture. The calculation of FISIM relies on the margin the bank makes relative to a benchmark rate. The choice of a reference rate affects the measurement:

	• A risk-free rate may overestimate banks' margins, while a risk-inclusive rate may better reflect actual financial services output. • FISIM calculations often include risk premia, which some argue overstates financial sector output by treating risk-taking as a productive service.
LFS	Methodological issues: • Sample design provides no guarantee of adequate coverage of any industry because the survey is not stratified by type of industry. • Declining response rates, with response rates falling from approximately 40% to 13%. This decline has led to reduced sample sizes, affecting the accuracy and representativeness of the data.

3 Qualitative Research

3.1 Interview findings

A series of interviews were conducted with academics and practitioners in the financial services sector[4] to understand the productivity trends after the GFC (see Annex 8.2). The discussion also focused on the relationship between productivity growth in the financial sector and systemic risks, the role of regulation in promoting growth while mitigating risks, and views on improved productivity measures for the financial sector and its sub-sectors. The interviews also touched on their opinion on artificial intelligence (AI) and new technologies to enhance productivity and growth.

Participants noted the limitations of traditional productivity measurement methods, highlighting that measures of productivity based on comparing the level of outputs to inputs may not be suitable for the financial services sector. Academics recommended speaking with financial sector practitioners to get direct feedback on how the sector tracks and measures its productivity. Participants also indicated that regulatory factors may contribute to the declining trend in financial productivity following the GFC. They also highlighted the challenges and risks facing both the economy and the regulatory frameworks while emphasising the growing importance of new technologies in enhancing productivity in the sector. Below is a summary of the main findings from the interviews that are solely based on the interviewees' responses:

- Limitations of productivity measurement: the output approach to measuring productivity has significant limitations, as it fails to accurately reflect efficiency within the financial sector. Metrics such as bank profitability and value-added indicators can be misleading and influenced by variables like interest rate fluctuations, shifts in market power, and regulatory changes. While incorporating sector-specific metrics—such as the number of loans or transactions processed per employee—could provide more accuracy, achieving this without compromising national statistical consistency poses a considerable challenge.
- Impact of regulation post-GFC: before the GFC, productivity levels in the financial sector appeared elevated, largely due to the prevalence of high-risk, high-return financial instruments. But in the wake of the crisis, the implementation of stricter regulations and robust risk mitigation strategies has led to a decline in productivity within the sector. While UK productivity has stagnated, other countries have experienced more robust recoveries. Additionally, both Brexit and the Covid-19 pandemic have adversely affected financial services performance by limiting access to European markets and necessitating remote working arrangements, the

[4] Interviews were conducted with three academics from LSE, Oxford and Nottingham and three practitioners from HSBC and the PRA, during the first two weeks of March 2025.

long-term productivity implications of which remain uncertain.

- Regulatory challenges: it is essential to achieve a balance between maintaining financial stability and fostering innovation and efficiency within the financial sector. Certain regulatory burdens could be alleviated to enhance competitiveness and promote efficiency. For example, participants in the banking sector noted that changes in compliance regulations—what they can or cannot say, and what they can or cannot do—have become exceedingly restrictive. They also highlighted that the number of people who must be involved in communicating across the bank, for example, someone from research to someone on the retail side of the bank, is overwhelming and inefficient. Furthermore, the increase in compliance officers has been significant: a floor that was once dedicated to research now accommodates more than half its staff with lawyers.

  Academics have also signalled potential issues around excessive regulation and productivity slowdown. Regarding this, they mentioned that the massive move towards financial services regulation post-GFC signified that many instruments traded pre-crisis are no longer allowed. High-risk products that generated significant profits cannot be issued anymore. This has led to a reduction in the types of services and products that can be offered. Academics also highlighted the important role of existing regulations, such as capital requirements (that some financial institutions would prefer to push down), as the GFC showed that when banks lack adequate capital buffers, the taxpayer ends up bearing the cost. While excessive capital buffers could reduce efficiency, adequate capital requirements can reduce the exposure of the system to greater risks. But other aspects of financial regulation may be disproportionate, for example, the bonus cap, as the government should regulate institutions' safety and soundness rather than dictate their compensation structures.

  Furthermore, Brexit also impacted financial services, as many trades that used to be channelled through London are now subject to different regulations. The loss of equivalences with European regulations has reduced the amount of work and services that can be offered. Concerning regulatory innovation, they mentioned that the UK has fallen behind in terms of adopting new technologies like digital currencies while other markets, like North America, have embraced these innovations. The United States has historically done more than Europe in financial regulation. Within Europe, the UK has been more proactive than the rest of the EU. What happens next in the United States is uncertain, but the regulatory landscape continues to evolve.

- Risks to the overall economy: geopolitical risks, legal challenges, fluctuations in interest rates and rising public debt levels pose significant concerns for the economy. Recent failures serve as a reminder that even minor institutional collapses can have far-reaching consequences. It is crucial to recognise the cyclical nature of financial risk: as stability increases over time, regulatory measures tend to be

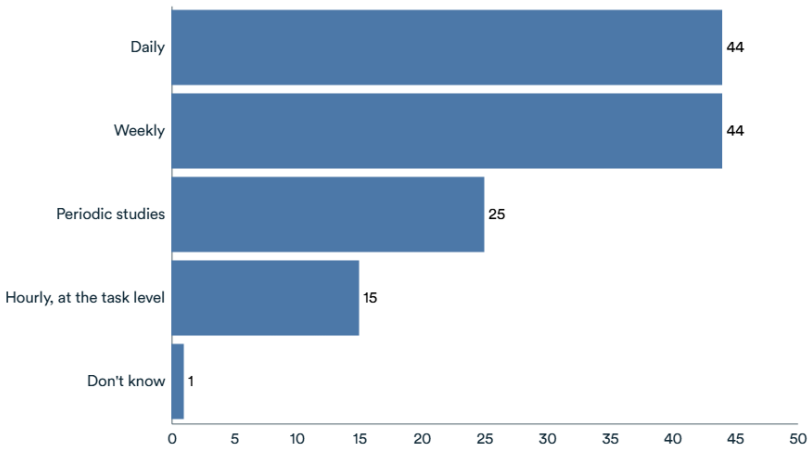
relaxed, which can lead to the accumulation of risks and ultimately trigger crises.

- Adoption of new technologies and associated risks: the integration of artificial intelligence (AI) is anticipated to considerably enhance productivity by automating routine financial operations. But this advancement may exacerbate inequality, as low- to middle-skilled workers are more susceptible to displacement. Furthermore, the introduction of new technologies brings inherent risks, including regulatory uncertainty, cybersecurity threats and ethical dilemmas. The UK has adopted a cautious approach towards financial technology innovations, such as digital currencies, and currently lags behind North America and Asia in this domain.

3.2 Survey analysis

A significant number of financial firms actively track productivity and implement change management strategies and new technologies to enhance it. Approximately 77% of global financial organisations monitor productivity, with China and India leading at 96% each (PwC, 2021). While daily and weekly tracking is common, fewer than four in ten firms believe that this monitoring effectively enhances workforce productivity (Figure 3.1). Challenges to implementing additional productivity measures include concerns about high costs and resistance from employees.

Figure 3.1. At what level is productivity tracking performed?



