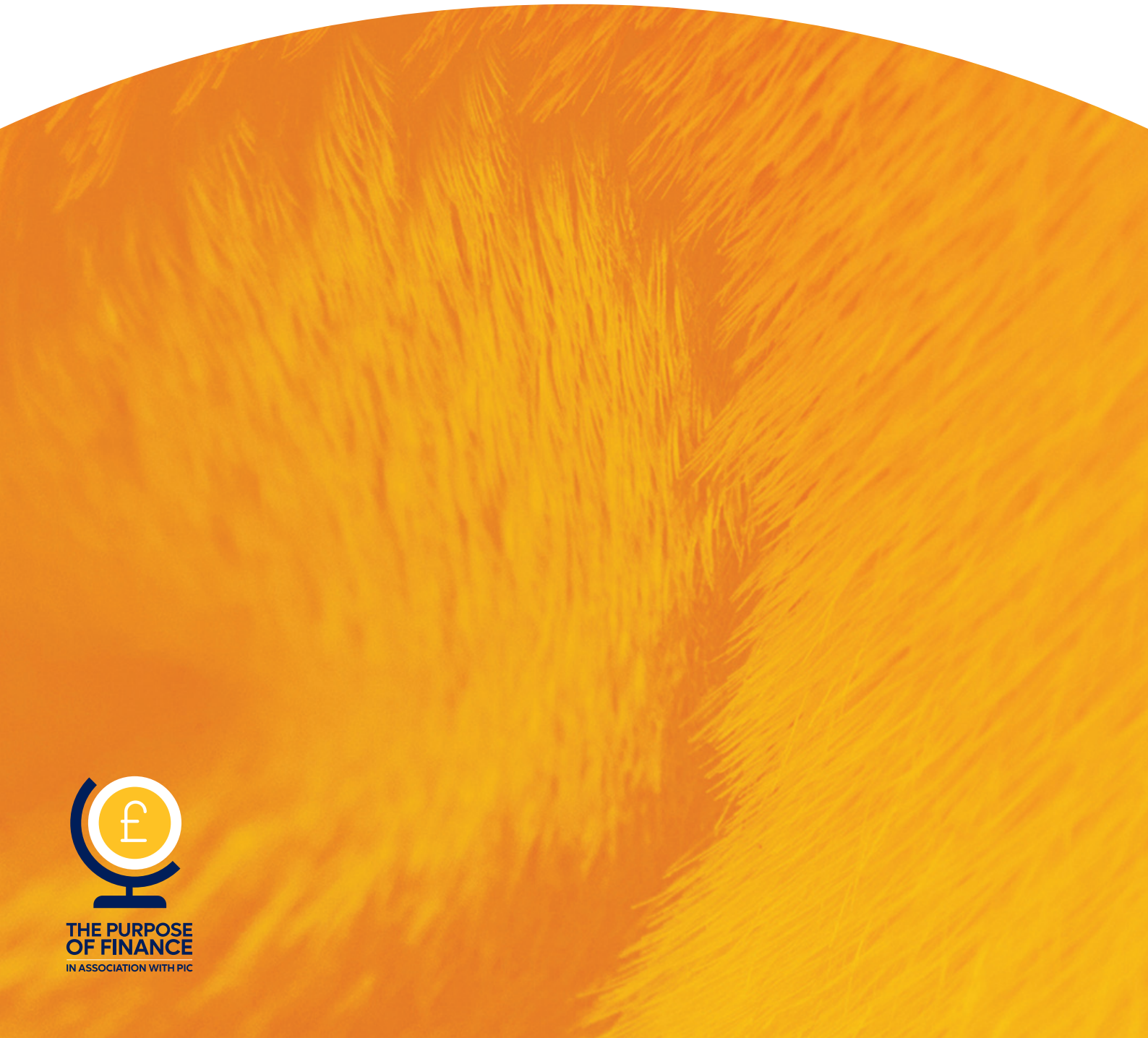
PIC

The purpose of finance:

Has efficiency improved in the European finance industry?



THE PURPOSE OF FINANCE
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Contents.

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About the 'Purpose of Finance'.

The principle aim of the Purpose of Finance project, launched in Spring 2017 with the publication of "The Purpose of Finance", is to facilitate a debate, from a position of support, about how best to repair the disconnect between society and an industry that is of fundamental importance to the UK: financial services.

As the recent wave of populist party success shows, anger at economic inequality is far from abstract. The pressure on listed companies to focus on short-term gain, from asset owners and investors, has serious consequences that go to the heart of our democracy: falling levels of investment in listed companies may be a primary cause of the serious declines in productivity over the past decade, leading directly to falling real wages and economic inequality. Yet there is a general lack of understanding about the connection between short-termism and risk aversion in the markets and social inequality.

There are other issues which have been discussed at length as the Purpose of Finance project has unfolded, including: transparency, corporate governance, social values, and the nature of regulation. These will be covered at greater length in future papers.

It is clear that financial services is not working as it should. The Purpose of Finance project has created a space for debate about how best to resolve these deep-rooted problems, involving policymakers, regulators, people who work in financial services and others. There will be practical policy solutions aiming to ensure financial institutions focus on their purpose and are then regulated to that purpose. This focus will help build an efficient, balanced financial industry that serves society.

All materials relating to the Purpose of Finance project can be found at https://www.pensioncorporation.com/thought-leadership/the-purpose-of-finance/.

About the author

Guillaume Bazot is assistant professor at The University of Paris VIII. Having completed his doctorate at the Paris School of Economics and EHESS, Paris he went on to teach at University Paris VIII. He has published and researched in the area of financial efficiency and consumption for several years. His other research interests include economic history, economics of banking, monetary policy and financial regulation.

Dr Guillaume Bazot
Assistant professor at The University of Paris VIII

Foreword.

The finance industry is vital to the well-being of the UK's economy. The UK's financial institutions keep more than £800 billion of our deposits safe; have issued more than 164 million payments cards in the UK, facilitating an effective payment system; manage the savings and pensions of three quarters of UK households, pooling risk; and with £449 billion of business loans, they move money from where it is, to where it is needed.

Yet, despite its central role in helping the economy function, no one has ever tried to measure the efficiency of the UK's financial services sector. Until now.

I'm delighted that as the third paper in our "Purpose of Finance" series we are able to publish groundbreaking work by Dr Guillaume Bazot, which for the first time sets out the cost of finance to the end user in the UK, France and Germany.

The context given by Dr Bazot shows that financial income as a proportion of GDP increased steadily during the 70 years covered by the study, especially in the UK where it represented more than 8% of GDP in 2014. This is not surprising given the huge increase in savings and investment we have seen over the same time period.

One of the primary purposes of the financial industry is to help mobilise these savings in order to support economic growth. This is financial intermediation – helping savers who have money to lend to, or invest in, businesses, or to borrowers who need money.

