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MAPPING BANKING CENTRES GLOBALLY SINCE 1970

EMMANUEL MOURLON-DRUOL AND ALIÉNOR CAMERON

Brexit and the rise of China as a leading international economic power have revived discussions about the geography of banking centres. This paper analyses the geographical evolution of banking centres since the 1970s, based on a database constructed from a ranking of the top banks in the world created by *The Banker* magazine, a UK-based monthly publication specialised in international financial affairs. We describe both how the database was created and the ways in which it can be used to inform policy on money and capital markets. We address why the data can be used to proxy the size of International Financial Centres (IFCs) and the methodological limitations it may present. We find that banking consolidations and the evolution of the legal framework are more central to the changing geography of banking centres than economic and financial crises. We also highlight that, despite major shifts in global economic power, leading banking centres are hard to replace.

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1 Introduction

Brexit and the rise of China as a leading international economic power have revived discussions about the geography of banking centres. Banking centres can confer not only significant economic power to the countries where they are located, but also various forms of geopolitical power. This has led to some competition between countries aiming to attract financial actors, especially when opportunities for power reshuffling emerge.

This paper analyses the geographical evolution of banking centres since 1970, based on *The Banker*'s ranking of the world's top commercial lending banks. The development of banking centres over time is neither linear nor obvious. As Charles Kindleberger noted in his seminal study (Kindleberger, 1974), the executive offices of banks are not necessarily located in the place their name would imply: Crédit Lyonnais is not in Lyon, Dresdner Bank is not in Dresden and the Midland Bank was not in the Midlands. Many other factors which we discuss may influence banks' decisions to locate in one centre rather than another.

Our database is constructed from a ranking of the top banks in the world created by *The Banker* magazine, a UK-based monthly publication founded 1926 and specialised in international financial affairs. *The Banker's* rankings are commonly used as a source of data by bankers and civil servants to analyse the financial environment. *The Banker* presents its data online only from the year 1996, so we have digitised most of the rankings from years prior to this. We describe both how the database was created and the ways in which it can be used to inform policy on money and capital markets. We address why the data can be used to proxy the size of international financial centres (IFCs), and the methodological limitations it may present. Our definition of banking centres is restricted by the database we use. We take it to mean the place where a bank is registered. The Annex outlines further details about the challenges associated with measuring the size and weight of a bank.

The study of the development of banking centres focuses on three questions. How were new banking centres created? What are the determinants of their location? How can policies affect where banking centres take root? Analysing the geography of banking centres through the lens of the world's top 300 banks shows that banking consolidations and the evolution of the legal framework are more important for the changing geography of banking centres than economic and financial crises. It also highlights that in spite of significant shifts of global economic power, leading banking centres are hard to replace.

First, we review the relevant literature on international banking and financial centres and focus on the types of data commonly used by researchers in this field. We also compare this to the information provided by the database described in this paper. Second, we present the methodology of the creation of the database. Third, we analyse the global distribution of banks. Finally, we draw out potential policy implications and discuss the use of this data in policy debates.

2 Literature review

The American economic historian Charles Kindleberger put IFCs on the research agenda when he published *The formation of financial centers: a study in comparative economic history* in 1973/1974 (Kindleberger, 1974). Kindleberger started his book by noting that *"it is a curious fact that the formation of financial centres is not studied today in economics"*, given both the historical interest in understanding why IFCs developed where they did and the contemporary relevance of this research. Kindleberger argued that understanding the determinants of the formation of IFCs can help guide policymakers in their efforts to build and maintain money and capital markets.

Work in this field was later greatly advanced by Howard Curtis Reed, who pioneered the use of quantitative methods to study IFCs (Reed, 1981). To measure the determinants of the rise and fall of IFCs across the globe during most of the twentieth century, he used an array of banking, financial and 'home nation' variables to capture the different characteristics of each home nation, such as size of industry, population, time zone, etc. The novelty of his work was partly its methodology and partly its scope; earlier studies had mostly focused on specific IFCs, with Johnson's 1976 study of Panama as a regional centre being one of the most notable (Johnson, 1976). Though Reed's book marked a turning point in the study of IFCs, it should be noted that most variables were measured in five to fifteen-year intervals and looked only at the presence of banks as an indicator of the size of an IFC up until 1955. Subsequent studies expanded on Reed's work either by exploring new sources of data, by focusing on a subset of IFCs or on a more restricted time period. Table 1 summarises the most relevant literature in this strand of economic/financial history, detailing each study's data sources, time and geographical coverage.

Table 1: Summary of the literature on IFCs

Title	Author(s)	Date	Data source(s)	Time coverage	Geographical coverage	Actors
The formation of financial centers: a study in comparative economic history	Charles P. Kindleberger	1974	Qualitative analysis	Late 19th century to 1973	UK, France, Germany, Italy, Switzerland, Canada, US	Primarily banks
Panama as a Regional Financial Center: A Preliminary Analysis of Development Contribution	H. G. Johnson	1976	The World Bank Memorandum on Panama (July 1972), Statistics from National Banking Commission	1960-1971	Panama City	All financial services
The Preeminence of International Financial Centers	H. C. Reed	1981	Randy McNally International Bankers Directory, The Bankers Almanac and Yearbook, IMF's International Financial Statistics	1900-1980 (10- to 15-year intervals)	76-80 cities across the globe	Banks
Trends in the growth of Japanese international banking in Western Europe	F. N. Burton, F. H. Saelens	1983	The Banker, Feb and Nov. 1981	1970-1981	Western Europe	Japanese Banks
A financial history of Western Europe	C. Kindleberger	1984	Qualitative analysis	1272-1957	Western Europe	All financial services
Banks and the world's major financial centres, 1970-1980	S.-R. Choi, A. E. Tschoegl, C.-M. Yu	1986	The Banker (1971 & 81), The Banker's Almanac & Yearbook (1970-71 & 1980-81)	1970 & 1980	14 financial centres	Top 300 banks by asset
International financial centres in Asia, the Middle East and Australia: a historical perspective	G. Jones, Y. Cassis	1991	IMF's International Financial Statistics Yearbook, 1981 and 1988	1965 – 1987 (5-year intervals)	Asia, Middle East, and Australia	Banks
International Financial Centres	R. Roberts (ed)	1994	Collective volume: different data sources according to individual chapters	Varied, depending on individual chapters	Global	Varied, depending on individual chapters

Frankfurt as a Financial Centre: From Medieval Trade Fair to European Banking Centre	C.-L. Holtfrerich	1999	Qualitative analysis	1648-1999	Frankfurt	All financial services
Banks and the emergence of Hong Kong as an international financial center	C. R. Schenk	2002	Far Eastern Economic Review, The Banker's Almanac and Yearbook (1956/1966)	1950-1970 (5-year intervals)	Hong Kong	Banks
London as an International Financial Centre, 1980-2000: Global Powerhouse or Wimbledon EC2?	R. Roberts, Y. Cassis, E. Bussière	2005	Qualitative analysis	1820-2000	London	All financial services
London and Paris as international financial centres in the twentieth century	E. Bussière, Y. Cassis	2005	Collective volume: different data sources according to individual chapters	1900-2000	London & Paris	Foreign banks
Capitals of capital: a history of international financial centres, 1780-2005	Y. Cassis	2006	Different data sources depending on period which is studied, mostly qualitative analysis	1780-2005	Top 10-15 financial centres	All financial services
International banking centres: a network perspective	G. von Peter	2007	BIS international banking statistics	1984-2007	Global	Banks
The Rise of International Financial Centres after the Breakdown of Bretton Woods	E. Mourlon-Druol	2018	The Banker's Almanac, IMF's International Financial Statistics	1966-1986	Bahrain	Banks
International Financial Centres after the Global Financial Crisis and Brexit	Y. Cassis, D. Wójcik	2018	Varied, depending on individual chapters	Varied, depending on individual chapters	Top 11 financial centres	Varied, depending on individual chapters

Source: Bruegel.

Three main elements emerge from this large and complex literature. First, most studies raise the issue of the **difficulty of finding consistent and reliable statistics to use**. Reed mentions this point in his book published in 1981 (Reed, 1981); much more recently Schenk still refers to the challenges associated with data collection in the case of Hong Kong (Schenk, 2002). Cassis (2006) even questioned the possibility of undertaking a rigorous quantitative analysis on the rise and development of IFCs in the world over a long period of time. *The Banker*'s database does not allow us to completely overcome such problems as the database has its own limitations that we discuss below. However, *The Banker*'s database does offer a chronological consistency that allows comparisons to be made over time and across the world, at a high level of granularity that other sources do not allow.