Source: Authors' elaboration based on PwC Productivity 2021 and beyond.

Other strategies that firms have adopted for effective organisational transformation and boosting productivity are change management functions and technology adoption. Around 77% of financial firms have established a dedicated change management function, and 85% of these firms report satisfaction with its effectiveness in facilitating organisational transformation. For example, companies are adopting agile methodologies and crowdsourcing platforms to improve business efficiency and find

innovative ideas. Additionally, over one-third of firms are using new technologies to enhance productivity, with adoption rates for AI at 54%, deep learning at 40%, and robotic process automation at 37% (PwC, 2021). The primary barriers to successful technology implementation include a lack of a coordinated strategy, perceived limited benefits relative to costs and challenges posed by legacy systems.

Relating to recent regulatory changes, survey analysis indicates that these changes are having a significant impact on the financial services sector. Around 64% of UK-based financial services businesses indicated that the introduction of Consumer Duty in July 2023 has fundamentally changed their customer services practices. Furthermore, 36% of respondents have faced penalties at least once for non-compliance with regulatory requirements (Davies, 2024).

Regulatory compliance is regarded as one of the major challenges in the UK financial services sector, where 72% of respondents believe that keeping up with evolving regulatory requirements has become increasingly difficult over the past five years. Additionally, 43% of decision-makers identified regulatory compliance as the second-biggest challenge, following economic turbulence (Davies, 2024).

3.3 Productivity measures used by practitioners in different sub-sectors of financial services

As mentioned above, several interview respondents noted that traditional measures of productivity such as GVA or the 'output versus inputs' approach have limitations when it comes to measuring financial services activities. In response to their suggestions, four further interviews were conducted with practitioners from various sub-sectors of financial services (capital markets, corporate banking, retail banking and asset management) to explore how they track and measure their performance, and use these metrics as proxy measures of productivity.

Given the diverse nature of financial services, productivity measurement must be tailored to the unique characteristics of each sub-sector. Traditional economy-wide metrics often fail to capture the nuances of financial activities, making it essential to consider sector-specific indicators that practitioners actively track. This report outlines key productivity measures used across different financial services sub-sectors, including banks and building societies, insurance and pension providers, and auxiliary financial services (Table 3.1). Examining industry-specific outputs provides a more accurate reflection of how practitioners assess productivity within each segment of the financial sector.

Table 3.1: Financial services sub-sectors proposed productivity outputs

Sub-sector	Key productivity outputs
Retail banking	• Deposits (£) • Deposit growth • Deposit spread revenue (Transfer pricing rate – deposit rate) • Number of new client accounts opened • Number of clients met per week
Retail lending	Sales • New loans disbursed (£) • Number of new loans disbursed • Loan spread revenue (loan rate – transfer pricing rate) Risk management • Default rate • Net credit losses • Number of loans approved • Number of loans rejected
Insurance	Distribution • Number of new policies sold • Sales commissions (£) • Number of new clients acquired/number of prospective clients met Manufacture • Value of new business (i.e. present value of future premiums) • Amount of new business premiums (£) • Assets under management (£) • Profits (£)
Investments (retail and wholesale)	Distribution • Number of new client accounts • Sales commissions (£) • Number of new clients acquired/number of prospective clients met

	Manufacture • Fees (£) • Assets under management (£) • Returns on investment (compared to benchmarks
Wholesale financial markets	Primary Markets – Advisory • Advisory Fees (£) • Number of Deals Signed • Number of Deals Closed • Size of Deals (£) • Number of clients met per week Primary Markets – Arranging • Arranger Fees (£) • Number of Deals Closed • Size of Deals (£) • Number of clients met per week Secondary Markets • Trading Revenues (£) • Trading Commissions (£) • Trading Volumes (£) Corporate Banking – Origination • Deposits (£) • Deposits growth • Loan Assets (£) • Loan Growth • Number of clients met per week • Number of new clients acquired Corporate Banking – Risk Management • Net Credit Losses • Risk Weighted Assets • Return on Risk Capital

3.4 Recommendations to improve productivity measures

Some limitations of current productivity measures were mentioned in section 2.6 of this report. This highlights the need for further research and discussion on constructing proxy indicators or alternative indicators for FSS productivity. Some recommendations are suggested below:

1. Given the limitations of traditional measures of productivity and considering the indicators used by practitioners, as outlined in sub-section 3.3, regulators may explore the introduction of new complementary proxy indicators for productivity within the financial services sector, organised by sub-sector. Potential productivity indicators could include ratios such as new loans per employee and new deposits per employee for banks and building societies, along with sales commissions per employee for insurers. Additionally, profitability indicators applicable across the entire financial sector, such as revenue per employee, may also be considered. One of the key advantages of these proxy indicators is their ease of interpretation and understanding among all stakeholders in the financial system.

2. For the Auxiliary Financial Services sub-sector, a more fundamental revision in ONS's approach for determining the sector's GVA is merited. Indeed, the ONS has recognised the limitations of using employment-based proxies (using the Labour Force Survey) to measure FSS output, as financial services generate high value with relatively low employment shares. Additionally, employment data is unable to perfectly capture regional variations in output, and hence productivity (Harris 2018). While the auxiliary financial services subsector represents 15% of total FSS output, its value added calculation methodology remains relatively vague, relying on a 'range of measures' (Burgess, 2011). As such, this report recommends investigating other metrics that are directly linked to sector output rather than employment proxies. Suggested metrics include asset management fees (similar to how the ONS uses service charges for pension schemes as a proxy for pension provider output). These metrics would provide a better estimation of output and productivity in the Auxiliary Financial Services sub-sector, which includes the critical asset management industry.

3. Lastly, the interviews with financial sector practitioners yielded another perspective towards determining the impact of regulation on financial sector productivity. One practitioner suggested that rather than directly measuring productivity from output, it would be valuable for regulators to track the impact of regulation on alternative metrics like time to bring a new product to market or time to file an initial public offering (IPO) prospectus. These metrics would be more directly linked to regulations and hence allow regulators to assess regulatory impact more accurately.