But to our knowledge, no one has ever asked the question of how much this intermediation should cost. This measure is vital because even small improvements in cost efficiency can have significant benefits for the real economy.

Historically, improvements in the cost efficiency of financial services have been a precondition for rapid economic development, including in 17th century Netherlands and the UK in the 18th century.

In the context of Brexit today it is incumbent on politicians, regulators and the industry itself to actively, and urgently, engage in a policy debate about the right level of intermediation costs, because a more cost efficient financial services sector will reinvigorate the UK's economy.

To my mind, a vital part of this debate should focus on how best to get financial services companies to focus on their purpose, and then be regulated to that purpose. This should naturally lead to a more cost efficient financial services industry.

This document is not intended to be the final word. Rather, I very much look forward to the debate it should rightly stimulate.

Tracy Blackwell
CEO of Pension Insurance Corporation

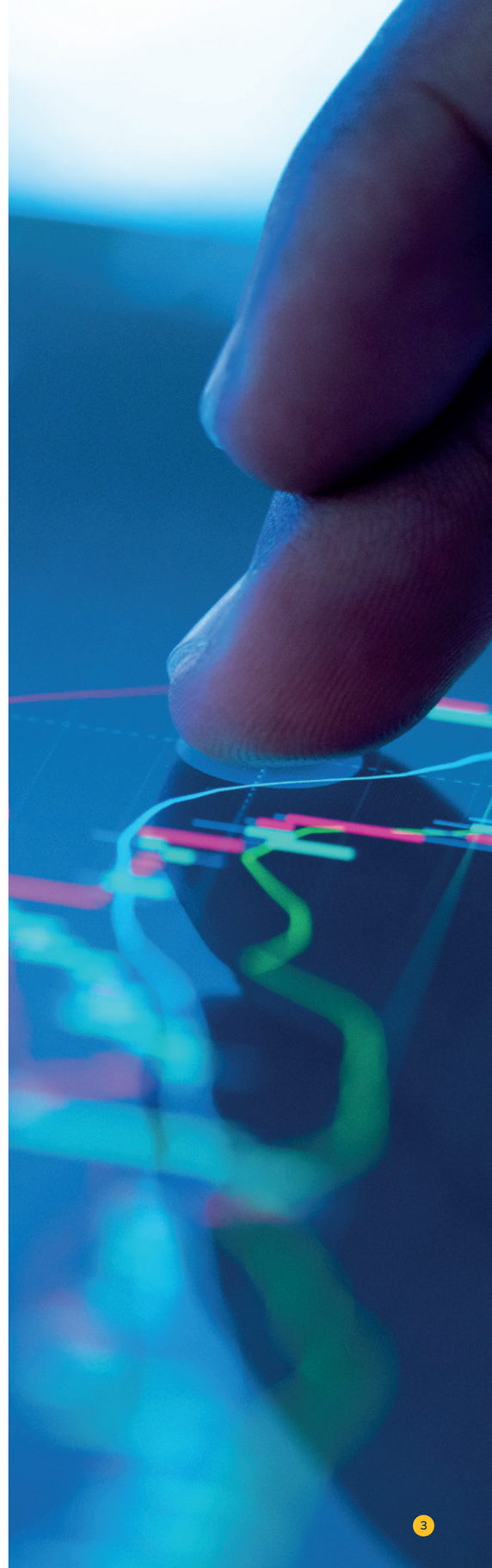
The work shows that:

The UK has consistently had the most cost efficient financial services sector

France saw a dramatic decrease in the cost of financial intermediation following a period of deregulation from the 1950s onward

On current trends, France will have a more cost efficient financial services sector than the UK over time

The average cost of finance to the end user has remained fairly static in the UK albeit with significant increases in costs prior to "Big Bang", followed by significant falls. The cost of intermediation today is similar to the cost 70 years ago.



Introduction.

This is the third paper in the "Purpose of Finance" series. The first began by asking whether the finance industry fulfills its purpose well. It noted that there were hardly any studies that addressed that very basic question.

One notable exception is the work of Thomas Philippon. It suggests that, in the USA, there has been little or no increase in the efficiency of the finance industry over the last century or more. Indeed he suggests that the finance industry that funded the railways was the same in terms of efficiency as that which has funded the internet.

This work carried out by Dr Guillaume Bazot builds on this work by looking at the financial sector in Europe as well as the United States over the past 70 years. Following a similar methodology to Philippon's, the paper measures the financial efficiency of the finance industry in Europe by analysing the cost of intermediation; that is the amount of money which it has received and invested in the outside world, and how this compares with the cost paid for its services.

The paper compares the growth and cost of financial intermediation in France, Germany, the UK and the US since 1950, and demonstrates that the finance industry has not delivered the sort of gains in efficiency that you might expect given its growth, the vast progress made by technology, the deregulation of markets, and the increase in competition.

The paper suggests that the approach we have been taking to the financial services industry needs some rethinking. In particular we cannot assume that competitive markets and technological advance, with bouts of regulation and deregulation, will inevitably lead to improvements in efficiency and hence to customer benefit.

Together with Philippon's work, this paper suggests we have new questions to ask about the finance industry. They are ones which are of importance to participants, regulators, policymakers and stakeholders. The prize for finding answers has wider implications beyond the profits and growth of the finance industry. It is critical if we want to create economic growth which will benefit us all.

Dr Hari Mann
Professor of Strategy and Innovation,
Ashridge Business School

David Pitt-Watson
Pembroke Visiting Professor of Finance,
Cambridge University

Executive summary.

Recent analysis for the US and Europe shows that finance has taken an increasing large share of the economy since the 1970s.[1, 2]

No-one would question that finance has a significant role to play in supporting economic growth. However, the coincidence between financial development and the subprime crisis[3] has cast doubt as to the consequences of its growth for global welfare. Several experts and political leaders have argued for different types of reform to address perceived problems.[4]

However, few have stopped to ask the prior question of what a productive finance industry would look like. Instead it has been assumed that a combination of technological improvements and consumer choice will create positive outcomes. Where they have not done so, regulation has often been applied.

The central question posed by this study is whether this formula has allowed the finance industry to use technological advances to create a more efficient industry serving other sectors of the economy. The theory would suggest that this should almost certainly be the case...yet the findings deliver an ambiguous conclusion.

In concept the methodology of the paper is quite simple. It looks at the unit cost of "financial intermediation" and measures this over seventy years. It derives unit cost by:

i. **Calculating the amount of savings** gathered and invested by the industry from the outside world;
ii. **Calculating the economic cost** of the finance industry – for example the salaries it pays and the profits it makes;
iii. **By dividing the second by the first,** deriving the unit cost of financial intermediation - that is, the cost to take one unit of saving from the outside world, and reinvest it in the outside world.

Let's take the example of a simple commercial transaction to understand the concept. A merchant is a commercial intermediary compensated for matching supply and demand of goods and services. If she buys a pound of apples from a farmer for £3 and sells it to some clients for £4, she gets £1 income, so the cost of its service is £1. In this example the unit cost is £1 per apple-pound.