Second, all works highlight the **importance of several factors in explaining the rise and fall of banking and financial centres**: the evolution of local regulatory frameworks, competition between these regulatory frameworks and how individual banks may choose one over another, the stability of local political systems, the tax regime, the strength and stability of the currency, the existence of a trading centre, the skills of the workforce, communication, and technology. These different variables and their evolution can offer new opportunities and incentives for banks to develop their activities in a given place.

Third, **the ranking** of these financial and/or banking centres varies greatly across the literature. There are not just differences in defining which centres are local, regional, or international, there are also differences in the variables used to arrive at a given ranking. Reed (1981) for instance used several variables (including, but not limited to: Local Bank Headquarters, Foreign Bank Office, Foreign Financial Assets) while Choi *et al* (1986) used the number of the world's top 300 banks which are represented by an office in that location. Another way to rank the centres is to establish a typology. This is what Jones (1991) did by identifying three types of centres: A (sub-regional), B (regional) and C (global). *The Banker*'s database allows us to rank the banking centres based on one consistent measure: total assets. The methodological challenges associated with this measure are discussed in the Annex.

Overall, the challenge of studying IFCs is in how difficult it is to find data widely covering the three following dimensions of analysis: time, space and actors. Consequently, many studies give up on one, or more, of the three dimensions. First, authors usually refer only to banks and banking centres when they use the **expression 'international financial centre'**, which is more restrictive than the expression seems to indicate. Other actors that play an important part in these centres, such as insurance companies, investment funds or credit rating agencies, are not included in this definition. This is likely because data sources spanning many decades and covering the full range of actors composing a financial centre are virtually non-existent. Cassis (2006) explicitly questioned the possibility of carrying

out quantitative analysis of IFCs over the long run for this very reason. As such, many studies focus on banking as a proxy for IFCs as a whole.

Focusing primarily on the banking sector allows us to reflect on the structural forces at play in the evolution of financial centres more generally. The presence of a skilled workforce, the stability of the host country's political regime, the regulatory and supervisory frameworks, among other factors, are all equally important for both banking and other financial services. And it is unlikely that a banking centre will not also host other financial services. Banking is central in economic development and understanding the formation of banking centres alone already offers important insights into the geography of international finance. Banking is thus the unavoidable starting point in the literature on international financial centres.

Second, studies that look at relatively long timespans in fact mostly compare a **series of distant snapshots, rather than analysing a continuous time series of data**. For instance, Choi *et al* (1986) stated that they were studying the evolution of IFCs over the course of a full decade, but the data they analysed was from the first year of this decade (1970) and the last year (1980). Very often, authors provide this type of 'time capsule' analysis because of the lack of available continuous data. *The Banker*'s database overcomes this limitation by using a time-series with more frequent data points since 1970.

Third, when authors do study long time series and use continuous data, their **geographical coverage is somewhat limited**. Some authors provide in-depth analyses of one financial centre in particular (Holtfrerich, 1999; Johnson, 1976; Schenk, 2002; Roberts *et al*, 2005), while others select a few (Bussière and Cassis, 2005), and some focus on a specific region (Burton and Saelens; 1983, Kindleberger, 1984; Jones and Cassis, 1991). *The Banker*'s database also overcomes this limitation, as its geographical coverage is not limited to a country or a region but includes the entire world.

The new data created from *The Banker*'s rankings of lending commercial banks allows for analysis along two of these dimensions: time and space. The whole world is covered over a time period of 52 years, but data is only available for banks.

3 Methodology

3.1 Database creation

The database was constructed from a ranking of the top commercial lending banks in the world created by *The Banker*, a UK-based monthly publication specialised in international financial affairs. This ranking was started in 1970. Rankings from 1996 to 2022 were digitised and made available online to *The Banker* subscribers. Rankings from before this date are only available in print editions of *The Banker*.

To digitise this data before 1996, we took pictures of the pages featuring the rankings in *The Banker*, pre-processed these images to make them more readable and ran them through an open-source optical character recognition (OCR) algorithm[1]. This machine-learning-based algorithm 'reads' characters from images or scanned documents and translates them into a digital format (ie a spreadsheet).

We then cleaned the digitised data and merged rankings from all the years available. We ran random controls to check the accuracy of the OCR algorithm on all the years that were digitised through this method (1970 to 1976, 1979, 1982, 1985, 1988, 1993 and 1994). The algorithm worked very accurately on numerical characters, but there were some errors in the letter characters (such as in names of banks, location of bank headquarters) which were fixed manually.

Because of time constraints, some years were not digitised. The data presented for these missing years in this paper is the average of the two closest data points available. The database will be gradually completed with missing years.

3.2 *The Banker's* ranking methodology

The aim of *The Banker*'s rankings is to measure and compare the financial strength of banks across the world. Over the years, the ranking has been expanded and its methodology[2] was improved for better cross-country comparability.

Between 1970 and 1979, the ranking included 300 banks. This was increased to 500 banks in 1980 and to 1000 banks in 1989. Today, *The Banker* still ranks the 1000 top banks in the world. To allow for comparison across all years, our analysis is based only on the top 300 banks in all rankings.

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1 See https://www.onlineocr.net/.

2 Individual issues of *The Banker*'s rankings gave details about the methodology used each year.

'Banks' are defined as *"institutions which engage in the short and medium-term banking market, and which raised a substantial portion of their funds from deposits"* (*The Banker*, 1970). The list of institutions considered for the ranking was gradually expanded over the years. For instance, it was expanded in 1979 to include European savings and cooperative banks, and in 1981 to include consortium banks and medium-sized savings banks in Italy and Spain. These changes were made to adapt to the changing nature of banking and the broadening variety of institutions operating as banks[3].

Banks are ranked based on the total value of their assets at the end of an accounting year. Contra accounts are not included in this, in order to better capture the true intermediary function of banks. However, *The Banker* does warn that not all banks report their contra accounts, so consequently the reported data may be incomplete. Additionally, *The Banker* warns that its ranking should not be taken as an exact scoreboard given that it is based on self-reporting by banks and that there may be differences in accounting practices between countries. This is why we focus on analysing trends in the database rather than examining exact values at a given time. In the later rankings, US accounting practices are used as much as possible, so cross-country comparisons are likely more accurate than in the earlier rankings. Annex I describes in more detail the evolution of the methodology used for the ranking.

There is also an increasing number of variables included in the ranking. In this analysis, we use only total assets given that it is the most consistent data available across all rankings. Annex II details the variables available by time period.

Finally, the database we built presents two limitations. First, some years are still missing, as we could not digitise all years between 1979 and 1996[4]. Second, using the threshold of only the top 300 banks means that any drop to 301 means a bank will not be included in statistics, and therefore can marginally create an artificial change.

[3] Some locations were not included in the original data so were added by the authors based on the location of the bank in previous or following years or based on independent research to add the location.

[4] One may add to this that the OCR may have led to some errors in the reading of the data, however, we carefully double-checked surprising and unexpected results against the original.

4 Global distribution

This section looks at the global distribution of the top 300 banks in the world in order to better understand the evolution of the geography of banking centres internationally.