4 Risk mapping

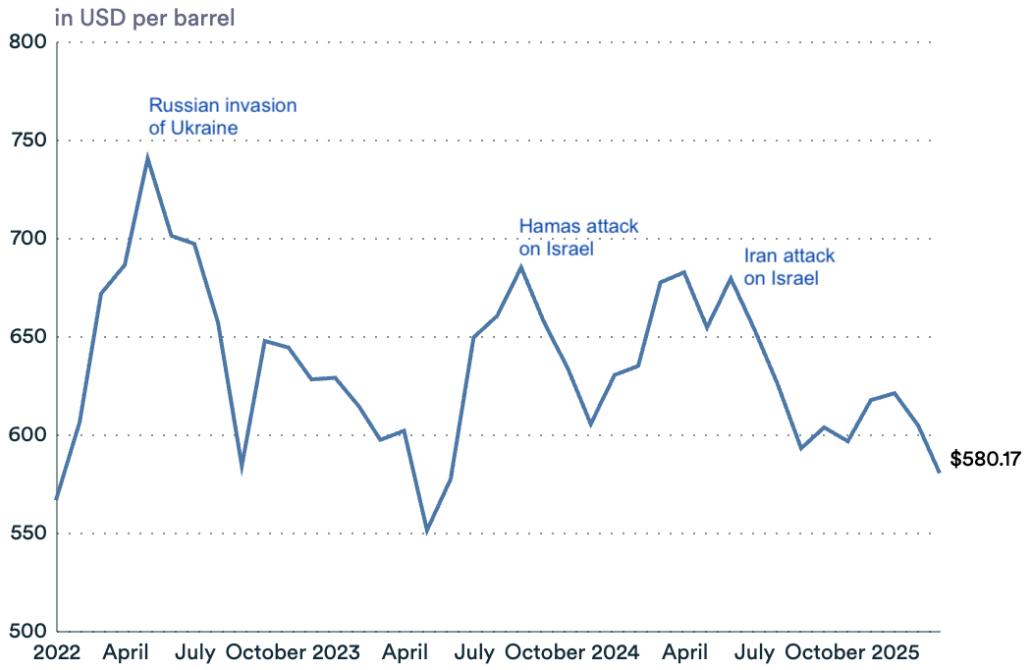
The financial sector plays a critical role in economic stability but is also a source of systemic risks that can amplify economic shocks. Understanding these risks and their transmission mechanisms is essential for policymakers and financial institutions to mitigate potential disruptions. This framework categorises key financial sector risks into three broad areas: financial stability risks, resource misallocation risks, and macroprudential risk diffusion.

4.1. Financial stability risks

The major risks the UK's financial system poses to global financial and economic stability are increased global tensions, sovereign debt concerns, market uncertainty and asset valuation risks (Bank of England, 2024; Bailey, 2024).

Geopolitical tensions (the Middle East conflict, the Ukraine-Russia war and China-US relations) have increased global macroeconomic risks by increasing the volatility of oil prices and financial markets (Figure 4.1). As a heavily integrated open economy with a large financial sector, the UK is highly sensitive to these external shocks. These exacerbate the risks of global fragmentation of trade, financial markets, and investment and capital flows. Additionally, global fragmentation poses significant threats to long-run growth and increases financial market volatility, uncertainty of economic outcomes and rising inflation, which can impact asset valuation.

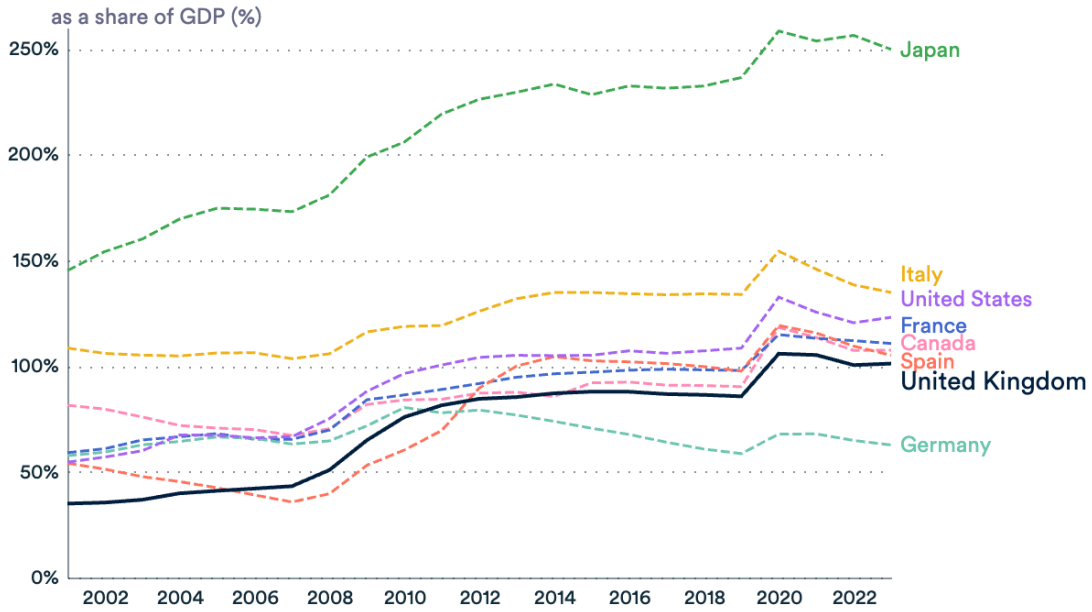
Figure 4.1. Implied volatility of Brent three-month forward oil prices



Source: Authors' elaboration using Bank of England and Bloomberg statistics.

High levels of public debt in major economies, including the UK (Figure 4.2), could have interaction effects with other financial vulnerabilities. These debt levels could affect UK financial stability by deteriorating market confidence in sovereign debt sustainability, limiting fiscal flexibility and government capacity to respond to future shocks, and enhancing exchange rate volatility and capital outflows.

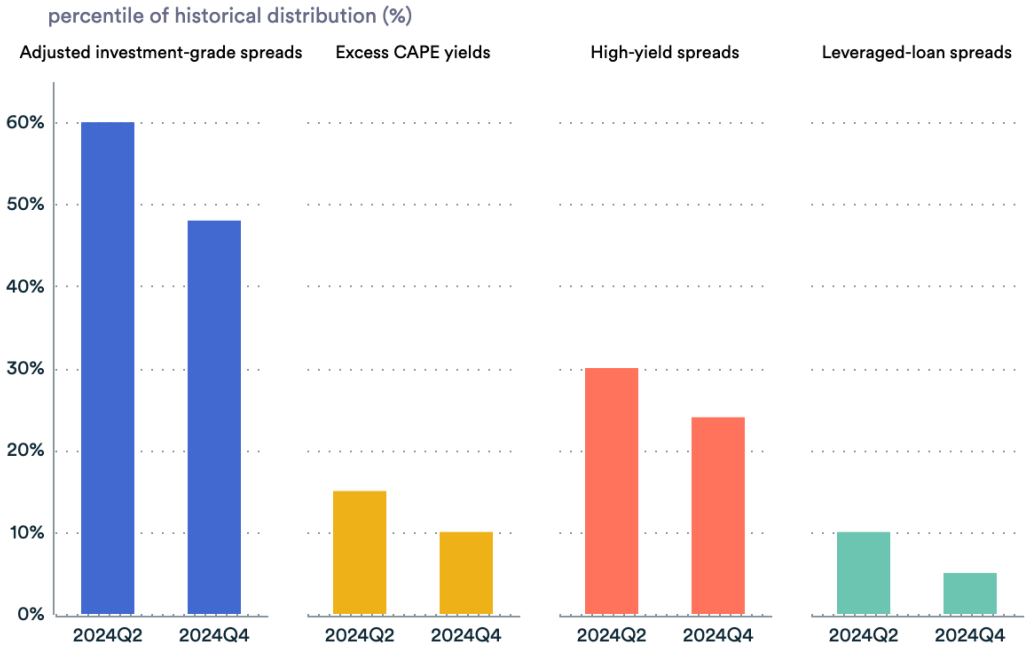
Figure 4.2. Sovereign debt in the UK and peer countries



Source: Authors' elaboration using Bank of England, IMF and LSEG statistics.

While the UK's financial markets remain robust, it has increased their sensitivity to global shocks. Market volatility in UK financial markets was high during the run-up to the US election, and although market liquidity measures have recently been better than historical averages, the uncertainty about future US economic policy remain a threat to global financial market stability. But risk premia by asset classes, which gives an indication of the shadow price of risks in the financial sector, has shown a positive trend, as risk premia are lower than their historical distributions (Figure 4.3).

