**Economic geography of investment banking since 2008: the geography of shrinkage and shift**

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**Abstract**
Investment bank capitalism might have foundered during the global financial crisis in 2008, but what has happened to investment banks? Our analysis reveals that core investment banking activities have experienced a significant contraction, accompanied by diminished institutional and geographical concentration. Large banks have experienced the largest falls in revenue and Asian banks have capitalised on the growth of their local capital markets. With direct access to the largest market in the world, US banks remain dominant globally, but their market shares have declined. Our results highlight the variegated nature of change underway in the global financial system, and its implications for geo-politics and geo-economics.
**Keywords:** investment banks, financial crisis, globalisation, geographical concentration

**JEL codes:** F30, F65, G24, L10, R10

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## Introduction

If the Global Financial Crisis is remembered by only one date, it will probably be September 15th of 2008, when Lehman Brothers declared bankruptcy. The 158-year old investment bank was unable to refinance its highly leveraged investments including those linked to failed mortgage backed securities (McDowell, 2011). The US government intervened to prevent the collapse of other large investment banks by brokering the take-over of Bear Stearns by J.P. Morgan and Merrill Lynch by Bank of America, while Goldman Sachs and Morgan Stanley promptly converted their legal status into bank holding companies to access the federal bailout programme for banks. The events of September 2008 led financial historian Niall Ferguson to declare the extinction of the US investment banks (2008). While this was an exaggeration, the industry has been battered with lawsuits over misrepresented investment products and manipulation of markets, including forex and interest rates, leading to multi-billion dollar fines (Ashton and Christophers, 2015; The Economist 2015).

The global financial crisis has reinvigorated financial geography as well as political and social studies of finance in general. One strand of this literature investigates the roots of the crisis (Engelen et al., 2011; Martin, 2011; Aalbers, 2009). Another strand focuses on documenting the impacts of the crisis on financial production (Marshall et al., 2012, Wójcik and MacDonald-Korth, 2015), regulation (Helleiner, 2014), financial consumption and access to credit (Lai, 2013), as well as regional development (Pike et al., 2016). Yet another important group of works is preoccupied with the new financial landscape emerging in the wake of the crisis, including new forms of digital finance (Langley and Leyshon, 2017), the rise of institutional investors (Clark and Monk, 2017), and the enhanced presence of China in global finance (Töpfer and Hall, 2017). Conspicuous by its absence however is analysis of changes in investment banking as the industry at the epicentre of the crisis. Surely, if we recognise the position of investment banks at the fulcrum of a system that failed, we need to investigate how they have changed and whether this give us hope that the system will operate better in the future. With the tenth anniversary of Lehman Brothers' collapse in September 2018, it is high time to take stock of changes in investment banking.

In this paper, we address this challenge by mapping the changing landscape of the core investment banking activity since the crisis. This involves services related to equity and debt issuance, syndicated lending, and mergers and acquisitions. We have four questions in mind:

1. How much has the level of the core investment banking activity declined since the crisis?
2. Have investment banks re-oriented themselves from international to domestic activity?
3. How have the institutional structure and concentration in the industry changed?
4. How has the geographical structure of the industry, based on bank nationality, changed?

Our analysis draws on access to a unique proprietary database on investment banking deals, complemented with hand-collected data on operational headquarters of individual banks. While our analysis is driven by quantitative data, our understanding of the industry is also informed by over 100 interviews with investment bankers and other finance professionals conducted around the world, including London, New York, Hong Kong, Tokyo, Singapore, Frankfurt, Zürich and Sydney, as part of a series of research projects both before and after 2008. Additional insight into the industry comes from a review of media reports, including the leading specialist trade magazine in investment banking *The Financial News*. While our understanding is obviously influenced by our interviews, the evidence presented in the paper draws predominantly on quantitative analysis enhanced with publicly available information. We think this approach is appropriate, given that the paper attempts to discern global industry-wide trends rather than the specificities that might be revealed in a collection of case studies.

Our data enables a comprehensive coverage of what the industry considers core investment banking activity, which focuses on primary capital market transactions. It does not cover trading, securitisation of loans or shadow banking activities, such as repo transactions or money market funds (FSB, 2017). While these are major business segments of banks engaged in investment banking, and key to their involvement in the global financial crisis (see e.g. Fernandez and Wigger, 2016), data available on these activities are of incomparably lower quality than the data on investment banking deals we use in this paper. We keep these limitations firmly in mind while interpreting our results, and hope that the analysis helps us begin to understand the post-crisis transformation of investment banking industry, even though it presents only a partial picture.

Our results show that the size of the core investment banking activity relative to global GDP has nearly halved since 2007 with both domestic and cross-border activities affected to a similar extent. The investment banking league is now less top-heavy, reflecting a significant decline in the institutional concentration of the industry. Falling institutional concentration has been accompanied by decreasing geographical concentration based on bank nationality. The dominance of US banks has diminished, while the position of Asian banks, Japanese in particular, has risen considerably. Canadian banks have also been big winners in terms of market shares. The European banks have contracted – even more than US banks – with particularly heavy losses in Switzerland.

Our findings underscore the need to recognise the variegated nature of change underway in the global financial system, and its implications for understanding geo-politics and geo-economics in the wake of the crisis. Stylised distinctions between liberal market economies and coordinated market economies of the varieties of capitalism literature offer little in explaining the post-2008 landscape of investment banking (Engelen, Konings and Fernandez, 2010). The rise of investment banking in Japan and China does not sit comfortably with the classification of these countries as coordinated market economies, neither does the investment banking prowess (though now declining) of Swiss and German banks. Rather what we see in our results is a landscape of variegated investment bank capitalism, and its variegated change since the crisis.

**Financial geography of investment banking**

Investment banking has attracted the attention of geographers for a long-time, much of it inspired by the work of Susan Strange in which she colourfully characterised investment banks as croupiers in the casino of capitalism (1986). The pre-2008 geography of investment banking concentrated on: specific products and practices of investment banks (for example Hall 2007; Grote and Lo 2002); mobility of investment bankers (Beaverstock 2007); and investment banks as agents of neoliberalism (Leyshon and Thrift 1997). More broadly, what was happening in international banking was seen as an exemplar of the nature of globalization and the dynamics of capitalism (Jones 2002; Wrigley, