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HAS FINANCE BECOME TOO EXPENSIVE? AN ESTIMATION OF THE UNIT COST OF FINANCIAL INTERMEDIATION IN EUROPE 1951-2007

Summary

Finance played an increasing important role in European economies, growing from 2.3 per cent of GDP in 1951 to 8.2 per cent in 2007. But since the subprime mortgage crisis, the role and size of finance in our societies has been hotly debated. A key question in the debate is whether recent financial developments justify the accrued importance of finance in our economies and whether, as some propose, regulation should be aimed at reducing its importance. This study proposes a measure of the unit cost of the production of financial services over the long term in Europe, as a way of assessing the efficiency gains in financial services production. The results show that finance has become more “expensive” since the 1970s, just when deregulation was intended to make it more productive. The growth in intermediation costs between 1970 and 1990 can nevertheless be explained by macroeconomic and monetary conditions. By contrast, the increase in unit cost after 1990 coincides with the development of modern finance that gives a greater role to market activity. ■

- The economic clout of the European finance industry increased steadily from 2.3 per cent to 8.2 per cent of GDP between 1951 and 2007
- The volume of financial services produced remained relatively stable until the beginning of the 1980s, then grew explosively until 2007
- The unit cost of financial intermediation services began to grow in Europe from 1970 and remained high until 2007
- The nominal interest rate explains to a great extent the increase in unit cost between 1970 and 1990
- The high values of unit cost after 1990 coincide with the growth of the market activities of banks



The Institut des politiques publiques (IPP) is developed through a scientific partnership between the Paris School of Economics and the Centre for Research in Economics and Statistics. The aim of the IPP is to promote quantitative analysis and evaluation of public policy using cutting edge research methods in economics.

While financial deregulation allowed the development of new financial services, the growing economic significance of finance seems to have produced some excesses. The crisis of 2008 was one of the most visible of them. Several experts and political leaders have argued that finance has become too important and that new kinds of regulations must aim to limit its role.

This debate follows a period in which, from the 1980s, financial deregulation policies were introduced in Europe and the United States with the aim of reducing the costs of financial intermediation by stimulating competition between financial actors. Thirty years later, the effect of that deregulation is not established. A recent study by Thomas Philippon (2013) shows that **the production cost of financial services has not decreased in the U.S. since the 1990s**, though it had been hoped that efficiencies would result from a deregulated industry.

Are the results found for the United States applicable to Europe? What mechanisms determine the evolution of the unit cost of financial intermediation over the long term? This IPP Policy Brief presents a review of European finance data from 1950 to 2007 and tries to provide some answers to these questions. Because the aim of this study is to look at the long run evolution of the unit cost, it does not account for post-2007 exceptional years.

Methodology: measuring the unit cost of financial intermediation

What is a unit cost? Let's take the example of the electricity industry in order to restate the basic logic of this idea. The total cost of production or of consumption of electricity is what society pays for electricity provision given the cost of raw material such as oil or uranium. The unit cost of providing electricity thus corresponds to the income earned by the electricity industry divided by total production of electricity. From this calculation derives the average cost, or unit cost of electricity provision, in a given period. Such a calculation can seem redundant however, given that the price of a kilowatt hour is regularly published in numerous sources.

The situation is different in the finance sector, where the heterogeneity of financial services renders impossible the use of pricing to measure unit cost. To measure the cost of finance, we thus must rely on aggregate data. The methodology used in this paper is inspired by the work done with American data by Thomas Philippon (2013) and relies on macroeconomic data on the EU's finance sector. It aims to measure **the unit cost of financial intermediation, defined as the real cost of the creation and maintenance of one euro's worth of financial services** over one year. The unit cost corresponds to the ratio of the domestic income of the financial sector to the quantity of domestic financial services produced.

Measuring the income of finance

The income of the finance industry, measured as a percentage of GDP, gives an idea of the rhythm of the annual growth of domestic financial consumption and of the economic significance of the finance industry. According to national accounting principles for calculating value added (VA), this income can be measured in two ways: on the one hand, as the sum of revenues received by the finance industry minus the consumption required for the production of financial services and on the other hand, as the sum of profits, wages and taxes distributed by the financial industry for its domestic services; this latter measure refers to the simple principle of redistribution of income from activities.