Figure 4.3. GBP risk premia metrics compared to Bank of England Financial Policy Committee 2024 Q2 levels



Source: Authors' elaboration using Bank of England, Bloomberg Finance LP, LSEG, ICE BofAML, PitchBook data.

Uncertainty persists around asset valuation. Asset valuations have risen across several markets (mortgage valuations, FTSE 100 and FTSE 350, strong banking sector capitalisation and asset quality); But these may not accurately reflect the underlying risks associated with financial markets. For example, interest rates have risen to higher levels than expected, exceeding investor expectations. Furthermore, despite recent income growth, households remain under high cost-of-living and interest rate pressures (Alliance News, 2024).

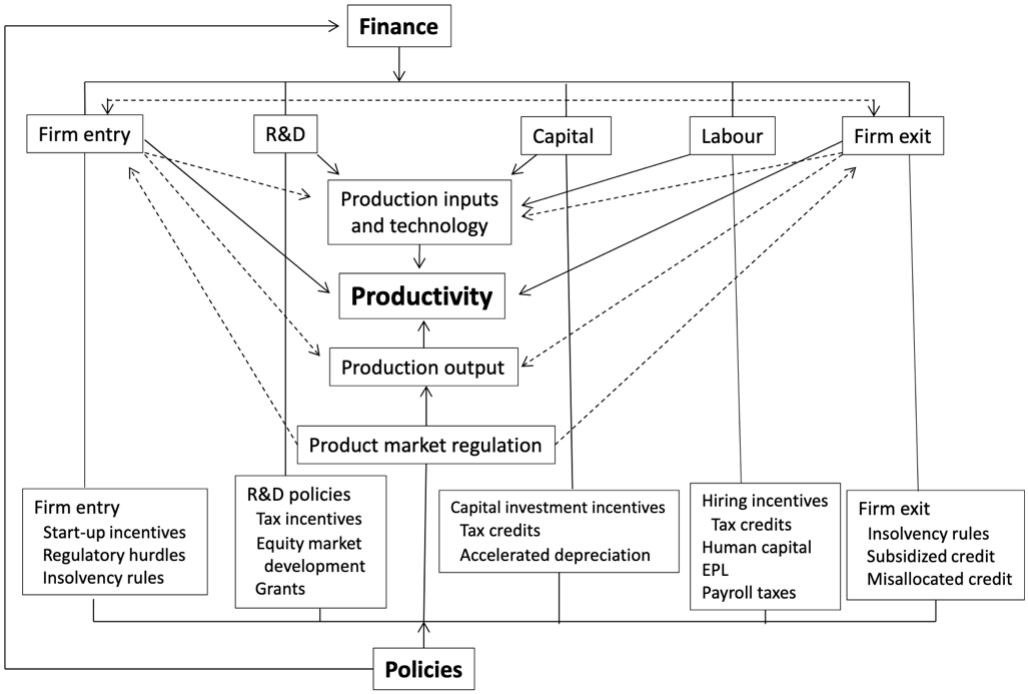
4.2. Resource misallocation risks

While finance significantly contributes to productivity growth, financial frictions can also lead to productivity losses (Figure 4.4). Both single-country and cross-country studies have shown that various financial frictions can obstruct productivity growth by hindering optimal resource allocation, reducing competition, impairing capital investment, hindering the adoption of advanced technologies, and distorting incentives for efficient capital allocation (Heil, 2017). Some evidence suggests that financial frictions may account for a substantial portion of the productivity disparities between developed and developing countries.

Financial frictions across financial markets pose the risk of leading to suboptimal credit allocation, affecting business investment and reducing the overall level of productivity.

While this is mainly a risk for developing economies, the size of the UK's financial sector could make financial frictions more sizeable. Furthermore, academic literature has shown that financial constraints can curb human capital accumulation, as higher education attainment is strongly correlated with family income and wealth (Heil, 2017; Becker, 1967). Financial frictions in a highly developed financial system like the UK may still result in significant credit constraints and human capital shortage. On the opposite side, there is the risk of excessive credit expansion that can lead to financial instability.

Figure 4.4. The productivity, finance and policy nexus



Source: Heil, 2017, OECD

A large area of academic research has sought to analyse the effects of financial development on growth, using cross-sectional, time-series and ordinary least squares panel regressions. These studies found that, while financial sector growth can contribute to economic development, excessive financialisation may entail diminishing returns to growth (see Annex 8.1). Indeed, the late 1990s saw significant productivity contributions from the US financial sector, though these were not sustained. Research on bank economies of scale does not consistently support efficiency gains for the largest banks.

Empirical evidence suggests that financial development helps reduce capital constraints by efficiently allocating capital to productive enterprises (King and Levine, 1993; Beck, 2015; Heil, 2017), although potential distortions in capital allocation can lead to speculative activities over productive investments. Nonetheless, all studies in Annex 8.1 analyse a positive causal relationship between financial development and

growth, at least up to a certain point.

Non-linear studies between financial development and growth using polynomial or quadratic functional forms posit that, beyond a certain threshold, increased financial sector size can slow economic growth (Cecchetti and Kharroubi, 2015; Arcand, Berkes, and Panizza, 2012; Christensen, Shaxson, and Wigan, 2016) (see Annex 8.1, Table 8.2). Regarding this, most studies from the literature find that private credit beyond 100% of GDP has a detrimental effect on economic growth.

It is however important to note that these results are purely correlative and cannot be understood as causal, as causally linking financial development to growth is complicated by a variety of confounding factors, making such identification strategies purely correlative.

4.3. Macroprudential risks and the diffusion of risks to the broader economy

The development of geopolitical tensions in recent months has increased the need for adequate responses from regulators in the event of heightened financial fragility (European Central Bank, 2024). Rising geopolitical uncertainties create complex and interconnected risks that affect financial stability, disrupting financial markets, economic activity and policy coordination. These directly affect banks, potentially leading to price fluctuations, market and global capital flow disruptions, and increased market volatility. These risks differentiate themselves from more 'traditional' risks as they are less predictable, more interconnected, diverse and hard to quantify, and in general, there is a lack of information around them (Table 4.1)

Table 4.1: Financial services macroprudential risks: geopolitical vs traditional risks

Characteristic	Geopolitical risk	Traditional risk
Predictability	Low: geopolitical events can emerge unexpectedly and escalate quickly.	High: economic cycles and market trends can be better modelled with historical data.
Interdependencies	High: involves complex, interconnected relationships between political events, economic impacts, and the financial system across countries, regions, and institutions.	Low: generally, more contained within financial systems and less influenced by non-economic events.

Quantification	Difficult: cannot be easily quantified or modelled probabilistically due to inherent uncertainty.	Easier: can often be quantified using historical data and probabilistic models (e.g. credit scores, value at risk).
Ambiguity	High: characterised by a lack of clear information, leading to challenges in defining responses.	Low: more data-driven with clearer information available for decision-making.
Range of outcomes	High: potential scenarios are diverse and can vary significantly.	Low: outcomes are generally more predictable within a certain range based on historical patterns.