The unit cost of financial intermediation follows the same principle, except that the related services are euros, pounds and dollars saved and invested.

The majority of this paper discusses the calculation of points (i) and (ii) above. The scale, and more significantly the cost, of finance is not easily measured. However, we believe that we have taken into account all the main factors. One might note that, like many measures in economics, (such as GDP) there can and should be debate about how calculations are made. Such a debate about this methodology would be welcome.

However, the main conclusions of the study are robust, whether or not some of the adjustments made in the calculations are included or not.

- The financial sector has grown very significantly both in absolute terms and relative to the GDP in all countries.
- Whilst unit costs decline in France and in the UK after the big bang overall financial efficiency has not increased despite the dramatic evolution of financial systems.
- Unit costs rose in the 1970s in all the countries studied and decreased thereafter. This coincides with the rise of nominal interest, which increased the gap between lending and deposit rates.
- Comparison between the European and US series shows that the unit costs follow similar paths until the early 1990s. However, the European unit costs improve more during the 1990s.
- The UK appears to have a financial industry which is considerably more efficient either than France, Germany, or America. Germany, on the other hand appears to have an economy which requires less intermediation than found in other countries.

Given the importance of the finance industry in our economy and in global terms, these conclusions raise critical questions for any country whose aim is to achieve inclusive economic growth.

[1] Philippon, T. (2015): "Has the US financial industry become less efficient? On the theory and measurement of financial intermediation", American Economic Review, vol. 105(4)
[2] Philippon, T. and A. Reshef (2013): "An international look at the growth of modern finance", Journal of Economic Perspectives, vol. 27(2)
[3] Bazot, G. (2018): "Financial consumption and the cost of finance: measuring financial efficiency in Europe (1950 – 2007)", Journal of the European Economic Association, vol. 16(1),pp. 123-160
[4] Schularick, M. and A. Taylor (2012): "Credit booms gone bust: monetary policy, leverage cycles and financial crises, 1870-2008", American Economic Review, vol. 102(2)

1. The role of finance and economic growth.

In their book on European development, North and Thomas5 set financial development as a necessary condition for economic growth. Efficient money markets, they argue, reduce the cost of financial intermediation and help to allocate capital to its best use. As long as finance remains in the service of society, its development generates growth and welfare.

According to this view, financial efficiency and the related decrease in financial intermediation costs played a significant role in the creation of wealth, and subsequently power in Europe before the nineteenth century. Looking at the development of financial intermediation in the Low Countries in the sixteenth and seventeenth centuries, North and Thomas argue:

"The development of an efficient capital market in the Low Countries had tremendous implications for the functioning of commerce and industry. The capital market consisted of a host of intermediaries bringing together borrowers and lenders. The intermediaries, armed with the new financial devices, became so efficient that the rate of interest was drastically reduced, from 20–30 percent in 1500 to 9–12 percent in 1550 and to 3 percent or even less during the seventeenth century. Thus the cost of capital fell substantially relative to the prices of the other factors of production. No sector of the economy of the Netherlands was immune from the influence of this dramatic change in relative factor prices.[6]"

The more efficient the market the lower the search, negotiation, and enforcement costs of creating loans.

North, Douglass C.
Thomas, Robert Paul. The Rise of the Western World: A New Economic History. 1973

In this respect, financial innovation was the turning point of capital accumulation and growth. If one believes that the United Provinces was the first nation to achieve sustained per capita income growth[7], there is little doubt that reduction in the cost of finance was a facilitating factor. The same could be said about the UK. The years around 1700 were ones of significant financial innovation, including the foundation of the Bank of England. According to North and Weingast:

"[A]t the time when Holland was borrowing £5 million long term at four percent per year, the English crown could only borrow small amounts at short term, paying between 6 and 30 percent per year...(T)he [Glorious] Revolution radically altered this pattern. In 1697, just nine years later government expenditures had grown fourfold, to £7.9 million." [8]

"Its initial long term loans in the early 1690s were at 14 percent. By the end of the 1690s the rate was about half, between six and eight percent."[9]..."[I]t appears that the growth of private capital markets paralleled that of public capital markets. This development mobilized the savings of a large numbers of individuals and, by mid-century, provided financial services in an integrated, national market. These funds appear to have financed a large variety of business activities and played a necessary role in the economic expansion throughout this [the eighteenth] century."[10]

North and Weingast argue that financial development and financial cost reduction were two necessary conditions for business development and ultimately the Industrial Revolution(s). What seems to be true historically continues to be true today. As pointed out by Demirgü -Kunt11 and Levine12, the access cost to capital and capital allocation efficiency are two fundamental components of innovation and growth. Low efficiency in finance raises the financial intermediation cost, which reduces enterprises' investments, and impedes their development. **Because of their pivotal effect on social welfare, financial efficiency and financial intermediation costs should be a prime interest to researchers and should be inquired into systematically. Yet so far little research has been undertaken on the topic.**

[5] North, Douglass C.; Thomas, Robert Paul. The Rise of the Western World: A New Economic History. 1973. Cambridge University Press. Cambridge.
[6] North and Thomas, opcit, p.182

[7] Fouquet R. and S. Broadberry (2015): "Seven Centuries of European Economic Growth and Decline," Journal of Economic Perspectives, vol. 29(4), pp. 227-44
[8] North, Dougals C.; Weingast, Barry R. (1989): "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England", Journal of Economic History, vol. 49(4). Citation from page 822.
[9] Ibid. page 823
[10] Ibid. page 828
[11] Demirgü -Kunt, A., L. Laeven and R. Levine (2004): "Regulations, market structure, institutions, and the cost of financial intermediation", Journal of Money, Credit and Banking, vol. 36(3)
[12] Levine, R (2005), "Finance and growth: Theory and evidence", in P Aghion and S Durlauf (eds.), Handbook of Economic Growth, 1(12):865-834

2 The output of the financial system from 1950 to 2015.

The purpose of this section is threefold. First, to account for the variety of financial activities across countries and over time. Second, to look at a potential convergence of financial systems. Third, to compare financial development based on diverse indicators. Three main findings are presented:

i. Throughout the period studied, lending and borrowing to and from the financial system increased more than GDP;
ii. The nature of borrowing and lending converges amongst different countries due to the growth of the securities industry relative to traditional banking; this raises the number of transactions per intermediated dollar, which in turn has further increased levels of borrowing within the financial system;
iii. Each country still has its own particular characteristics: for example household credit is weak in France, banks hold large market shares in Germany, banks hold less market share in the US, the intensity of intermediation is very high in the UK, and lower in Germany.

The rest of this section lays out the methodology used to calculate the output of the financial system in a way that can be measured across countries and over time. It notes the different forms and trends of intermediation in different countries.