« The income of the finance industry, measured as a percentage of GDP, gives an idea of [...] the economic significance of the finance industry »

However, **the specificities of the finance sector do not always allow the equating of these two measures**, especially in the banking sector. Indeed, some activities are not considered in the national accounts to be the products of a separate activity of financial intermediation, even though they give rise to profits, wages and taxes. This is the case, for example, with gains on the sale of assets and dividends, and interest margins on securities reported on the balance sheet. These incomes are linked to activities of portfolio management and market making and in this sense constitute income from financial intermediation. Unlike the VA calculated in the national accounts, banking income measured by private accounting takes these revenues into account (see [Box 1](#)).

To the extent that total consumption of banking financial services corresponds to the transfer of income from the non-banking sector to the banking sector, 'banking income' is a reliable measure of that consumption. Domestic financial consumption is therefore estimated by the total of banking income plus the value added of the insurance sector and other financial intermediaries (Cf. Bazot, 2014).

Measuring the quantity of financial services produced by the finance industry

Unlike in the energy industry, where the total production of electricity is easily quantified, the identification of volume produced by finance remains complex. In order to measure these quantities, we must count the services underpinning financial intermediation activities.

Box 1: Value added in the banking sector and banking income

National accounts measure value added (VA) by the difference between the income from production and the intermediary consumption necessary for that production. In the specific case of banks, production income is measured by the sum of financial intermediation services indirectly measured (FISIM) and services billed. FISIM corresponds to the interest margins that banks make on their intermediation operations. The margins correspond to the activity of capital transfers via credits and management of deposits. Indeed, banks lend at an interest rate higher than that at which they refinance on the market and pay interest on deposits at below the market rate at which they can reuse them.

Banking income adds to VA the income from property (dividends and interest margins on securities reported on the balance sheet) and capital gains (net gains and net profits on securities transactions; net products minus net charges on financial futures). Furthermore, banking income does not exclude all intermediary consumption as some of this consumption is dependent on – and not necessarily for – the production of financial services. Finally, FISIM are replaced by the simple difference between income from lending activities and interest on deposits.

While banking VA measures banking intermediation in a limited way, notably to respect the homogeneity of the accounting framework in other economic sectors (the calculation of VA does not take into account income from property or from gains on the sale of assets in other sectors), banking income measures them in a broad sense.

Economic theory counts **two types of service rendered by the financial industry: the transfer of funds and the provision of liquidity**. The transfer of funds is the allocation of capital towards their highest yield. The finance industry plays a double intermediation role here. First, it manages savings by proposing different ranges of placement products from which the profits depend on the risks. Second, it assures the financing of the economy by selecting and overseeing borrowing projects. The servicing of liquidity is the creation and provision on demand of liquidity. Banks are, for example, able to provide liquidity to their depositors despite the use of those deposits for long-term operations.

In order to provide their services, financial intermediaries produce and manage financial assets. These assets are called "real" when they directly serve the real economy. They are distinguished from "derivative" assets, which derive from other financial assets (Cf. [Box 2](#)). The real assets are mediated

« *These assets are called "real" when they directly serve the real economy. They are distinguished from "derivative" assets, which derive from other financial assets* »

because they require the intervention of a financial intermediary at the moment of their creation and thereafter during the course of their life. For example, in making a loan to a business, a bank creates a debt that it manages until its term is reached. In return, this debt appears in the form of deposits or securities – after

the transformation of the debt into negotiable securities – whose management also depends on financial intermediaries. Thus, the volume of services produced by the finance industry coincides with the volume of intermediated real financial assets. These assets are loans, transferable securities (stocks and bonds) and the money supply in the broad sense. The loans and transferable securities corresponds to the activity of the transfer of funds; the indicator of broad money corresponds to the service of liquidity, including the creation of liquid assets in the parallel banking sector that operates outside banking regulations.

Box 2: The question of derivatives

Some financial assets are called "derivatives" because they derive from real financial assets or, when they become even more complex, from other derivative financial assets. Derivatives offer services, mainly to the finance industry, in particular for managing risks and increasing financial intermediaries access to external funding. Insofar as the release of derivatives allows growth in the total volume of intermediated real assets, their impact on the production of financial services corresponds to that increase. If, for example, credit derivatives allow banks to increase their volume of loans, the quantity of financial services produced increases in proportion to the service produced by the credit derivatives. However, some derivatives are supposed to provide a direct service to the real economy – e.g. interest risk management through plain vanilla swaps. Based on BIS and ISDA data, this represents less than 0.5% of European's real asset intermediated in 2007 (see Bazot 2014). This is why derivatives do not enter into the calculation of the quantity of financial services produced by the finance industry.

In order to measure the total production of financial services starting with intermediated financial assets, **it is important to account for assets intensity of intermediation**, that is, the energy spends by intermediaries to manage financial assets. If the average intensity of intermediation of a loan is greater than that of a security of the same value, then the volume of financial service produced by the creation and or maintenance of a loan is greater than that for a security. Series is then controlled to take into account these differences¹.

Box 3: Aggregation of European series

The financial revenues and quantity of financial services produced in Europe are obtained by an aggregation of German, French, British, Italian, Spanish and Dutch series. These countries represent more than 80 per cent of European GDP for the entire period covered in this study. Because of data availability problems, the consumption and production of financial services cannot be calculated in a robust manner for Italy, Spain or the Netherlands before 1970 and therefore, the pre-1970 data do not include data for these countries. However, this choice has little effect on the results in view of the economic heft of Germany, France and the UK before 1970 (when these three countries represent more than 65 per cent of European GDP). Two aggregation methods were used. The first made a simple sum of national series of financial consumption and production; the second used the share of each country in the annual European GDP as the basis for weighting. The two methods arrive at practically the same results.

Results

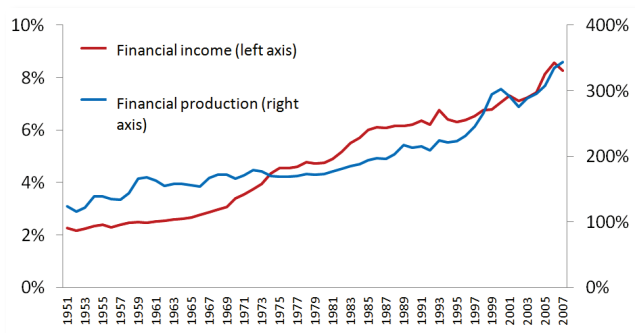
The European unit cost of financial intermediation is obtained through the aggregation of European national series (see [Box 3](#)). [Figure 1](#) shows that the economic significance of the finance industry (income of financial intermediation to GDP) and financial development in the broad sense (quantity of financial services to GDP) grew during the period. The weight of finance in Europe went from 3.4 per cent of European GDP to 8.2 per cent between 1970 and 2007. On the other hand, the quantity of services produced by the finance industry only grew relative to GDP from the 1990s. This growth was, however, explosive between 1990 and 2007: the volume of financial intermediation services produced in Europe increased from 213 per cent of European GDP to 343 per cent. **These results indicate the extent to which the economic clout of the finance sector grew, in terms of both income and volume.**

The ratio of income to volume allows us to measure the unit cost of financial intermediation. [Figure 2](#) compares the **evolution of unit cost in Europe and the United States**. The two curves present some similarities. First, unit cost increases over the whole period on both sides of the Atlantic. In Europe as in the U.S., the cost of creating and maintaining one euro/dollar of intermediated financial asset for one year grew by 35 per cent, or 0.6 cents, between 1967 and 2007. Second, the shape of the two curves is similar: growing between 1970 and 1990, and slightly decreasing thereafter. Finally, the values of unit cost in the U.S. and Europe are close, sitting around two per cent over the whole period.

« *The cost of creating and maintaining one euro/dollar of intermediated financial asset for one year grew by 35 per cent, or 0.6 cents, between 1967 and 2007* »

1. See Philippon (2013) for calculation details and Bazot (2014) for robustness check.

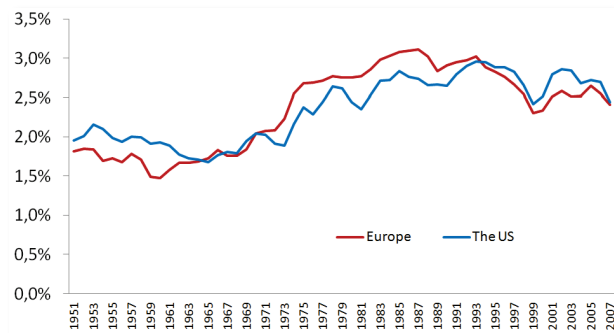
Figure 1: Financial income and volume of produced financial services in Europe relative to GDP



Source: Bazot (2014).

Note: Financial income is the total net income of the finance industry. Financial production is the total production of financial services, measured by total intermediated financial assets.

Figure 2: Unit cost of financial intermediation in Europe and the United States



Source: For Europe see Bazot (2014). For the U.S. see Philippon (2013), "level estimation".

Note: In 2007, the creation and maintenance of one euro of intermediated financial asset cost 2.4 cents in Europe and the U.S. NB: Unit cost is the ratio of consumption to production of financial services. It is estimated by the ratio of financial industry income to total intermediated financial assets.