Source: ECB, 2024

Financial sector risks propagate through multiple channels. The European Systemic Risk Board (ESBR) has developed a classification of the main transmission channels of systemic or geopolitical risks to banks and the global macro-financial sector. These risks may affect the greater economy via three main pathways: financial markets channel, the real economy channel, or safety and security systems channel.

- Financial markets channel: depicts how geopolitical shocks lead to market uncertainty for investors, leading to market volatility and disrupting global capital flows. This transmission channel has been verified multiple times: the Panic of 1997, the hyperinflation of World War I, the Great Depression, The World War II defaults, the 1970s emerging market crisis and Japanese banking crises, the 1973 oil shock inflation or the GFC. These crises were partly driven by the interaction of economic vulnerability and political crises, rapidly displacing risk to the markets.
- Real economy channel: occurs when geopolitical events disrupt global supply chains and trade flows, posing significant downside risks to global growth and international trade dynamics. Additionally, this channel raises concerns about public debt sustainability (often exacerbated to foster countercyclical economic policy), potentially lowering investor confidence in credit solvency. Finally, it is worth mentioning that the real economy channel has a differential impact on specific sub-sectors, the energy sector being particularly prone.
- Safety and security channel: occurs through bank's operations. These materialise as physical risks (physical damage to assets and infrastructure), cybersecurity risks (cyberattacks), operational risks (damaged infrastructure

and service interruptions), and policy responses (economic sanctions, trade barriers, etc).

4.4. Risk mapping and mitigation strategies

To mitigate these risks, policymakers should employ a combination of microprudential (individual bank supervision) and macroprudential (system-wide financial stability) measures. The risk-mapping framework developed in this report summarises the main financial sector risks, their transmission mechanisms to the whole economy, and potential mitigation strategies (Table 4.2).

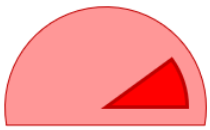
Table 4.2: Financial services risk-mapping table

Risk category	Key risks	Transmission channels	Mitigation strategies
Financial stability	Market volatility Sovereign debt crises	Capital flows Exchange rate fluctuations	Central banks interventions Capital buffers
Resource misallocation	Credit constraints Inefficient capital allocation	Low productivity Economic slowdown	Improved financial regulations Targeted lending policies
Geopolitical risks	Trade wars Sanctions Cyber risks	Supply chain disruptions Inflation	Diversification of trade Cybersecurity frameworks
Macroeconomic risks	High interest rates Inflation uncertainty	Market repricing Asset bubbles	Fiscal discipline Monetary policy coordination

A robust risk management framework, involving risk identification, measurement, mitigation, reporting and monitoring, and governance, is essential to mitigate systemic vulnerabilities, especially given the interconnected nature of financial sector risks (Table

4.3). Early warning systems, regulatory coordination and stress testing mechanisms can ensure financial resilience in the evolving global risk environment.

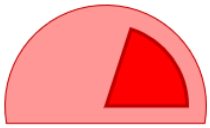
Table 4.3. Risk management framework for financial risks



Risk Identification

Recognising systemic risks such as market volatility, sovereign debt concerns, credit constraints, geopolitical risks, and macroeconomic uncertainties.

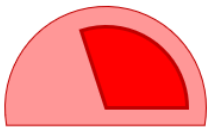
Identifying transmission channels, including financial market disruptions, capital flows, and economic slowdowns.



Risk Measurement

Assessing the magnitude of risks through market indicators, economic models, and stress tests.

Measuring vulnerabilities related to asset valuations, fiscal sustainability, and systemic interdependencies.

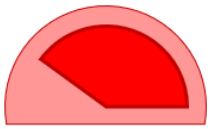


Risk Mitigation

Implementing central bank interventions, capital buffers, and liquidity support mechanisms to stabilise financial markets.

Enforcing improved financial regulations and targeted lending policies to mitigate resource misallocation.

Enhancing cybersecurity frameworks and trade diversification strategies to address geopolitical risks.



Risk Reporting and Monitoring

Establishing early warning systems and regulatory reporting requirements for financial institutions.

Conducting macroprudential assessments and market surveillance to track evolving risks.

Promoting transparency in financial markets through robust disclosure requirements.

Risk Governance

Strengthening coordination among central banks, financial regulators, and government institutions.

Enhancing international cooperation to manage cross-border financial risks.

Instituting governance frameworks that ensure accountability and risk oversight.

Source: Authors' elaboration

5 Regulation, risks and productivity

The global financial landscape has undergone significant transformation in the aftermath of the GFC. In response to the vulnerabilities exposed during the crisis, international regulatory bodies implemented a broad array of financial reforms aimed at strengthening stability and reducing systemic risks. These regulatory measures were designed to prevent future crises and ensure that financial institutions maintain adequate capital buffers. While these regulations have undoubtedly bolstered the resilience of financial systems worldwide, they have also sparked debates regarding their potential impact on economic growth and productivity. Striking the right balance between financial stability and fostering an environment conducive to investment and innovation remains a key challenge for policymakers and industry stakeholders alike.

5.1 The global landscape

The international financial community increased regulation in the aftermath of the GFC to strengthen global financial stability. International bodies improved existing standards and introduced new guidelines, with the scale of this regulatory response being comparable only to that following the Great Depression. Unlike the 1930s, however, global collaboration has played a crucial role, laying the groundwork for harmonised efforts across domestic jurisdictions (Borio, Farag, and Tarashev, 2020).

Post-GFC reforms encompassed all financial services activities, including banks, central counterparties (CCPs) for clearing derivatives, asset managers, insurers, pension funds, and even credit rating agencies and auditors. Key international standards and guidelines implemented include Basel III, International Financial Reporting Standard (IFRS) 9, and key attributes of effective resolution regimes, among others (Table 5.1). These reforms have strengthened safeguards against risks already addressed by pre-crisis regulations while also expanding their scope to include previously unregulated risks at both the entity and systemic levels. For example, Basel III imposes higher capital requirements to absorb potential losses, improves liquidity standards to manage short-term obligations effectively, and strengthens risk management by emphasising better risk assessment and management practices.

Table 5.1: Post-GFC reforms

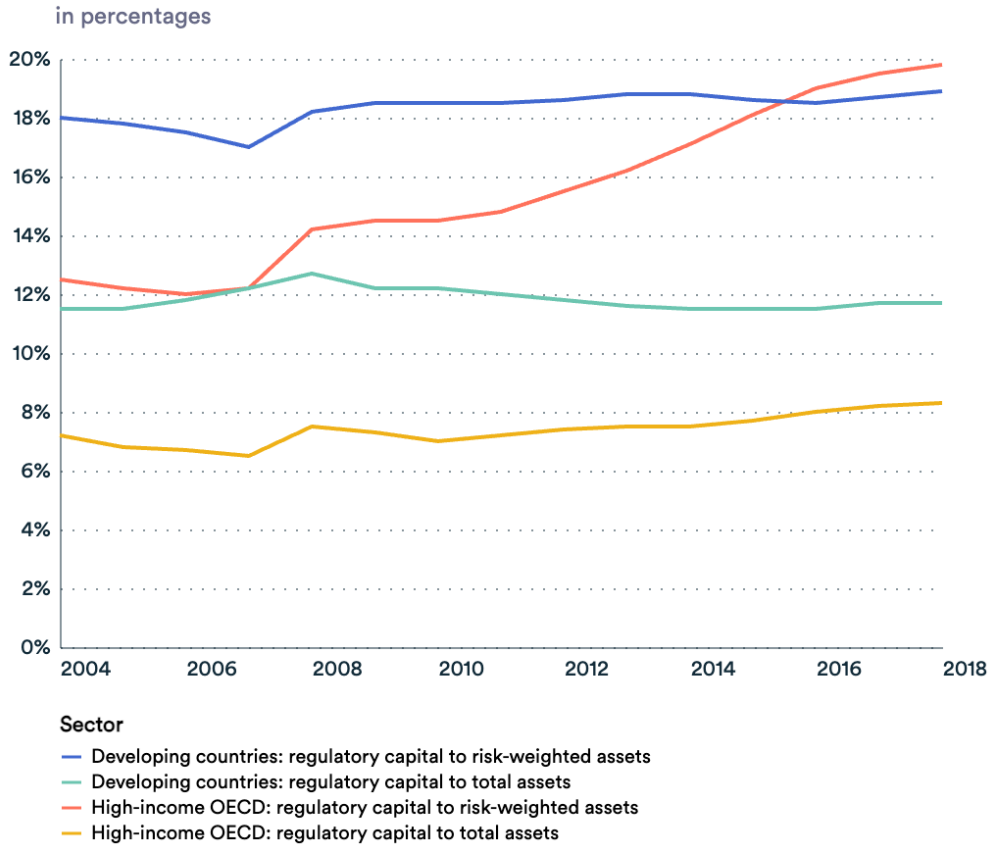
Entity (Standard-setting body)	International standard/guidance	Other reforms (non-exhaustive examples)
Banks (BCBS, FSB)	• Basel III • Total loss-absorbing capacity • International Financial Reporting Standard 9 • Key attributes of effective resolution regimes	• Structural reforms • Market functioning • Stress testing • Corporate governance • Remuneration Data harmonisation • Cyber resilience
CCPs (CPMI-IOSCO, FSB)	• PFMI • Guidance on resolution	
Asset managers (IOSCO)	• Recommendations for money market funds • Framework for assessing leverage in investment funds	
Insurers (IAIS)	• ICS 2.0 (under monitoring) • Holistic framework	
Pension funds (IOPS)	• Guidelines and good practices	
Credit rating agencies (IOSCO)	• Code of conduct	
Auditors (IAASB)	• Framework for audit quality	
Note: BCBS = Basel Committee on Banking Supervision; CPMI = Committee on Payments and Market Infrastructures, FSB = Financial Stability Board; IAASB = International Auditing and Assurance Standards; IAIS = International Association of Insurance Supervisors; IOPS = International Organisation of Pension Supervisors; IOSCO = International Organisation of Securities Commissions; ISC = Insurance Capital Standard; PFMI = Principles for Financial Market Infrastructures		

Source: BIS

Most countries adopted financial reforms following established international standards and guidelines (Demirgüç-Kunt, 2019). Three significant findings are noteworthy:

- Over the past decade, many countries have reformed their resolution schemes. But few have established a formal regulatory framework for managing the resolution of international banks.
- Explicit deposit insurance schemes have been introduced, with expanded coverage and scope in many countries, especially in low-income regions.
- Generally, banks in developing countries are better capitalised than those in high-income countries, which have only increased their capital since the crisis. Regulatory capital ratios—measuring the amount of capital held by banks relative to risk-weighted assets—are at their highest since the GFC (Figure 5.1). Nonetheless, there is considerable debate about whether these risk weights accurately reflect real-world risks.

Figure 5.1. Regulatory capital-to-asset ratios for high-income OECD and developing countries (2004-18)



Source: World Bank using IMF Financial Soundness Indicators (FSI) data.
Note: Note: The Financial Soundness Indicators (FSI) provide country-level data on total capital and asset holdings of the banking sector, as reported by participating countries to the IMF. All ratios used in the figure are calculated based on the underlying totals. Developing countries are those classified as such in the World Bank developing regions.

There is a consensus that the current financial system is stronger and more resilient than in the years preceding the GFC. Studies indicate that the post-crisis regulatory reform package has significantly increased the financial system's shock-absorbing capacity. By enhancing the quantity, quality, and robustness of required bank capital, formulating integrated and stricter principles for CCPs, and developing long-overdue liquidity standards, the reforms have improved banks' ability to absorb losses. Moreover, embedding a macroprudential perspective has created dedicated loss-absorbing resources for systemic risk and incorporated multiple regulatory standards to address similar risks, forming a 'belt-and-braces' approach (Borio, Farag, and Tarashev, 2020). But these studies also suggest that, given the political economy pressures and technical obstacles faced, along with the inherent uncertainty regarding the effects of these reforms, a conservative regulatory approach is essential.

The impact of stricter financial regulations on productivity remains unclear. Some studies indicate that tighter regulations can have positive effects on productivity (Chen,

2013), with findings suggesting that banking competition and capital regulation significantly enhance bank productivity. Tighter bank supervision positively affects bank productivity, and bank productivity declined during the GFC but began to recover afterwards. Additionally, commercial banks in countries with better national governance experienced higher productivity growth before, during, and after the GFC.

Conversely, other studies argue that stricter regulations may hinder economic growth. The rationale is that increased regulatory capital requirements lead banks to reduce business and real estate loan volumes while raising lending spreads. These negative effects on loan supply can trigger temporary declines in investment, consumption, housing activity, and overall production (Eickmeier, Kolb, and Prieto, 2018).

5.2 The UK

In the wake of the GFC, the UK established new regulatory bodies and revised rules governing the financial services sector to enhance financial stability (Table 5.2). Most reforms emphasise market discipline and capital requirements. The implementation of the Financial Services Act in 2012 marked a significant change in the UK's regulatory framework, replacing the Financial Services Authority (FSA) with a 'twin peaks' structure. This created the Prudential Regulation Authority (PRA), a subsidiary of the Bank of England focused on macro- and micro-prudential regulation, and the Financial Conduct Authority (FCA), responsible for regulating market conduct and protecting consumers.

The Financial Services (Banking Reform) Act 2013 introduced crucial reforms to enhance the stability and accountability of the UK banking sector. This new legal framework included measures such as ring-fencing retail banking from investment banking to protect essential services, a bail-in mechanism to manage failing banks without taxpayer bailouts, and the Senior Managers and Certification Regime (SMCR) to improve accountability. These measures were implemented progressively by the PRA and FCA and took effect in subsequent years.

In 2014, Basel III was introduced, enforcing stricter capital and liquidity requirements for banks to enhance financial stability. The new Consumer Credit Regulation was also implemented that year, introducing stricter rules to protect borrowers. In 2015, the SMCR was introduced to enhance accountability and conduct standards in financial services. By 2016, the ring-fencing of retail banking came into effect, separating retail banking from investment activities and reducing risks to depositors.

In 2019, the Solvency II framework for insurers was adopted, focusing on risk-based capital requirements and enhanced supervision. Then, in 2021, guidance on Climate-Related Financial Risks was issued, advising firms on how to manage and disclose these risks as part of supervisory priorities.

Table 5.2: Timeline of key regulatory changes in the UK aftermath of the GFC

Regulatory changes (chronological order)
• 2010: Introduction of the Independent Commission on Banking (ICB): Established to recommend reforms that enhance stability and competition within the UK banking sector.
• 2012: Financial Services Act 2012: Replaced the Financial Services Authority (FSA) with a 'twin peaks' regulatory structure, establishing the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA).
• 2013: Financial Services (Banking Reform) Act 2013: Introduced significant reforms aimed at bolstering the stability of the UK banking sector.
• 2014: Introduction of Basel III: Implemented stricter capital and liquidity requirements for banks to strengthen financial stability.
• 2015: Senior Managers and Certification Regime (SMCR): Launched the SMCR to enhance accountability among senior managers in financial institutions.
• 2016: Ring-Fencing of Retail Banking: Enforced regulations to separate retail banking from investment banking activities, thereby minimising risks to depositors.
• 2016: Bank of England and Financial Services Act: Strengthened the Bank of England's role in maintaining financial stability and introduced measures for improving the resolution process for failing financial institutions.
• 2019: Solvency II Directive: Established the Solvency II framework for insurers, focusing on risk-based capital requirements and enhanced supervision.
• 2021: Climate-Related Financial Risks: Guidance for firms to manage and disclose climate-related financial risks as part of its supervisory priorities.

Source: Author's elaboration

But stricter regulations may impede economic growth and productivity. Initial studies suggest that the optimal level of bank capital in the UK banking system should be around 10-14% of risk-weighted assets, varying significantly based on the risk environment. The same study indicates that it would be inefficient to always capitalise the banking system for elevated risk periods, based on the analysis of the economic costs of higher bank capital levels (Martin Brooke et al 2024).

Other studies estimate the total cost of lost growth potential in the UK due to 'too much finance' between 1995 and 2015 at around £4,500bn. Of this, 60% (£2,700bn) is attributed to 'misallocation costs', including a focus on short-termism over investment, brain drain, and property price inflation. The misallocation effects are more pronounced in the UK (52.1% to 60% of total UK costs) compared with the United States (17.5% to 20.5% of total US costs) (Baker, Epstein, and Montecino, 2018).

Further research is recommended to assess the effects of UK reforms on economic growth, particularly concerning investment and GDP. Studies should evaluate both the impact of specific banking standards on economic growth and the cumulative effects of the reform package, as some standards may reinforce each other, while others may create tensions.

Consulting firms indicate that regulatory pressures are increasingly challenging for businesses. For example, KPMG's Regulatory Barometer highlights that regulatory pressure in the UK and EU financial sectors remains intense, reflecting policy pressures and heightened supervisory intensity (KPMG, 2025).

In this context, representatives of the UK financial sector are calling for bold reforms to support economic growth. Recently, banking industry representatives released a set of measures aimed at enhancing economic growth, competitiveness, and productivity. These reforms primarily focus on streamlining regulations, improving data reporting, and enhancing capital requirements (UK Finance, 2025). The regulators should consider evaluating the appropriateness of these measures. This report summarises these proposals according to seven distinct areas (Table 5.3).

Table 5.3: Measures for boosting economic growth, competitiveness and productivity

Proposed measures
1. Simpler and clearer regulatory architecture • Improve the Regulatory Initiatives Grid for better transparency and prioritisation. • Review and streamline data reporting, governance, and disclosure requirements. • Revoke outdated market investigation remedies in the retail banking sector.
2. Streamlined conduct regulation • Drop revised enforcement proposals to avoid reputational risks and harm to competitiveness. • Establish a joint industry working group for embedding consumer duty. Ensure it complements the FCA's secondary competitiveness and growth objective. • Centralise regulatory guidance for easier navigation of consumer duty.
3. Pro-growth prudential regulation • Reform capital requirements to better reflect risk and boost lending. • Remove cliff edges in capital and leverage requirements. • Reform the leverage ratio framework and provide clarity on Pillar 2 capital requirements. • Bring proportionality to the bank capital regime to support diverse business models.
4. Delivering world-class payments • Clarify the upgrade plan for the UK's account-to-account payments infrastructure. • Rethink safeguarding reform proposals for payment and e-money institutions.
5. Modernised capital markets • Reduce the reporting burden and operational costs in MiFID transaction reporting. • Prioritise delivery of public offers and admission to trading reforms.
6. Fighting economic crime • Require social media, tech, and telco sectors to partner in fraud prevention. • Incentivise proactive fraud prevention and cost-sharing for countering fraud. • Deepen government-industry partnership on economic crime initiatives. • Develop specialised intelligence capabilities for proactive crime disruption.

7. More inclusive financial services
   - Conclude the Advice Guidance Boundary Review and propose rule changes.
   - Simplify responsible lending and advice rules and remove outdated guidance.
   - Ease loan-to-income flow limits for new residential mortgages.
   - Optimize the Freedom to Buy mortgage guarantee scheme with reduced capital weighting.

Source: UK Finance

The current government has demonstrated a strong commitment to easing regulatory constraints and fostering a pro-investment climate, recognising the need to support economic growth while maintaining financial stability. Recent policy initiatives focus on simplifying regulatory frameworks, promoting technological advancements to enhance financial security and encouraging capital market participation.

Leveraging cutting-edge technologies such as AI and blockchain can reduce fraud, streamline compliance processes, and mitigate risks, thereby fostering confidence in the financial system. Additionally, efforts to recalibrate capital requirements and enhance lending mechanisms are designed to support private investment and economic expansion. These measures reflect a broader strategy to ensure that regulatory oversight does not stifle growth, but rather, facilitates a dynamic and resilient financial ecosystem that can adapt to emerging challenges and opportunities.

Overall, while some studies indicate that regulations might be hindering economic growth and productivity in the UK, and certain stakeholders are pushing for a relaxation of these rules, regulators should adhere to a cautious approach as advised by international regulatory bodies. It is crucial to emphasise the need for further evidence and in-depth discussions in this area to ensure that any regulatory changes are well-informed and balanced.

6 Concluding remarks

The UK's financial services sector plays a crucial role in the broader economy, yet its declining productivity underscores structural challenges that must be addressed. While traditional metrics provide a partial picture, a more tailored measurement approach, considering sector-specific characteristics and adjusting productivity indicators, can enhance accuracy and inform better policy decisions.

The evolving regulatory landscape remains a double-edged sword. While post-crisis reforms have strengthened financial stability, their impact on productivity, investment, and competitiveness requires continuing evaluation. Policymakers must strike a careful balance between maintaining resilience and fostering economic dynamism, ensuring that financial sector regulations do not unduly constrain growth.

There are several avenues for further research that extend beyond the scope of this report. First, research on allocative efficiency within the financial system would shed light on regional and sectoral variation. This topic could determine whether financial resources are appropriately allocated to economic activities or if there are signs of resource misallocation. Some studies suggest potential misallocation of resources, but conducting further research using different approaches and methodologies could clarify the significance of this issue for the economy. The study of regional variations in investment and profitability metrics could provide valuable insights into regional financial sector contributions and inform more targeted policy interventions.

Second, further research could be conducted to explore how fintech influences financial sector productivity measurement. As digital finance reshapes traditional business models, understanding its impact on productivity statistics will be crucial. The adoption of new tools such as AI and blockchain may have a material implication on productivity measures, which could be studied further.

Looking ahead, a forward-thinking policy framework that integrates innovation, risk management, and regulatory flexibility will be essential. The UK must remain agile in adapting to global financial shifts, leveraging new technologies while safeguarding against emerging risks. Continued research and policy discussions will be critical in refining regulatory approaches, promoting financial sector efficiency and ensuring that the UK remains a competitive, stable and productive financial hub.

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8 Annex

8.1 Academic references on finance and growth

Table 8.1. Summary of studies and main results on financial development (FD) and growth

Paper	Analytical approach	Main results
King and Levine (1993)	Cross-section and time-series OLS using initial values of FD and controls at start of decadal periods.	FD can spur economic growth by raising capital accumulation and improving capital allocation. Direction of causality may be a problem.
Rajan and Zingales (1998)	Sector-level growth models with interacted explanatory variables. Stock market, bank credit, and accounting standards proxy FD.	FD benefits those values added growth rates of sectors more externally financed, financing by economic and technological margins.
Beck et al (2000)	Cross-sectional and dynamic panel regressions with 'policy conditioning' controls.	Financial intermediaries have large positive effect on TFP, which feeds GDP growth.
Manning (2003)	Re-examines data from Rajan and Zingales (1998) using sector-level growth model and bank credit for FD (all models include stock market).	Strong positive link between lending to firms and growth applies to non-OECD countries. No significant link for OECD nations.
Pagano and Pica (2012)	Market liquidity-growth models using bank credit or stock market capitalisation for FD. Endogeneity tests use accounting standards as instrument.	No improvement in external finance dependent sectors in non-OECD countries, but not in OECD.
Law and Singh (2014)	Growth model and dynamic panel estimation using Kreutzer et al (2013) method. Bank credit and stock liquidity proxy FD.	Nonlinear relationship between FD and GDP. No private sector credit beyond 88% of GDP has a positive effect on economic growth.
Cournède and Denk (2015)	Pooled mean group estimation, housing value effects. Country-specific linear time trends and year fixed effects included in baseline model.	FD raises GDP up to a threshold, but the link to non-residents and a threshold about 110% of GDP for credit shrinks GDP.
Madsen and Ang (2016)	2SLS models using agriculture sector share of total income and unionisation as instruments for FD. Data averaged over 5-year intervals.	FD operates through four channels: knowledge production, savings, investment, and schooling. Knowledge is the main FD channel of growth.

Source: Heil 2017, OECD

Table 8.2. Summary of non-linear studies and main results on the effects of finance on growth

Paper	Sample countries	Type of data and period	Methods	Results
Deddia and Fattouh (2002)	119 developed and developing countries	Cross-sections, 1980-89	Hansen (2000) threshold regression	Nonlinear relationship between finance and economic growth. Finance is determinant of growth in high-income but not in low-income countries.
Rioja and Valev (2004a)	74 developed and developing countries	Panel (1961-95) averaged over 5-year intervals	Dynamic panel GMM, 3 regions by financial development	Finance has strong positive effect on growth in medium financial development region, smaller positive effect in high financial development region.
Rioja and Valev (2004b)	74 developed and developing countries	Panel (1961-95) averaged over 5-year intervals	Dynamic panel GMM, 3 groups: low, medium, high income	Finance has strong positive influence on productivity growth for low and medium-income but not high-income economies. The effect of finance on output growth occurs through capital accumulation.
Lee (2005)	48 developed and developing countries	Panel (1976-2001)	Pooled OLS	Inverted U-shaped link between finance and economic growth. Bank development is weak link in U.
Ergungor (2008)	48 developed and developing countries	Cross-sections (average 1980-95)	2SLS with heteroskedasticity consistent SEs	Nonlinear contingent relationship between finance (banking sector) and growth.
Huang and Lin (2009)	71 countries	Cross-sections (average 1960-95)	Hansen (2004) IV threshold regression	Nonlinear positive relationship between finance and growth. Positive effects in poor nations but no impact in high-income countries.
Cecchetti and Kharroubi (2012)	50 developed and emerging economies	Panel 45 year non-overlapping 1980-2009	Pooled OLS with robust SEs	Financial sector has Inverted U-shaped effect on productivity growth. Recent financial sector is a drag on productivity growth.
Arcand et al (2012)	96 developed and	Panel (1960-2011)	Semi-parametric estimations	Finance starts having a negative effect on output

	developing countries			growth when credit to private sector exceeds 110% of GDP.
Cournède and Denk (2015)	42 developed and emerging countries of OECD and G20	Panel (1985-2015) with country fixed effects		Credit beyond 100% of GDP is linked to slower growth for both bank credit and leasing activity. Most OECD countries lie above the threshold for credit but below it for stock market capitalisation.

Source: Heil 2017, OECD

8.2 Interview methodology

During the first two weeks of March 2025, a series of interviews were conducted to support the findings of the research and literature review, as well as to gain insights and better understanding from academics and practitioners with knowledge of productivity in the financial sector. A total of nine interviews were conducted. Three were with finance professors from the London School of Economics, Oxford University, and the University of Nottingham. Two initial interviews were held with practitioners from HSBC and the PRA. The remaining four interviews were with practitioners from different sub-sectors—capital markets, corporate banking, retail banking, and asset management—focusing on how productivity is measured by practitioners. The interviews were conducted on Zoom calls, lasting between 30 and 45 minutes each, and covered the following topics:

<u>Measuring productivity in financial services</u>

1. What are the most effective productivity metrics in the financial services sector (FSS), and how do they differ from those used in other industries?
2. What are the limitations of current methodologies for assessing FSS productivity, and how can they be improved? Specifically, is GVA an appropriate metric, given it excludes 'intermediate financial demand' (e.g. mortgage and corporate lending)?
3. How important is it to design customised productivity metrics for different financial services sub-sectors (e.g. banks, insurance and pension funds, asset management)?
4. How should UK regulators measure productivity for global financial institutions headquartered in the UK? Should their non-UK activities be excluded from productivity measurement by UK regulators?

<u>Post-GFC and post-crisis shifts and productivity constraints</u>

5. How has financial services productivity evolved since the GFC, and what structural shifts have been most significant?
6. What are the main barriers to productivity growth that financial firms face today?
7. How have recent crises (e.g. Brexit and the Covid-19 pandemic) influenced productivity trends in the UK financial services sector?

<u>Regulation and competitiveness</u>

8. To what extent does financial regulation enhance or hinder productivity growth in the UK financial services sector? Are there specific sub-sectors of UK financial services where you believe regulation is having a pronounced effect in enhancing

or hindering productivity growth?

9. How do UK financial regulations compare to those in other major financial hubs (e.g. US, EU, or Asia) in terms of fostering innovation and competitiveness?

Risk and financial stability

10. What are the most significant risks associated with financial services, and how do they impact the broader UK economy?
11. How can financial institutions balance the need for productivity growth with maintaining financial stability and consumer protection?

Innovation and future trends

12. How can emerging technologies (e.g. AI, blockchain, or fintech solutions) contribute to improving financial services productivity while mitigating systemic risks?
13. What role should regulators play in fostering a more productive and globally competitive UK financial sector?
14. What should UK policymakers and regulators prioritise to kickstart FSS productivity growth over the coming years?

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