4.1 Total assets of the top 300 banks

Figure 1a: Top 300 banks in the world, breakdown of total assets for top 20 countries ($ trillions)

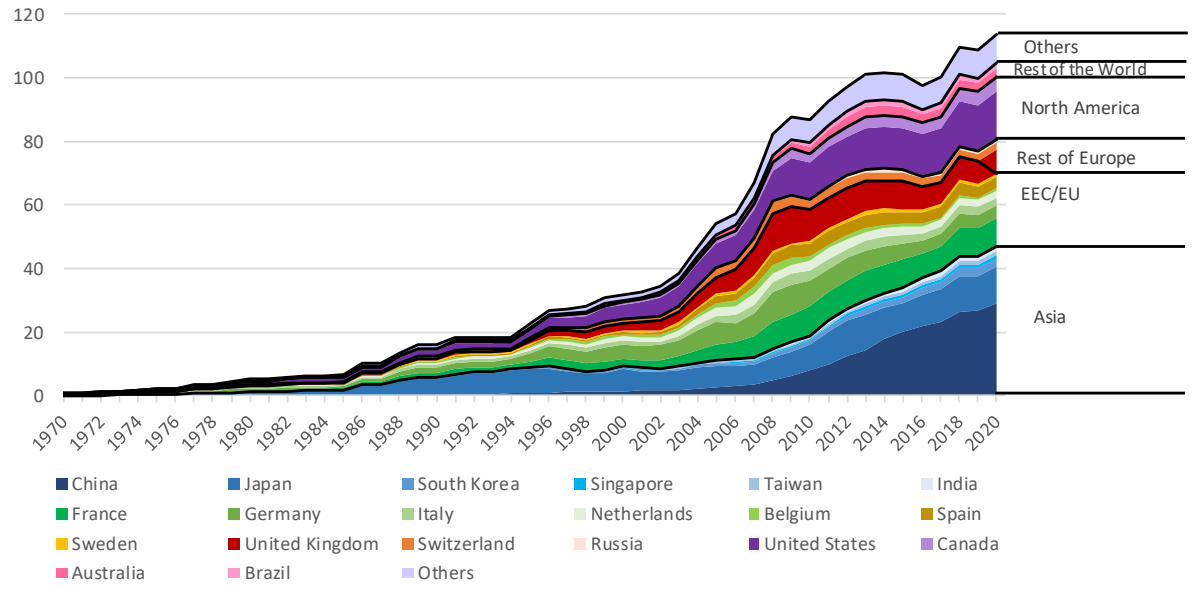
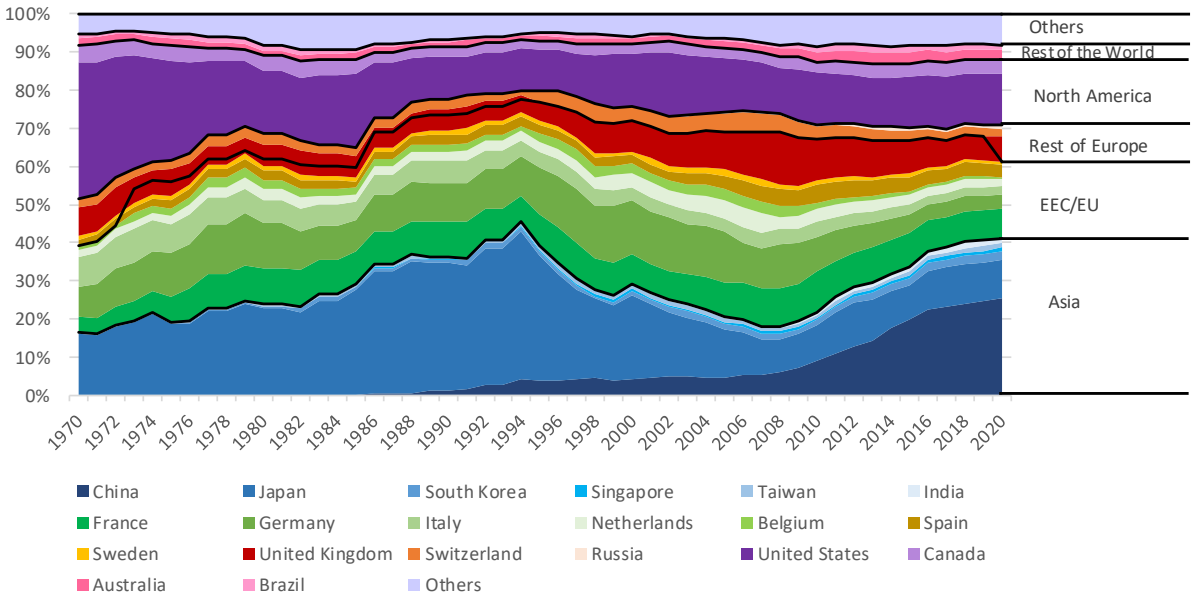


Figure 1b: Relative weight of total assets of top 300 banks in the world, breakdown for top 20 countries ($ trillions)



Source: Bruegel, based on *The Banker*. Note: 'Rest of the World' includes countries in Africa, Oceania, and South America. 'Others' includes all other countries having banks on the top 300 of the ranking, but that are not in the top 20 countries according to the average of total assets over the period 1970-2020.

The global distribution by country of the total assets of the world's top 300 banks highlights several key shifts in the evolution of international economic relations since 1970, that can be summarised briefly:

- The emergence of Japanese banking in the second half of the 1980s, and its world leading position until the emergence of China;
- The emergence of China from the second half of the 2000s;
- A momentary global slowdown because of the 2008 financial crisis;
- The rise of the UK from the mid-1990s, although London's position as one of the world's leading IFCs predates this;
- Europe's relative overbanking (well reflected in 2008, and its decline since then);
- The geographical repartition around three poles: Asia, North America, and Europe;

4.2 Total assets of the top 300 banks by country, normalised by GDP

Figure 2 presents the same data normalised by GDP. This ratio brings a different perspective, highlighting the disproportion between the presence of some of the top 300 banks globally and the size of the GDP of a given country. Several smaller countries therefore appear in Figure 2, while they did not in Figure 1: Liechtenstein, Ireland, Denmark, Bahrain and Jordan.

Figure 2a: Total assets of top 300 banks in the world, normalised by GDP, selection of top 15 countries + United States

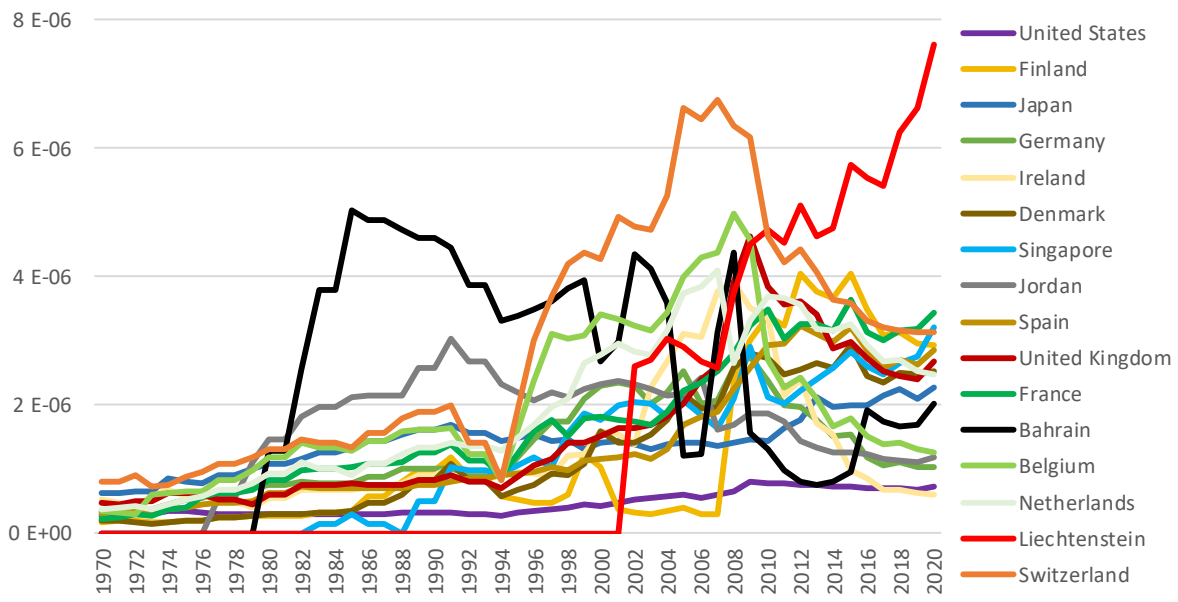
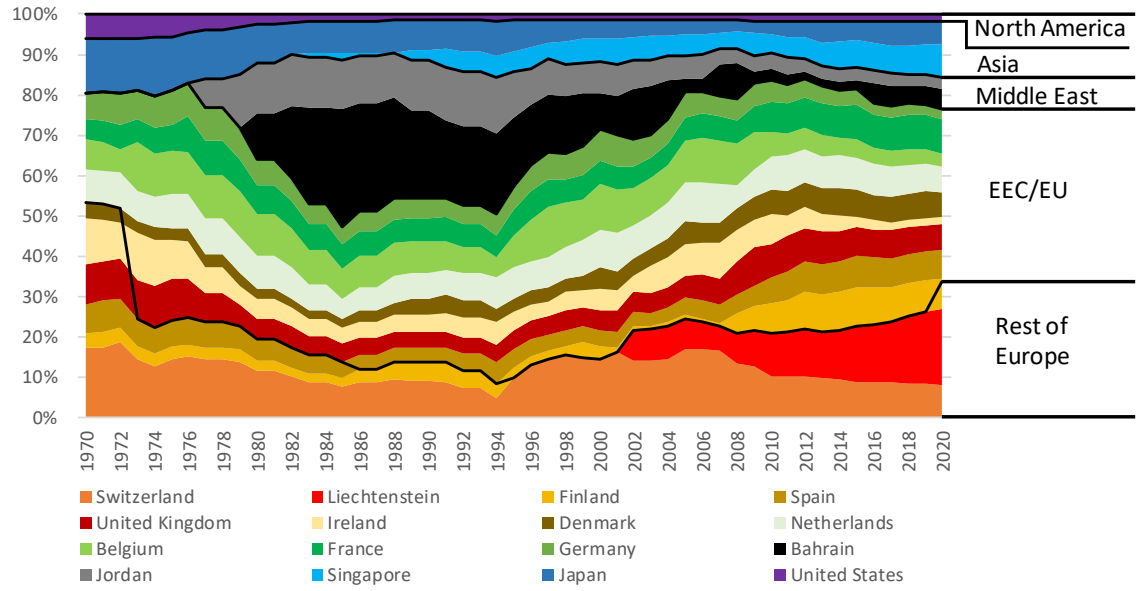


Figure 2b: Relative weight of total assets of top 300 banks in the world, normalised by GDP, selection of top 15 countries + United States



Source: Bruegel, based on IMF and World Bank (GDP), *The Banker* (value of assets). Note: Top 15 countries according to the average of total assets normalised by GDP over the period 1970-2020. Note that Iraq was part of the top 15 but was removed since, due to the Gulf war around 1991, there was an abrupt reduction in GDP which created an outlier and distorted the interpretation of the chart. With the removal of Iraq, Finland (being the 16th) was included.

Bahrain stands out for the growth of its banking sector, particularly in the 1980s and 1990s, following the introduction of new legislation encouraging the creation of Offshore Banking Units. This managed to attract many new banks to the country. Singapore is similarly a small economy, but a renowned international banking centre. Amman (Jordan) houses the headquarters of the Arab Bank, one of the largest financial institutions of the Middle East. Other smaller countries – Denmark and Ireland – are developed western European economies.

Figure 2 also highlights the importance of regulatory choices (eg Bahrain, Liechtenstein, Switzerland). A good illustration of this is the decline of Switzerland after 2008 and the loosening of financial secrecy (the European Union Savings Directive, agreement between UBS and US Department of Justice), though secrecy remains quite high[5] today (Straumann, 2018). Conversely, the US is notably steady at the bottom of Figure 2a: the banking sector is not disproportionately large compared to the rest of the economy.

4.3 Total assets of top 300 banks in the world, by country, normalised by population

Figure 3 presents the same data, this time normalised by population size. This allows us to refine the picture and highlight the disproportion between the presence of some of the top 300 banks and the population of a country. This normalisation shows that – at least at some point in time – some of the countries with the smallest populations have housed some of the top 300 banks: Iceland, Liechtenstein, Luxembourg and Bahrain.

[5] See https://fsi.taxjustice.net/en/explore/overviewmap.

Figure 3a: Total assets of top 300 banks in the world, normalised by population, selection of top 20 countries + United States

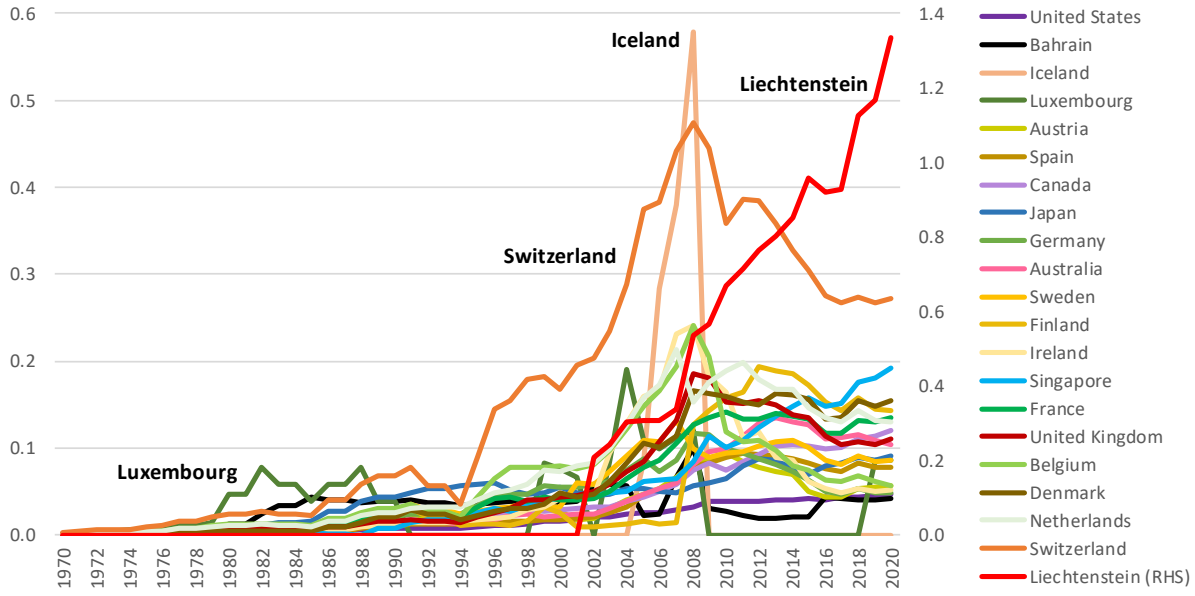
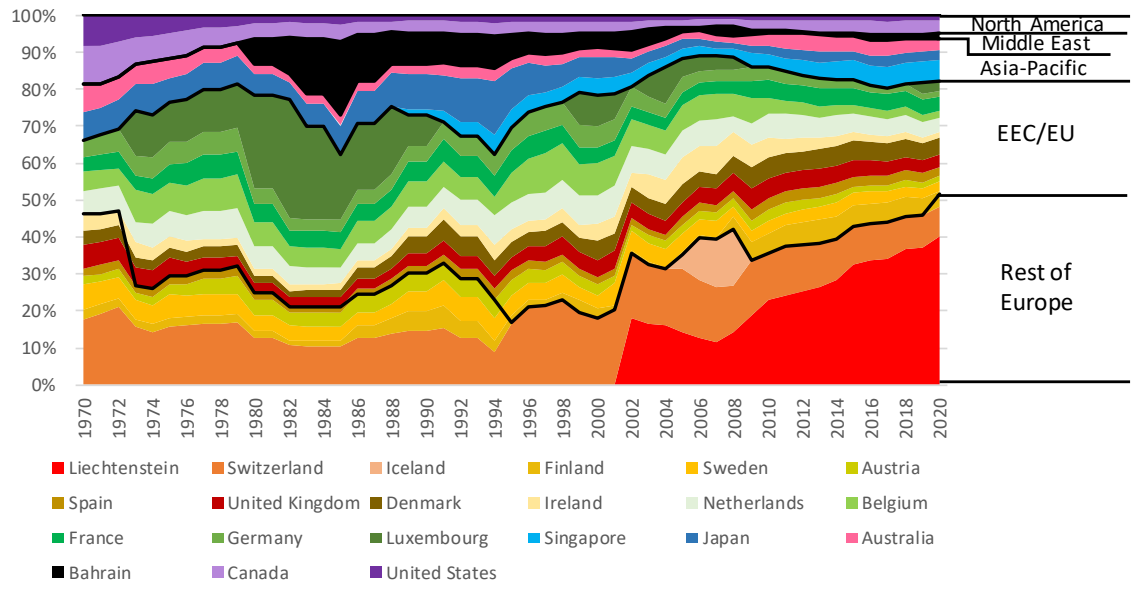


Figure 3b: Relative weight of total assets of top 300 banks in the world, normalised by population, selection of top 20 countries + United States