According to the World Bank: "financial sector development is about overcoming "costs" incurred in the financial system. This process of reducing the costs of acquiring information, enforcing contracts, and making transactions resulted in the emergence of financial contracts, markets, and intermediaries. Different types and combinations of information, enforcement, and transaction costs in conjunction with different legal, regulatory, and tax systems have motivated distinct financial contracts, markets, and intermediaries across countries and throughout history."[14]

If financial development is about overcoming "costs" incurred in the financial system - that is, matching supply and demand for capital - we might conclude that this is the most important service for which intermediaries are compensated. It is the one on which this study will focus.

However, before proceeding it is important to note that there are at least three other services provided by the financial system. These are:-

the safekeeping of assets

the provision of effective payment systems

the ability to share risk

All these services are linked to financial intermediation, although each one could be considered individually. In this study, we have not tried separately to measure these three outputs. We accept that this could be a criticism. However we would argue first that the greatest cost of the finance industry is devoted to intermediation. And that, (with the exception of payment systems) there is little evidence of disproportionately higher efficiency gains in the provision of these other three services. Nevertheless while this remains an important area for further research, it is unlikely that consideration of outputs related to these three factors will change the conclusions of this paper.

Figure 1a: Financial intermediation in the UK

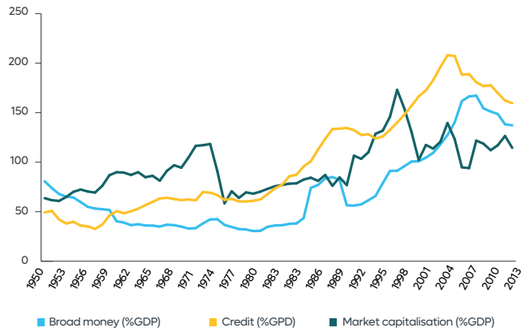


Figure 1b: Financial intermediation in France

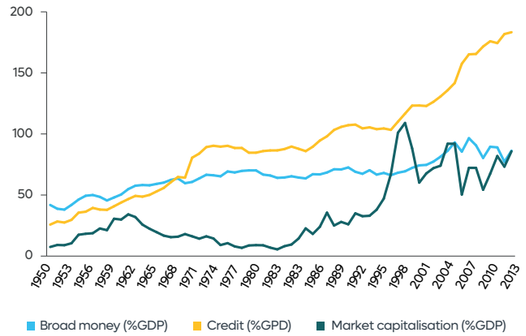


Figure 1c: Financial intermediation in Germany

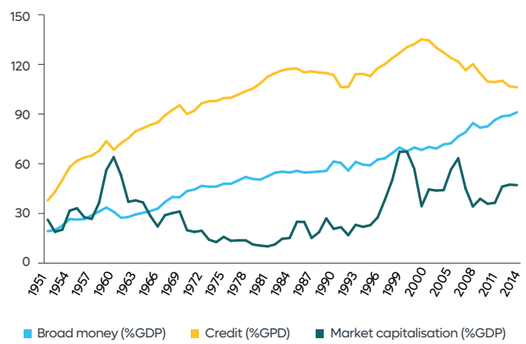
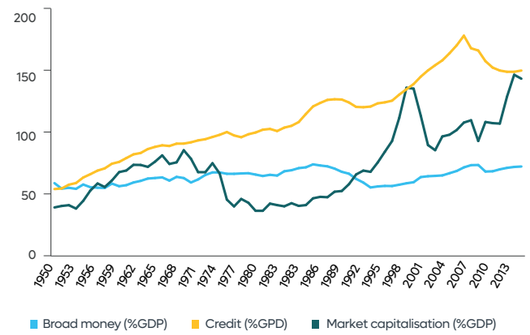


Figure 1d: Financial intermediation in the US



So this study focuses on intermediation. Even here we should recognise finance is multifaceted, and it is hard to provide a unique indicator of financial output. Economists, too often, have only looked at private credit to GDP without accounting for the variety of other forms of intermediation. In fact, financial intermediation in the US and the UK relies more on equity than would be the case in France and Germany. By the same token, the levels of investment made by different types of financial intermediary may differ according to the specific role played by banks in each country. For those reasons, market capitalisation and liquid liabilities should be taken into account, not just the ratio of credit to GDP. [15]

Figure 1 displays three "intermediation ratios": credit to GDP, market capitalisation to GDP and liquid liabilities to GDP. Three important facts come out.

First, whether we look at intermediation by institutions or markets, the level of intermediated capital tends to grow steadily over the period in all countries.

Second, except in the UK, broad money (that is cash, bank and other deposits (see footnote 12)) does not increase as much as total credit, meaning that private credit is less and less financed by the liquid liabilities of banks. The development of securitisation, the increasing weight of fund management, and the opening of markets for bond securities may explain this fact. The increasing growth of a two stage process - with banks raising funds from bond and equity issuance, sold to pension and life insurance companies - should also be taken into account.

Third, market capitalisation is higher in the UK and the US although France and Germany tend to catch up during the 1990's. On the other hand, until the 1980's the ratio of credit to GDP is far higher in France and Germany. Quite surprisingly, even though Germany is often seen as the paragon of bank-based financial systems, the ratio of credit to GDP becomes higher in the UK and the US than in Germany in the 2010's. This suggests that financial systems tend to converge after the 1980's in developed countries. However, differences remain. Comparing the share of bank credit to total credit (Figure 2) demonstrates a large difference between Germany and the US, while the UK and France sit in the middle. Securitisation plays a bigger role in the US compared to Europe. Nevertheless, as we look at the relative importance of banking in total credit, we see that Germany is the only country for which banking's share is stable. This coincides with a lower level of intermediation in Germany over the period. As a corollary, the intermediation boom in the other countries since the 1980's was related to the development of securities markets.

Note that the weight of banking loans in total credit tends to decrease over the period, replaced by the development of securitisation and the rise of market activities. This in turn means the number of steps needed to provide funds to the outside economy may have increased for several reasons. First, securitisation entails complex procedures of asset transfers, the consequence of which is often to raise the number of steps between those who deposit money in the financial system and those who borrow from it. Second, although bonds and securitised credits no longer appear in banks' balance sheets they are held by other intermediaries such as mutual funds and insurance companies. Third, the development of securitised borrowing and lending increased the need of interbank lending. Fourth, for legal reasons, financial wealth is more often managed by non-bank institutions within the financial system. Figure 3 confirms those facts as the credit intermediation index - that is, the number of steps a monetary unit takes as it passes from investors to final end-users of funds - is either increasing or stable from 1980 to 2015 in all countries.[16] In other words, as shown above, not only does intermediation to and from the outside economy increase, intermediation within the financial system has multiplied this figure.

[14] http://www.worldbank.org/en/publication/gfdr/background/financial-development

[15] Liquid liabilities are also known as broad money, or M3. They are the sum of currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2), plus travelers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents.

[16] The CII calculation is the following : CII=1+(financial sector liabilities)/(non financial sector liabilities)

Figure 2: Banking credit (% of total credit)
Source: BIS

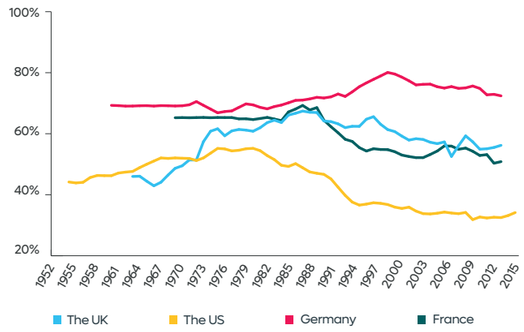


Figure 3: Credit Intermediation Index
Source: The US series is from Greenwood and Scharfstein (2012). Series for the UK, France, and Germany is from Bazot (2018). Extension of the series from 2007 to 2015 is from the author calculation based on Eurostat data.

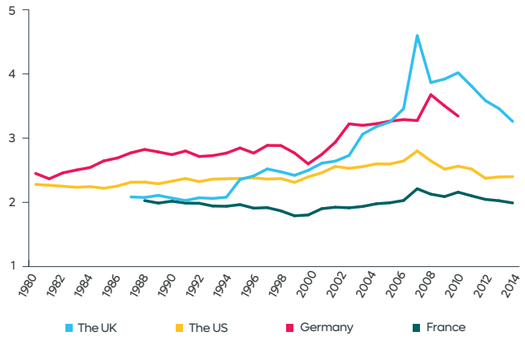


Figure 4: Share of business credit in total credit
Source: BIS

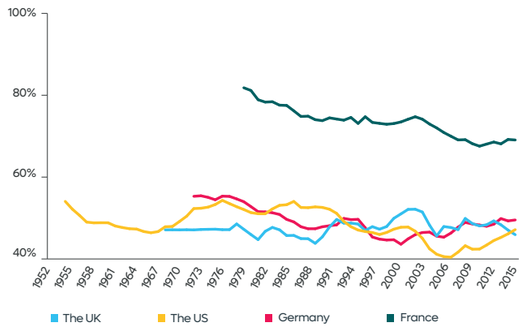
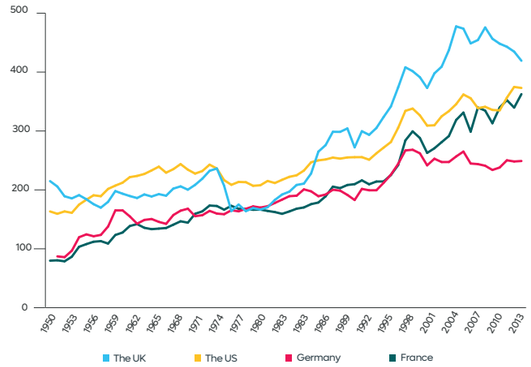


Figure 5: Financial intermediation (%GDP)



Lastly, it is interesting to look at whether borrowers are households or businesses. Figure 4, displays the share of credit to business. We see that, except for France, where business credit tends to decrease given the low level of households' credit in the 1970's, the share of business credit remains quite stable in the other countries.

To summarise, we see that financial developments have differed between countries. The amount of credit increased more in market based countries (the US and the UK) while market capitalisation increased more in bank-based countries (France and Germany). However, except for Germany, the process of financial development coincides with a reduction of banks' share of credit provision. This is mainly due to the opening of new markets for securities, the development of credit securitisation, and the increase in fund management and life insurance contracts. Germany appears as an exception as banks have remained the main provider of credit. This has coincided with intermediation levels increasing only slowly after the 1990's compared to the other countries.

This finally leads us to calculate total intermediation from the amount of assets and liabilities intermediated - that is, private credit, market capitalisation, public debt, and total deposits. Figure 5 shows that intermediation increases significantly everywhere. However, the raise appears particularly large in France and the UK. As one turns to the level of intermediation, the UK appears particularly advanced. As a matter of fact, intermediated assets equal more than 400% of GDP in the UK from 2000 to 2015. By contrast, the German figure stays close to 250% of GDP for the same period. It is also worth noting that French and German figures are very close until 2001 and the adoption of the Euro. This suggests some balance of payment effect whereby capital flowed from Germany to France to compensate trade balance asymmetry after 2001.

3. The cost of the financial system.

In this section we discuss the method used to calculate the cost of operating the financial system, and the development of those costs over time in different countries. We note the difficulties in using numbers from national accounts, and make adjustments accordingly. We also note the difficulties of comparing different types of intermediation over time, and make adjustments for this, and for international trade in financial services. This allows a like-for-like comparison over time and between countries.

The analysis demonstrates that the income of the finance industry as a proportion of GDP has grown considerably from around 2-3% of the economy in 1950, to 6-9% today. Germany has the lowest ratio, which in contrast to the other countries, has remained fairly constant for the past 25 years.

It should be possible to determine the costs of the financial system from the contribution of the financial industry to GDP. Financial value added[17], or rather "cost added" (CA) appears as the best figure one can use for that purpose. However, CA is not as simple to measure in finance as in other sectors. According to national accounting principles income can be measured in two ways: first, as the sum of revenues received by the finance industry minus the consumption required for the production of financial services and, second, as the sum of profits, compensations, and net taxes distributed by the financial industry for its services. However, the nature of the finance sector means that these two measures cannot be always equated, especially in the banking sector, as some of the income it receives is not considered in the national accounts[18].

Despite numerous debates about the right way to assess financial CA[19], the national accounts include only two things: (i) fees received by intermediaries and (ii) financial intermediation services indirectly measured (which will be referred to as FISIM) which basically measures lending and deposit rates spreads.[20] The problem with this calculation is that it excludes net property income from securities and capital gains, which may be large in the case of banks.[21]

Measuring financial income without accounting for those elements is problematic because of the link between banks' asset management activities and capital income. In order to better understand this point consider two intermediaries, an equity mutual fund and a bank.

In the first case, the equity mutual fund manages £100 on behalf of non-financial clients and charges fees. Equity gives a return 5%. Because fees are set at 2% of total managed funds, the mutual fund income is equal to £2. This is calculated in GDP figures.

In the second case the bank collects deposits of £100 and provides loans for the same value. Because, the deposit rate is 3% and the lending rate 5%, banking income is equal to £2. Financial industry cost added in this example is equal to FISIM. Again this is £2 and is included in GDP figures.

But a more complex situation arises where the "income" the intermediary makes is by way of a capital gain. Imagine a bank issues debt, intending to invest on its own account. Imagine it raises funds at 3%, and buys securities which yield a capital gain of 5%. Again the income will be 2%, but this compensation achieved through capital gain will not be captured in national accounts. Arguably it should be, and in this study the capital gain has been included. However, for those who wish to debate the point, we have in later sections tested whether excluding this income would make very much difference to the conclusions of the study. It barely does.

The gap between income and the measured cost added has become wider since banks have increased the volume of securities recorded on their balance sheets considerably over the last 30 years. In addition the development of shadow banking activities has led banks to increase their securities management activities.[22] Because capital income is akin to a transfer of income from the non-financial sector to the finance industry, that income constitutes an income from financial intermediation. This has been particularly true since the 1990s as universal banks have developed market-based activities. Thus for banks a larger share of financial income has been earned through capital gain.

In order to account for all those issues, figure 6 displays, a corrected estimation of the ratio of financial cost added as a proportion of GDP in Germany, France, the UK, and the US from 1950 to 2015.[23] We see that financial income as a proportion of GDP increased steadily over the whole period, except in Germany where a maximum is reached in the late 90s. The scale of the finance industry appears particularly large in the US and the UK; its economic weight equals more than 8% of total GDP in 2014.

The results show that an increasing part of national income has been transferred to the financial sector since 1950. This coincides with the increasing amount of assets and liabilities intermediated which we already documented. Note that it is in Germany, the only country where intermediation increases only slowly, that we also observe no increase in the GDP share of finance from the early 1980s to today.[24]

[17] In this study financial "value added" is measures from the level of intermediation (see section one)

[18] Bazot 2018

[19] Fournier, J. M. and D. Marionnet (2009): ``La mesure de l'activit des banques en France," Bulletin de la Banque de France, vol. 178
Stauffer, P. (2004): ``A tale of two worlds: how bankers and national accountants view banking", Working chapter presented to the 28th general conference of the International Association for Research in Income and Wealth (IARIW)

[20] FISIM are used to estimate the value of the services provided by financial intermediaries for which no explicit charges are made; this corresponds to the case where banks collect deposits and provide loans. FISIM is thus calculated as follow: FISIM=(r_L-r)L+(r-r_D)D, where L is the value of loans, D the amount of deposits, r_L the lending rate, r_D the deposit rate, and r the reference rate used to assess banks' refinancing cost - most often the interbank rate. The first term of FISIM calculation measures the service of credit provision while the second term measures the service of deposit management.

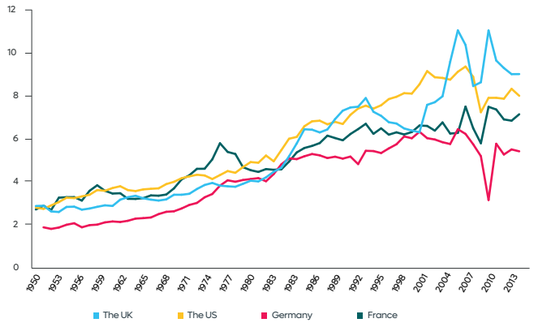
[21] Indeed, the financial accountant measures financial intermediation in a limited way, notably to respect the homogeneity of the accounting framework in other economic sectors (the calculation of VA removes income from property and capital gains in all sectors even though that income is included in GDP calculation). For that reason, the difference between banking income and VA produced by banks depends on four main elements: (i) net interest margins excluded from FISIM but included in banking income, that is, interest income excluding interest from loans minus interest expenses excluding interest from deposits; (ii) dividends from banks' securities portfolios; (iii) net capital gains from banks' securities portfolios; (iv) net income and capital gains on derivatives.

[22] Acharya, V., P. Schnabl, and G. Suarez (2013): "Securitization without risk transfer," Journal of Financial Economics, vol. 107(3)
Adrian, T. and H. Shin (2010): "The Changing Nature of Financial Intermediation and the Financial Crisis of 2007–09," Federal Reserve Bank of New York Staff Report 439
Gorton, G., and A. Metrick (2011): "Securitized banking and the run on repo," Journal of Financial Economics, vol. 104(3), pp. 425–451

[23] The corrected calculation is based on the following formula: Corrected financial income=Net banking income-Financial intermediation excluding insurance and pension funding+Insurance and pension funding VA+Activities auxiliary to financial intermediation

[24] Note that Germany experienced a financial income slump in 2009. This is partly due to Landesbanks capital losses as regional lenders speculated heavily in securities linked to the flailing American housing market.

Figure 6: Financial income (% GDP)



Overall, the analysis shows that over time, much more intermediation is taking place, and that the income of the finance industry is increasing. In both cases there is both an absolute increase, and an increase relative to GDP. Note that at this stage one could ask whether increased intermediation is a good or a bad thing. Some would argue that as growth increases, capital wealth increases disproportionately, stimulating the growth of financial intermediaries to manage people's savings. Others would note the growth of holdings of shares by financial institutions, as individuals looked to pension funds and asset managers to manage their wealth, rather than holding securities on their own account. So while some may raise concerns about "financialisation" there are many purposeful activities which can account for the growth we have seen. However this is not the focus of this paper.

The purpose of this study is to compare the cost of the finance industry with the amount it intermediates, and hence determine its efficiency. Before doing so, there are two further issues we should consider.

i. We need to account for any trade balances in financial intermediation. The UK for example, exports financial services. Intermediaries may export or import financial services, so cost added must be adjusted to take into account a nation's trade balance.

ii. We need to consider the "quality" of intermediation. This is an important adjustment on which we would welcome further discussion and research. The issue is as follows. Because intermediaries will tend to raise money from the lowest cost source, and to lend first to the best borrowers, as financial services expand, so the credit offered, and the consequent underwriting costs will be higher. Lenders may have to increase their screening and monitoring spending accordingly, the effect of which is to generate diseconomies of scale. Thus, it is important to account for the "quality" of intermediation; otherwise our calculation of intermediation costs may simply reflect the greater resources needed for more complex lending.[25]

[25] This is based on numbers used by Philippon which take into account the proportion of lending to firms and individuals likely to have a poor credit rating.

4 The unit cost of finance and financial efficiency.

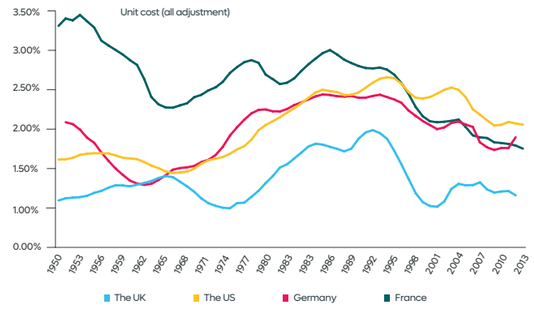
Since we now have a measure of intermediaries' financial income, we can look at the evolution of financial income relative to the financial output. This allows a calculation to be made of the unit cost of financial intermediation - that is, the cost of obtaining a basket of one pound of financial services for one year. It is upon this calculation that we base the conclusions of our study. We recognise that there are improvements possible to this calculation, but for now would contend that this represents the best measure we have of the efficiency of the finance industry over time.

(A summary of the results and methodology are shown in Figure 8 and Box 2)

Figure 7 displays unit costs after all these adjustments. Several observations can be made. First, the data show that the unit cost evolution is not the same in all countries. While it tends to decrease in France, it shows an increasing trend in the US and Germany; the UK is quite stable despite humps and bumps in the series. Second, except for the UK, unit costs tend to converge in the long run. This may be due to the homogenization of rules and regulations during the 1980s. Third, although close to the German and French unit cost in the 1990s, the US unit cost breaks away in the 2000s perhaps driven by the development of the originate-to-distribute model of finance.[26] Fourth, the UK series is an outlier. Throughout the period, the UK appears to have the lowest level of unit cost. Fifth, the unit cost appears higher during the 1980s and 1990s in all countries. This may stem from high nominal interest rates, which increase the opportunity cost of liquidity, and hence the gap between lending and deposit rates[27].

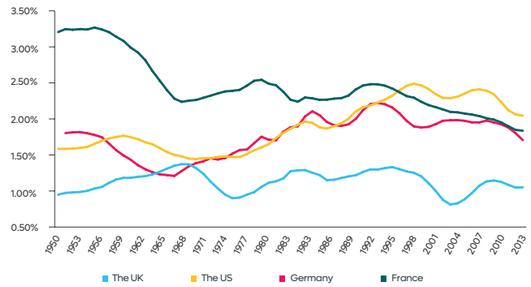
In order to account for this last point we have aimed to purge the series from the effect of nominal rates. This should help show the long term dynamic in unit cost. (To do so, we keep the residual of a regression explaining unit cost by nominal rates, assuming nominal rates may affect unit cost with delay it is used with a lag of five years.) The result is displayed in Figure 8. We immediately see that the humps and bumps are mitigated. The unit cost remains close to 1% all over the period in the UK, decreases in France from 3% to 2%, and increases in the US and Germany from 1.5% to almost 2%.

Figure 7: Unit cost of financial intermediation



Note: The unit cost is adjusted for trade balance and intermediation quality. The quality adjustment coefficient is calculated from a linear regression explaining financial output and its adjusted value in the US, based on Philippon's (2015) measures. Series are based on five year moving average values.

Figure 8: Unit cost, interest rate "purged"



Note: the unit cost is adjusted for trade balance and the quality of intermediation. It is "purged" from interest rates as it accounts for the effect of short term interest rates on its evolution. This has been done from the residual of the following regression: $uc_t=\beta.r_t+ c+\varepsilon_t$ with r_t the interest rate and β and c the estimated parameter. The new unit cost series is thus: $uc_t^{purged} = uc_t - \hat{\beta}.r_t= \hat{c}+\hat{\varepsilon}_t$

The low value of the UK unit cost is notable. First, the UK unit cost is lower throughout the period. Second, the unit cost gap widens. One might argue that those features are due to the trade balance adjustment, which perhaps attributes too much weight to international services provision. Two facts contradict this argument: (i) the trade balance is rather small up to the early 1990s (approximately 10% of all financial income); (ii) even ignoring trade balance adjustment, (a heroic assumption), the UK unit cost gets close, but still remains slightly lower than other countries. This suggests higher efficiency in the UK, which may help explain the UK's ability to develop both banking credit and market based activities from the 1970s onwards.

As its unit cost appears higher until the early 1980s but catches up thereafter, France is also intriguing. A key aspect of the French case may be the role played by the State until the 1970s. Credit and interest rates were controlled, while public banks were used to finance public enterprises. This financial structure may have been at the expense of depositors. First, the State did not want lending rates to be too high and imposed low deposit rates to promote lending to business. Second, financial market were not sufficiently large to absorb households' savings, giving large market power to deposit banks. Third, competition among banks was low because they were nationalized. All of this may have encouraged interest spread to widen, thereby increasing the unit cost of finance. Perhaps for these reasons the unit cost decreased in the 1980s along with banking privatization and financial market development.[28]

Box 1: The unit cost of financial intermediation calculation in a nutshell

The unit cost series displayed in Figure 9 is based on five principal elements

First, we measure financial sector income. In this process we add capital income which is not captured by national accounts. Capital income has become a large part of intermediaries' income over the period.

Second, we adjust financial income for trade balances as some financial services are not provided to domestic customers. We thus remove the trade balance in calculating the cost of the financial system.

Third, we measure the total amount of financial services provided to the society. We use the sum of asset and liabilities intermediated.

Fourth, we adjust the financial output to account for the quality of financial services. Quality adjustment is based on Philippon's (2015) calculation which adjusts for lending to less credit worthy firms and poorer households. Although this calculation is only available for the US, we applied the same factor, adjusted for the level of credit development to other countries. We thus assume that the link between financial development and intermediation quality is the similar in all countries. Adopting Philippon's adjustment has the advantage of consistency. We recognise that this issue is an important one, which is worthy of further research.

Fifth, after calculating the unit cost from the ratio of financial income to financial output, we purge the effect of nominal interest rates variation on the short term evolution of unit cost values. Nominal rates increase raises the spread between lending and deposit rates. The adjustment is made by using the residual of a regression explaining the unit cost from nominal interest rates. We recognise this is an imperfect calculation, but note that it has little impact on our conclusions.

[26] Note that this unit cost calculation for the US differs slightly from the calculation of Philippon (2015). First, it captures capital income. Second, it accounts for financial trade balance. Third, it relies only on outstanding assets, avoiding extrapolation from credit and equity flows. However, despite those changes, the series appear very similar.

[27] Bazot, 2018

[28] It is worth noting that a large decline occurred during the 1950s and early 1960s, this may be linked to monetary instability hitting France during that period.

5 How to explain the unit cost evolution?

The findings so far suggest that, with the exception of France, there is little evidence that there has been any increase in the efficiency of the finance industry from 1950 until today. These disappointing results are consistent with Philippon's evidence.

This should be surprising. One might have expected that with the rise in new technologies unit costs would have decreased in the long run. This has not happened.

Two things may explain those results. First, the calculation may be imperfect. Second, whatever combination of technology, competition, regulation and deregulation that has been applied over the last sixty years, it has simply not improved the ability of financial markets to intermediate more efficiently. Let us first consider whether our measures may be wrong.

The imperfect measure hypothesis

Imperfection in the calculation might have two distinct roots:

Cost measurement error

Financial output misspecification

Cost measurement error:

One of the adjustments made to a simple measure of the GDP share of finance, was the addition of capital income. What would be the results if we do not account for capital income? Figure 9 shows that ignoring them does not change our conclusions dramatically, except that unit costs appear lower after the 1990s, especially in Germany. The unit cost increases in the US, decreases in France, and remains stable in Germany and the UK. (Those results are confirmed by regression analyses showing that the US and French series display significant (positive and negative) trend while the UK and German series display no significant evolution.)

Output mis-specification:

We noted at the beginning of this paper that we had specified the output of the finance industry as equivalent to the funds it intermediates. We have adjusted for the "quality" of borrowing and lending. However we have not taken explicit account of other services offered by the financial services industry such as the 'safekeeping of assets' and the 'provision of effective payment system' or any risk sharing service which does not involve intermediation. However, given the cost of these services, any productivity gain would reduce the level and trend of unit cost series in a limited way.

Some argue that financial intermediaries provide indirect services such as price discovery. But price discovery is an externality for which market intermediaries are not paid, whether they are buying and selling financial products or any other commodity.

This leaves open the conundrum of why the finance industry has demonstrated such limited gains in efficiency.

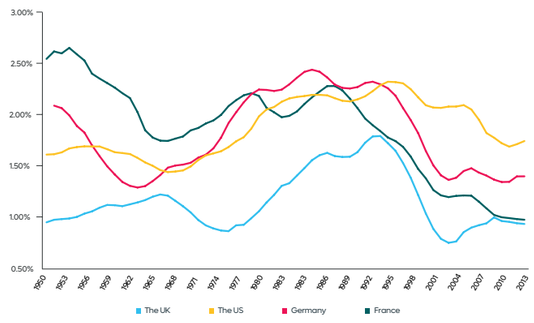
The information asymmetry hypothesis

One other possible explanation might be market imperfection. In this respect, a failure effectively to manage "information asymmetry" has been widely discussed by economists. By its nature, intermediation of finance requires the industry to be an information manager. Customers therefore have to trust their financial supplier in much the same way as they trust a doctor. This is particularly true where the service is a discretionary one, such as fund management. Thus while it might be straightforward to tell whether one bank is offering higher interest rates than another, it is difficult to know whether a fund manager has the skill to beat the market or to work on customers' interests. If suppliers are willing to take advantage of this asymmetric information they can raise prices for services of little value[29]. Regulation would not necessarily improve the situation given that intermediaries need to spend time and money to comply with or to escape from it.

Asymmetric information may allow suppliers to avoid undertaking their proper function. For example prior to the global financial crisis, the securitisation of mortgage credit may have helped financial intermediaries to reduce their credit risk management, and shirk on the necessary underwriting. Instead lending depended on collateral[30], and securitisation facilitated lax credit screening[31]. Because depositors or investors were not always able to monitor such behaviour, a larger share of income was pocketed by intermediaries.

In addition, the development of financial activities may be profitable if access to government safety nets encourages banks to take more risks[32]. Such a moral hazard encourages risk taking, the cost of which is ultimately paid by the non-financial sector.

Figure 9: Plain adjusted unit cost (five year moving average)



Box 2: Moral hazard and its consequences on financial costs and efficiency

Example 1: A Fund collects £1 million from an investor, and charges the investor 10% of any gain it makes. It can finance one of two projects. The first project will provide a 5% return with certainty. The second is risky and will bring 20% return with probability ½. In case of failure all the funds are lost, but because the Fund is subject to limited liability it does not have to cover these losses.

Project Gains:

	Project 1	Project 2
Expected gain of the Fund	£5000	£10000
Expected gain of the project	£50000	£400000

In case of asymmetric information the investor cannot control for the good use of the funds invested, so the project will be chosen based on the Fund's profitability. Let's compare private and social gains of both projects:

The expected utility of the second project is negative, so this project should be avoided. However, because the Fund maximises its own utility, this project will be chosen by the Fund, since this will double its expected revenue, from £5,000 to £10,000.

One might argue that rational investors might anticipate this situation. However if information asymmetry exists the investor is unable to make a good choice. And investors may not be fully rational. As shown in behavioural finance studies, people may be overconfident, display herding instinct, etc[33].

Example 2: In the "the big short", Michael Burry - supposedly the first fund manager that anticipated the subprime mortgage collapse - makes a bet against mortgage backed securities. He finally manages to make a very high profit. This story might interest us for four reasons, but not the obvious ones. In the end of the day Burry looked like a hero; that is how he is portrayed in the film. But Burry made this choice without consulting the investors, despite the dramatic consequences of its bet. Second he put all the Fund money on a single bet, ignoring the basic principles of risk diversification. Third, investors were unable to change Burry's course of action, suggesting high power asymmetry between the fund manager and its clients. Fourth, in a zero sum game such as market speculation, large profits are offset by large losses, the film only report the success story. Michael Burry's clients are now very rich but their gains were made on the back of other Burry-like clients. Indeed, if Burry's strategy failed (and it nearly did), investors would have lost their funds. If it had, Burry would have just closed the enterprise without paying the cost of its bold operation.

[29] Gennaioli, N., A. Shleifer, and R. Vishny (2014): "Finance and the preservation of wealth", Quarterly Journal of Economics, vol. 129(3)
[30] Manove, M., A. J. Padilla and M. Pagano (2001): "Collateral versus project screening: a model of lazy banks", RAND Journal of Economics, vol. 32(4)
[31] Keys B., T. Mukherjee, A. Seru, and V. Vig (2012): "Did securitization lead to lax screening? Evidence from money market mutual funds", Quarterly Journal of Economics, vol. 125(1)
[32] Acharya, V. (2009): "A theory of systemic risk and design of prudential bank regulation", Journal of Financial Stability, vol. 5(3)
[33] Thaler, R. (2016): Misbehaving: the Making of Behavioral Economics. W. W. Norton & Company.

6 Conclusion.

This paper has tried to address a very simple, but important question. That is whether there is evidence that the European finance industry is getting any better in fulfilling its purpose. It has noted with but one exception, this simple question has not previously been addressed. Therefore our first conclusion must be that there is an urgent need for more research into the efficiency of the finance industry, and the factors likely to make it more efficient.

In the absence of such research, policymakers may have tended to assume that current approaches to financial regulation will suffice; in other words that new technology and regulated competition will inevitably tend to lead to improved outcomes. The evidence of this study would suggest that current approaches have not worked well, and that a broader perspective is needed.

What we have discovered is that there has been a huge growth in financial intermediation, both to and from the outside world, and within the finance industry itself. But there is little evidence of any net improvement in efficiency, in terms of the service finance provides for the outside world.

There are distinct differences between countries, both in the scale, structure and efficiency of their financial services industry. For example, France alone shows some improvement in efficiency. Germany has a less financialised economy, and so sacrifices less of its GDP to enjoy the services of the finance industry. The UK industry seems remarkably efficient.

The author hopes that this study might stimulate a new debate, and indeed a new school of research whose purpose is to help improve the financial system. The prize for doing so would be high. We have noted the vital contribution finance makes. Indeed historians have noted that it was improvements in the efficiency of the finance industry which arguably stimulated the commercial and industrial growth of the Low Countries and the UK in the 18th century. It therefore seems paradoxical that in the 21st century we have paid so little attention to the fact that industry efficiency has been allowed to drift.

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