These results are robust vis-à-vis the assumptions made to calculate the production of financial services. Indeed, the unit cost does not depend on the weight given to the series of intermediated assets, since the ratio of financial income to each series composing the estimation of financial production (loans, securities and broad money) increases throughout the period. Moreover, the unit cost does not depend on the insurance sector, which takes into account some non-financial income (ex: home & car insurance), since the ratio of banking income to intermediated assets follows the unit cost curve.

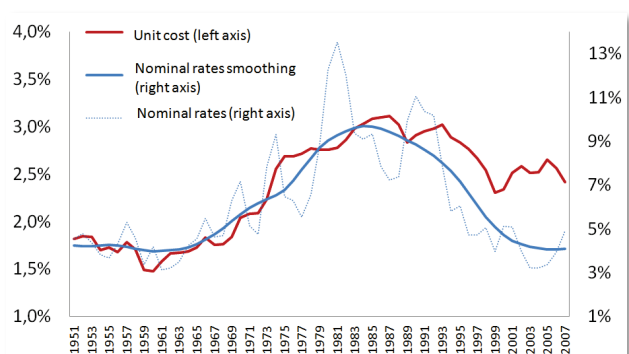
What explains the increase in the cost of finance?

What factors explain the growth of unit cost? As Figure 2 shows, unit cost grew from the 1970s and peaked at the end of the 1980s. These years are characterised by significant macroeconomic and monetary troubles (inflation, instability and then the collapse of the European monetary system). The underlying growth of the nominal interest rate is likely to influence the cost of intermediation. On the one hand, the gap between the rate of borrowing and the rate of remuneration on deposits grows when the nominal rate rises.

On the other hand, insofar as demand deposits are not remunerated, banks increase their margins in proportion to the rate increase. Figure 3 shows that **nominal rates are highly correlated to unit cost before 1990**. However, while the two curves go down together during the 1990s, the rates curve descends more quickly.

The progressive de-correlation of the two series coincides with **the growth of securitisation**, that is, the transformation of debt into exchangeable securities. Because the management of securities portfolios has developed at the expense of loans monitoring, the decline in incomes following the fall in interest rates in the 1990s has been offset by security management incomes. Indeed, the ratio of banking income excluded from banking VA – of which the majority comes from income from property and gains from sales – to total financial industry revenue appears to be positively correlated to the part of unit cost not explained by nominal rates (cf. Figure 4). The plateau reached by unit cost during the 1990s corresponds to the lift-off in banks' market activities. This may help to explain why unit cost remains high until 2007 despite the fall in nominal rates.

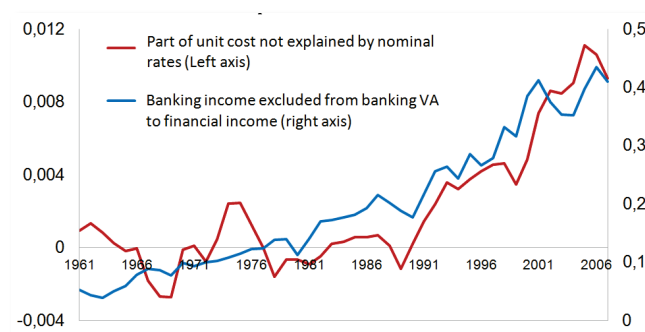
Figure 3: Unit cost and nominal interest rates in Europe



Source: Bazot (2014).

Note: The nominal rates are the short-term nominal interest rates. The European rates are estimated by weighting national rates according to the economic clout of each country in the sample. The interest rate smoothing is done using a local regression model.

Figure 4: Unit cost not explained by the nominal rates and income from banking portfolio activities



Source: Bazot (2014).

Note: The part of unit cost not explained by the nominal rates is the residual of a linear regression explaining unit cost by "smoothed" nominal rates.

Conclusions and future research

What mechanisms explain the high value of unit cost, especially after 1990? Is it the fruit of inefficiency? These questions are beyond the scope of this study, however, the significance of regulatory transformations can be underlined. Since the 1990s, the effect of financial deregulation has been to increase the volume of financial intermediation market activity. **The competences required for securitisation and the management of complex asset portfolios and risks have increased both financial intermediaries' demands for human capital and finance sector compensation.** According to Philippon and Reshef (2012), compensation in the finance industry has enjoyed a premium relative to other economic sectors with the same skill levels since the 1990s. Moreover, insofar as financial incomes derive from risk, the capacity to transfer the costs of risk to non-financial agents has allowed the finance industry to increase its revenues at the expense of the real economy. Are these phenomena the source of a situational rent that increases the unit cost of financial intermediation? The question is an interesting one for future research.

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