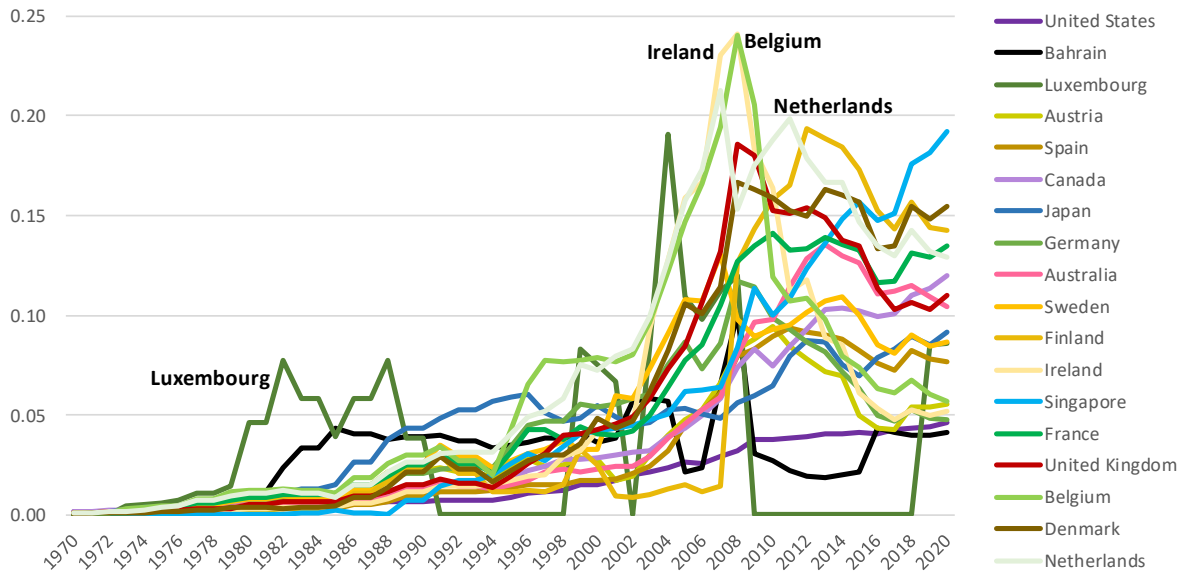


Sources: Bruegel, based on World Bank (population), *The Banker* (value of assets). Note: Top 20 countries according to the average of total assets normalised by population over the period 1970-2020.

Three countries stand out: Iceland (the deregulation of the banking sector and subsequent 2008 banking crisis is an obvious explanation for the skyrocketing of the disconnect between the size of the assets and the population in just three years between 2005 and 2008); Liechtenstein (because of the presence of LGT Group in the top 300 and then its move out of the top 300); and Switzerland (2008 crisis and subsequent fight against tax evasion).

Finally, setting aside these three outliers (Iceland, Liechtenstein and Switzerland) allows us to see more clearly the situation of the other countries (Figure 3c). Luxembourg had a clear and early disconnect between its population size and the total assets of its top banks from the late 1970s until the mid-1990s. Luxembourg was even the leading outlier over that period, as Switzerland, Iceland and Liechtenstein had not yet emerged.

Figure 3c: Total assets of top 300 banks in the world, normalised by population, selection of Figure 3a excluding Iceland, Liechtenstein, and Switzerland



Sources: Bruegel, based on World Bank (population), *The Banker* (value of assets). Note: Top 20 countries according to the average of total assets normalised by population over the period 1970-2020.

4.4 Top 300 banks total assets by banking centre

National comparisons do not by themselves reflect the geography of banking centres, understood as the place (city) where a bank is registered. Figures 4a and 4b present the total assets of the top 300 banks in the world by city. In order to preserve the readability of the figures, we have only focused on the 15 largest banking centres.

From 1970-1985, the well-known top five of the most famous IFCs including Tokyo, Paris, New York, London and Frankfurt topped the largest 15 banking centres. This reflects the international economic circumstances of the time, in particular with the rise of Tokyo.

The 1986-1994 period showcased the continued strength of the same five banking centres. At the turn of the century, the emergence of China is evident, as illustrated by the rise of Beijing, confirming the global shift in international economic relations towards Asia.

Since the beginning of the 2010s, a new geography has emerged, with Beijing clearly in the lead, and all other banking centres trailing behind. Tokyo, Paris, London and New York all remain in the top five. Of the five leading banking centres identified over the period 1970-1985, only Frankfurt has dropped away, contradicting the claims made at the time of the creation of the European single currency that Frankfurt would become the leading European financial centre with the hosting of the European Central Bank.

Figure 4a: Total assets of top 300 banks in the world by city (in $ trillion), selection of top 15 cities

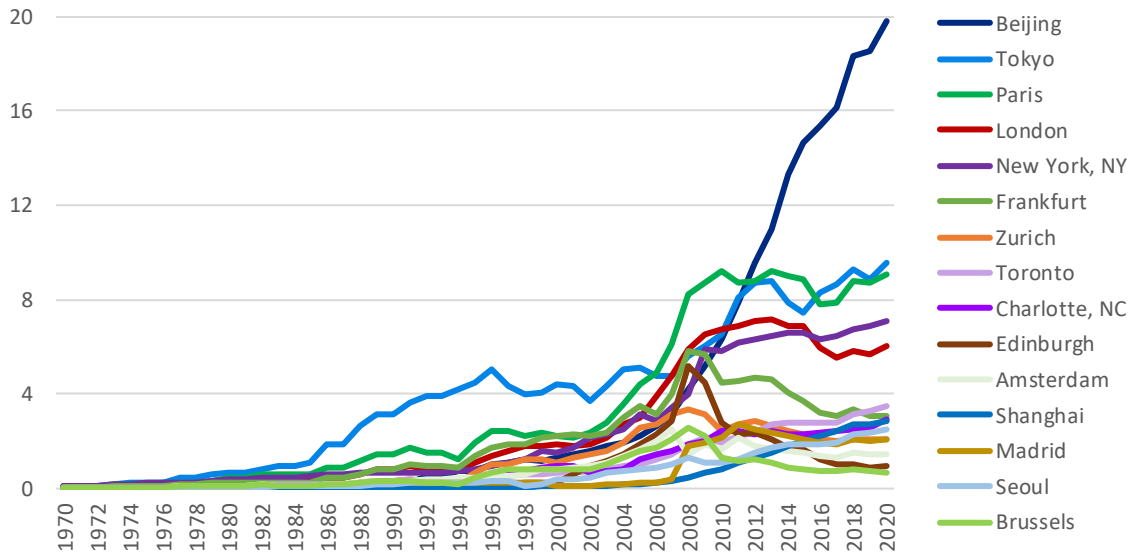
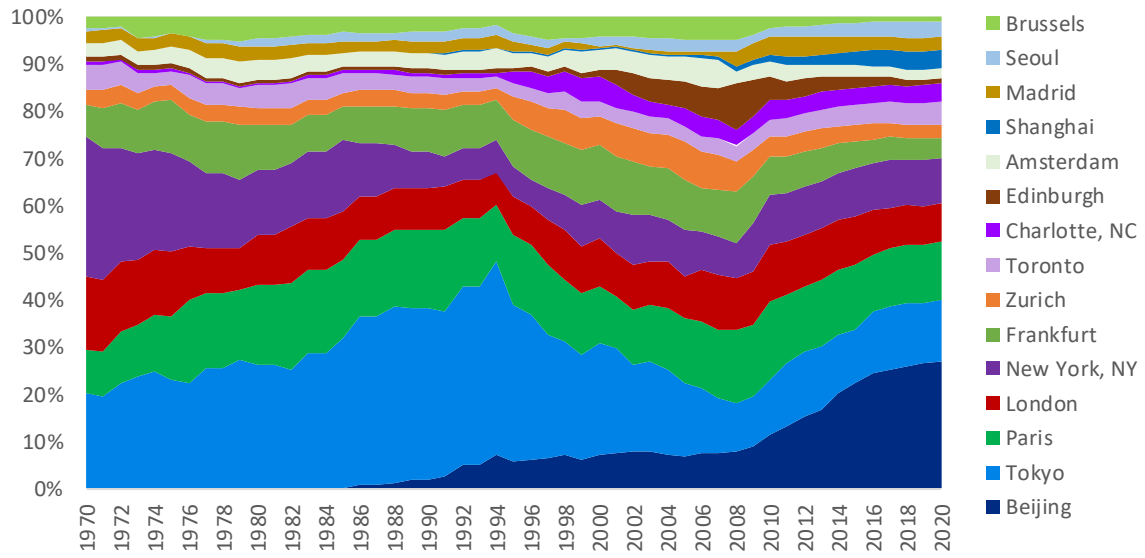
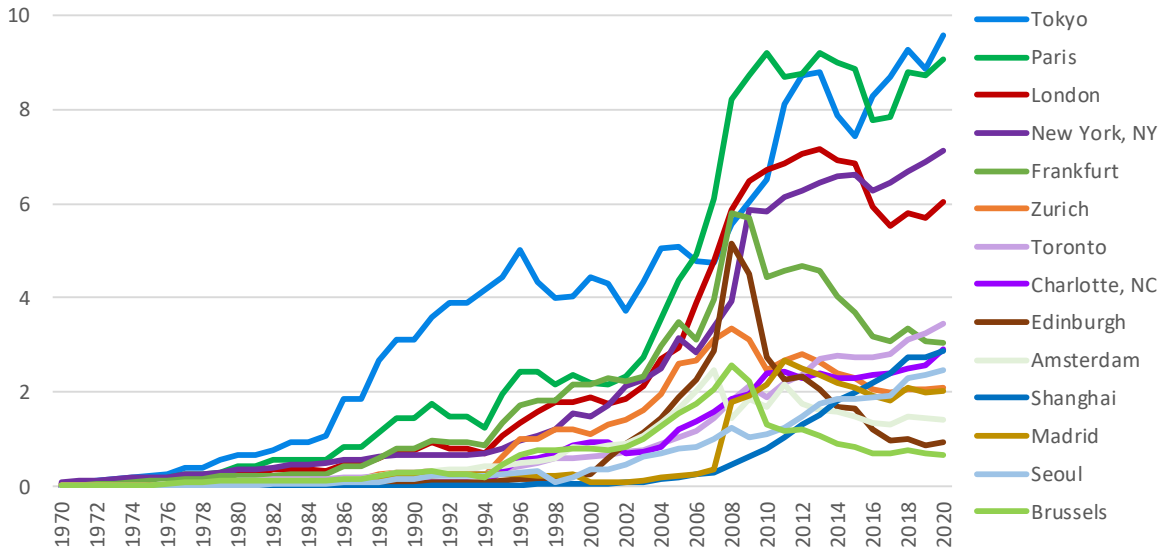


Figure 4b: Relative weight of total assets of top 300 banks in the world by city (in $ trillion), selection of top 15 cities



Sources: Bruegel based on *The Banker*. Note: Top 15 cities according to the average of total assets over the period 1970-2020.

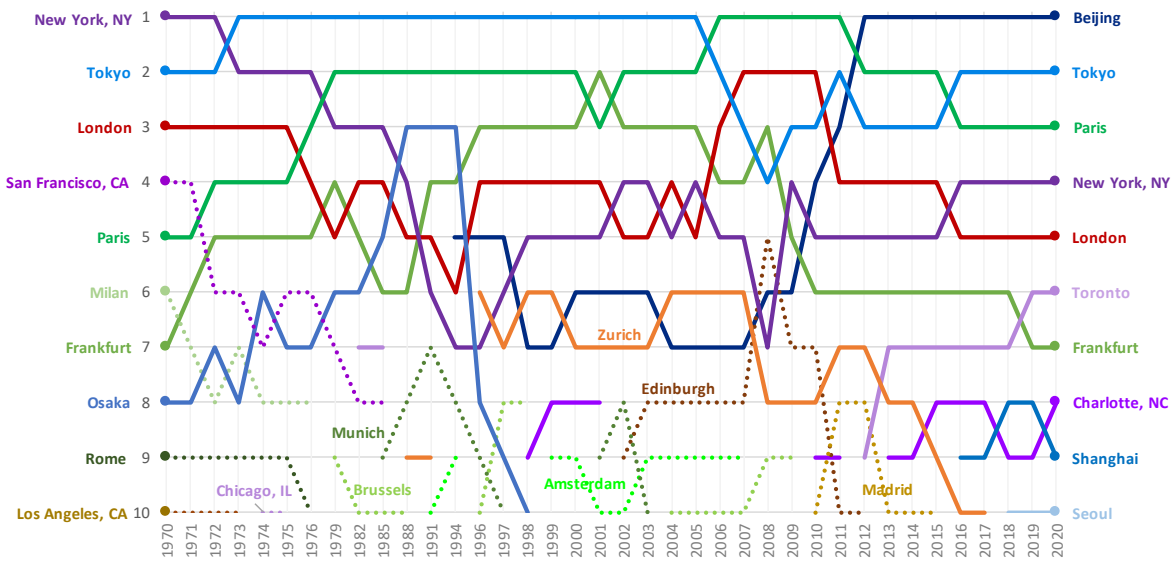
Figure 4c: Total assets of top 300 banks in the world by city (in $ trillion) – selection of Figure 4a excluding Beijing



Sources: Bruegel based on *The Banker*. Note: Top 15 cities according to the average of total assets over the period 1970-2020.

Another way to look at the changing geography of banking centres in the world is to explore cities' rankings year after year (Figure 5).

Figure 5: Ranking of top 10 cities in the world each year (based on total value of assets in ranking of top 300 banks)



Sources: Bruegel based on *The Banker*.

Figure 5 provides two main insights into the geographical and time evolution of banking centres through the lens of the world's top 300 banks.

First, while their actual ranking changes, five banking centres have never left the top 10 worldwide since 1970: **New York**, **Tokyo**, **London**, **Paris** and **Frankfurt**. In fact, these five banking centres have even always remained in the top seven. This highlights the strength of these places as financial centres, backed by the classic list of factors that support their functioning: a skilled workforce, the support of highly developed countries, and the stability of their institutional frameworks. These five centres represent the three most developed regions of the world economy, namely the United States, Japan and Europe.

Second, the other banking centres that appear occasionally or for several years in the top 10 highlight either the changing global geography of banking centres, or the limitations of *The Banker*'s database. The emergence of new banking centres can also be explained by structural changes in the world economy. The spectacular rise of Beijing from the mid-1990s is the most important example of the latter. Together with the later emergence of Shanghai, the emergence of these centres in the rankings underline the

growth of the Chinese economy as a whole. This also reinforces a point made in the literature: that a banking centre needs to be backed by a strong national economy to thrive. As for the limitations of this database, the appearance or disappearance of some cities is linked to the fact that *The Banker* ranks the top banks in the world: as soon as one large bank moves out of an otherwise 'small' banking centre, that banking centre tends to disappear from the ranking. For instance, **Los Angeles** disappeared from the top 10 after 1973 as First Western Bank dropped out of the top 300 banks and thus left *The Banker*'s ranking (First Western was bought by Lloyds (UK) in 1974). **Osaka** is in a comparable situation. Osaka housed three top banks over the 1970-1998 period: Sumitomo, Sanwa and Daiwa. Sanwa topped *The Banker*'s ranking in 1995, but because of the move of its operations to Tokyo and later consolidation in the Japanese banking sector following the turmoil of the 1990s, the bank left Osaka as a banking centre, which explains the complete disappearance of Osaka from the top banking centres in the world. Conversely, **Charlotte** is present in the ranking although it has only one bank headquartered there: Bank of America. Bank of America's presence in North Carolina's largest city reflects a desire to support the city as a financial centre, although the fact that the bank's management is not based there has raised discussion[6].

This limitation related to the reliance of some locations on one specific bank conversely reinforces the analysis made above about the strength of the five leading banking centres since 1970 (New York, Tokyo, London, Paris and Frankfurt). It tends to illustrate that they are less affected by one specific bank arriving or leaving. The entry of **Toronto** into the top 10 from 2012 onwards and its subsequent rise to the top six is closely linked to the development of the Toronto Dominion Bank, which acquired several banks starting in 2007. The rise and decline of **Edinburgh** reflect the acquisition by Lloyds TSB (based in London) of Halifax-Bank of Scotland (based in Edinburgh) in 2009, and the difficulties of the Royal Bank of Scotland from 2009 onwards. The emergence in the ranking from 2014 onwards of a new bank in the Scottish capital, Tesco Bank, did not compensate for these issues. **San Francisco**'s decline in the ranking in the 1970s is more complex to analyse. Two banks left the San Francisco location after mergers and acquisitions: Crocker National Corp was acquired by Midland Bank in 1980/81 (and then by Wells Fargo Bank in 1986); and Bancal Tri-State merged with Mitsubishi Bank in 1983/84[7]. But the evolution of the total assets of the three banks that remained in San Francisco for the 1970-1982 period (Bank of America, Wells Fargo and Bancal Tri-State Corp/Bank of California) suggests that San Francisco's decline

6 Christina Rexrode, 'Charlotte, New York, Boston: Just Where Is Bank of America's Home?' *Wall Street Journal*, 5 November 2015.

7 John M. Broder, 'Wells Fargo will take over 116-year-old bank this week: Crocker nearly gone but not forgotten', *Los Angeles Times*, 27 May 1996; Susan Chira, 'BanCal's Tokyo Connection', *New York Times*, 25 August 1984.

is more due to the rise of other banking centres (Paris, Frankfurt and Osaka) than to the headquarter changes within the Californian city (Figures 6a and b).

Figure 6a: Total assets of selected cities (in $ trillion), 1970-2020

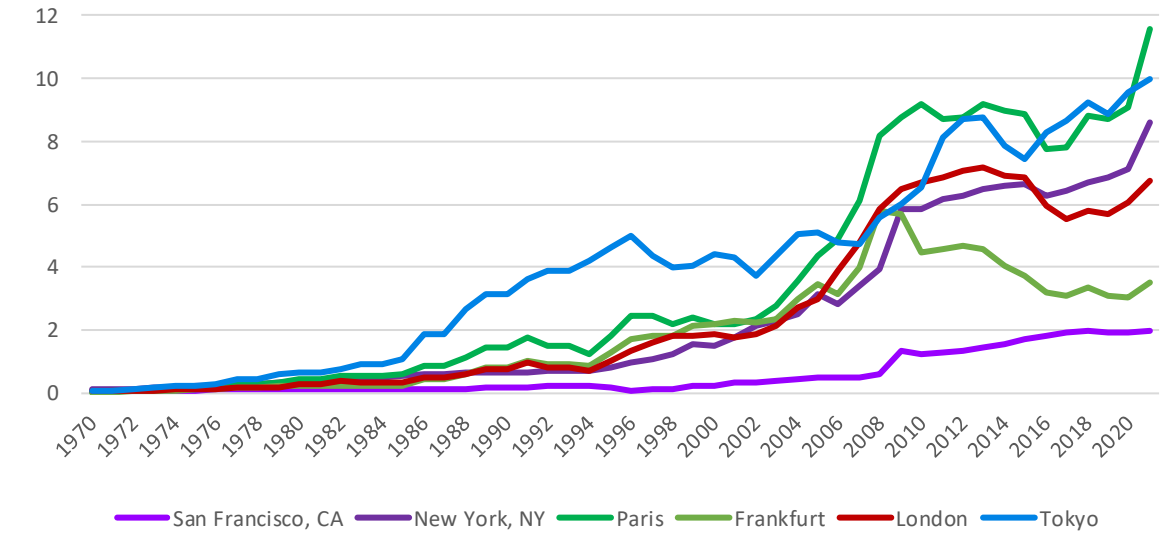
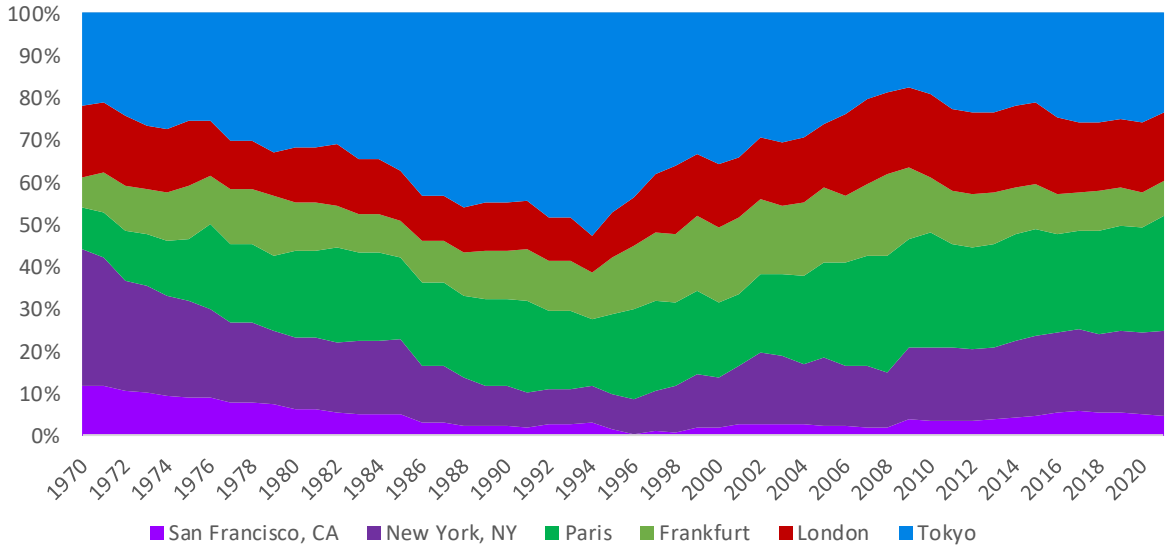


Figure 6b: Relative weight of total assets of selected cities in relation to each other (in $ trillion), 1970-2020



Sources: Bruegel based on *The Banker*.

The 2008 financial crisis has had overall relatively minor effects on the ranking. An overall decline in total assets is clear after 2008 until around 2010/2011. The 2010s, however, confirmed the lead taken by Beijing and Tokyo, which continued growing in this period. Confirming the regional dynamism, the 2010s witnessed the emergence of Seoul, Shanghai and of India with Mumbai as its largest financial centre (although the latter is reflected in the data but not in the charts).

Finally, focusing on only the most recent data, since 2020, Beijing is by far the world's largest banking centre. Paris comes second and is followed by a close group of three cities: New York, London and Tokyo. The presence of New York and London after Beijing and Paris, while the UK and US cities are traditionally seen as the world's leading centres, highlights the bias of the dataset towards banking, instead of finance more broadly. This same bias helps explain the absence of Hong Kong and Singapore from the top banking centres. North America is divided into four banking centres, with the US having three of them (New York, Charlotte and San Francisco) and Canada, in second place, being represented by Toronto. Paris and London dominate the rankings in Europe, and are followed by a group of four cities: Frankfurt, Zurich, Madrid and Amsterdam. Brussels, which Kindleberger predicted could be a leading IFC as European integration deepens, is only marginal[8].

5 What does this overview of banking through the lens of the top 300 banks since 1970 tell us?

Bearing in mind the specificities of the dataset – the top 300 banks in the world – some important elements stand out.

First, there is no automatic link between the economic importance of a country, its population size, and the significance of a banking centre located within it. In some cases, the link is confirmed. This is what we observe for cities in rich developed countries, which have remained in the top seven of the world banking centres since 1970: New York, London, Paris, Tokyo and Frankfurt. But in many other cases the link does not exist, in particular for offshore centres and tax havens.

Second, the role of the legal framework in influencing the ranking needs to be qualified. It is true that Bahrain's rapid development resulted from its legislation on offshore banking units, that the presence of

[8] *"Accordingly, I predict, very tentatively, that Brussels is the leading candidate as the financial center of the European Economic Community on the basis of serving as headquarters for the Commission, its attraction for foreign corporations, and ultimately foreign and European banks. The process will be long drawn out.* (…) *The advantages of centralization are less compelling than they were in the middle of the 19th century. They still exist. Despite cultural resistance, and only with difficulty, I predict centralization will take place, but not before the late 1980s."* Kindleberger (1974), pages 93-94.

Switzerland, Liechtenstein and Luxembourg (to name but a few) in the rankings owes to their lax regulations, and that the development of the Euromarkets from the 1960s contributed to the further growth of London as an international banking centre. However, the adoption of specific legislation does not guarantee the appearance of specific cities in the ranking: changes in the legal framework in Lebanon in the 1960s and in Austria in the 1980s did not lead to Beirut and Vienna reaching the top rankings as financial centres. Another important qualification comes from merger and acquisitions, which lead to important changes in the rankings of different cities.

Third, major policy changes do not necessarily affect the geography in the sense that was expected. This point is particularly relevant in the case of Europe: Brussels did not become the key European banking and financial centre just because European integration deepened, and Frankfurt did not become the leading European banking and financial centre either just because it housed the European Monetary Institute and then the European Central Bank after the decision to create Europe's Economic and Monetary Union. We rather observe a high degree of inertia in the ranking: the top 300 banks do not react quickly to economic and policy changes by moving their headquarters to a different location.

Fourth, economic and financial crises do not affect the geography in the sense expected either. The value of total assets obviously declines. But the shifts are relatively minor: strong geographical locations remain strong, smaller banking centres are potentially affected (see Edinburgh, for example) but this can also be linked to very specific reasons (here related to one bank). Overall, economic and financial crises seem to be 'status quo' crises for the ranking of international banking centres[9].

6 Conclusion

The study of the development and evolutions of IFCs has generally been limited by the absence of international data covering long periods and the difficulty of defining what financial services IFCs include. We propose to use digitised archives from *The Banker*'s ranking of top banks in the world since 1970 to proxy the importance of global financial centres. This new source of information illustrates important shifts in the geography of IFCs, notably the rapid emergence of China.

We propose to normalise the gross size of the banking sector that is measured in these rankings by population size and GDP. This allows us to detect financial centres that are disproportionately large compared to their economic weight, highlighting that other factors such as favourable regulation or

[9] To paraphrase Eric Helleiner's expression, albeit here in a different context (Helleiner, 2014).

geopolitical considerations may be at play. Our analysis shows that banking consolidations and the evolution of the legal framework impact the geography of IFCs more than economic and financial crises.

While the database we describe provides a new source of information to study the geography of IFCs, it does have limitations. The most significant of these is that it does not present an exhaustive list of assets from all banks in the world and can create threshold effects because it is strictly limited to the top 300 banks in the world. A second limitation is that it only represents the banking sector, which is only one of many groups of actors that form IFCs. This database should therefore be used in conjunction with other sources of information used in the literature.

Further research using this database could focus on a more micro-level analysis of individual bank's location choices and consolidations, as well as macro-level analyses of general trends in the location of the world's largest banks.

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Annex

Annex I: Description of *The Banker* ranking methodology and evolution

Top 300 rankings (1970-1979)

The intention of these rankings is to show the financial strengths of banking groups across the world.

The Banker's 'top 300' ranking includes banks, defined as *"institutions which engage in the short and medium-term banking market and which raised a substantial portion of their funds from deposits"*. Where possible, they use consolidated group figures (subject to the data made available by each specific bank). This means they exclude consortium banks (subsidiaries) if they already have their parent bank's group-consolidated balance sheet to avoid double-counting. They also exclude finance companies, defined as institutions which *"raise the bulk of their funds other than through deposits"*. In 1979, the list of institutions included in the ranking was broadened, mainly to include European savings and cooperative banks which do a large amount of commercial and international banking.

The ranking is based on a bank's total assets (defined as its balance sheet total), minus its contra accounts when these are available in the reported data. Contra accounts are defined as funds which are not for a bank's own use, such as acceptances, letters of credit or securities held on behalf of customers for instance. They are excluded on the premise that their inclusion would exaggerate the intermediary function of banks. For most banks, contra accounts are not large in any case, but for some institutions, specifically in developing countries, including contra accounts would grossly over-exaggerate their relative size. However, *The Banker* specifies that this data is incomplete, as many banks either don't report their contra accounts or only provide aggregate data on their total assets – as opposed to a detailed balance sheet. This may lead to some anomalies, with certain banks being higher in the ranking than they would be had they reported their contra accounts. Contra accounts are only explicitly reported in the ranking as of 1973.

Data are reported in each ranking for the current year and the previous year, for comparison purposes. However, rankings are always based on the most recent data available. The 'G' code indicates group-consolidated figures while the 'B' code indicates unconsolidated principal operating bank figures only. Foreign currencies were converted at the rates of exchange obtained at the dates when the balance sheets were made up. As of 1973, all values are expressed in millions of $, pound sterling and other foreign currencies having been dropped for the sake of simplicity and space limitations. As a general rule, consolidated figures include those of subsidiaries owned 50 percent or more by the parent bank –

with a few exceptions when this criterion is not met but the parent entity organisationally represents and largely controls the subsidiary.

The Banker does warn that cross-country comparisons should be made with caution as financial years differ from country to country, some banks are unable to provide up-to-date information and different countries follow very different accounting practices. The 'top 300' ranking is designed as a convenient framework for showing in broad terms the relative size of the world's largest banks, but should not be seen as an exact league table.

Top 500 rankings (1980-1988)

The intention of these rankings is to show the financial strengths of banking groups across the world.

The top 500 rankings use the same definition of banks as in the previous years, and still use assets less contra accounts as their main instrument to rank leading banks. The list of institutions which fall within *The Banker*'s definition of banks was broadened once again in 1980, to include more savings and cooperative banks, which had been steadily increasing the amount of commercial banking business they handle. As of 1981, consortium banks were also included in the ranking, along with a number of medium-sized savings banks in Italy and Spain.

For calculating data on liabilities, they follow US practice as much as possible, and modify the methodology for banks which have deposit-like liabilities which do not fall into US-defined categories. This has led them to define total deposits as the sum of demand deposits, savings deposits, savings certificates, certificates of deposit, other time deposits, interbank deposits and bonds and notes issued. They also follow US accounting practice for their definition of capital and reserves; these are calculated as the total shareholder's funds (which include both the preferred stock and common stock of the bank plus capital surplus and retained earnings), excluding subordinated debt. Minority holdings in subsidiary companies have not been included.

Wherever possible, consolidated data was used, including subsidiaries owned 50 percent or more by the parent. In the case of US multibank groups, the figures used are those of the multibank holding. For multi-tier cooperative and savings bank systems, commonly found in Europe, the consolidated figures for the central institutions (based on ownership) were used rather than all the institutions in the group. Currencies were converted at the rates of exchange obtaining at the dates when the balance sheets were made up.

This ranking includes new information on total revenue and pre-tax profits, when available. Before 1980, all figures are post-tax. Additionally, as of 1982, the ranking also includes the number of employees in each bank. The measure of total revenue is only available for the years 1980 to 1982. It was replaced by a measure of net interest income after this date. *The Banker* has also calculated performance ratios involving revenue and profit figures, calculated on average yearly balance sheet data. Pre-tax profits are defined as revenue after all charges except taxes. Banks sometimes give restated figures for the year preceding the current ranking.

Top 1000 rankings (1989-2019)

The intention of these rankings is to show banks' soundness in relation to the Basle requirements of a minimum Tier-One capital on risk-weighted assets of 4 percent.

Along with expanding its ranking to 1000 leading commercial institutions, *The Banker* also changed its criterion. It is now based on the strict definition of Tier One capital given by the BIS, which covers only the core of the bank's strength – the shareholder's equity available to cover actual or potential losses. This includes common stock and declared reserves plus perpetual, irredeemable and non-cumulative preferences shares, and excludes hybrid forms of capital such as cumulative or fixed-term stock and other instruments, as well as goodwill and revaluation reserves. Where a bank has not stated its Tier One capital, the figure has been calculated from its balance sheet. Assets are not risk-weighted, except in the capital adequacy ratio column as of 1993.

Pre-tax profits are used to show banks' performance. The figures for real profit growth take into account inflation. Consolidation is done on the same basis as previous rankings. Contra accounts are still excluded but are now called *"third-party items"*. *The Banker* also provides alternative rankings based on each of the other variables available in the table and percentage changes from the previous year.

Annex II: Summary of variables available by year of *The Banker* ranking

Variables in bold represent the variable used in the graphs and analyses presented in this paper for each of the years available in the dataset.

Year	Variables available in the ranking
1970-1972	Rank; bank; head office location; **total assets for current** and previous **year in dollars**, sterling pounds and local currencies; total deposits for current and previous year in dollars and sterling pounds.
1973-1979	Rank; bank; head office location; date of accounts (current and previous year); group or bank; **assets less contra**; contra accounts; total deposits; capital and reserves; other liabilities; total balance sheet.
1980-1988	Rank; previous year's rank; bank and head office; **assets less contra accounts**; total deposits; capital and reserves; total revenue, replaced by net interest income in 1983; pre-tax earnings; ratio of pre-tax earnings on assets; ratio of pre-tax earnings on capital; capital assets ratio; revenue on assets ratio, replaced by net interest on assets ratio in 1983; number of employees (as of 1982)
1989-1995	Rank; previous year's rank; bank, head office location and date of account; Tier 1 capital in millions of $ and % change since previous year; **assets in millions of dollars**, % change since previous year and rank; capital assets ratio in % for current and previous year, rank for current and previous year; pre-tax profits in millions of $ and % change since previous year; real profits growth in % for current and previous year, rank for current and previous year; profits on capital in % for current and previous year, rank for current and previous year; return on assets in % and rank; BIS capital ratio in %; *Financial Times* compiled credit rating
1996-2019	Rank; previous year's rank; bank; country name; world region; year-end; Tier One in millions of $ and % change since previous year; **assets in millions of $**, % change since previous year and rank; capital assets ratio in % for current and previous year, rank and previous rank; profits in millions of $ and % change since previous year; real profits growth in % for current and previous year and rank; profits on average capital in % for current and previous year and rank.

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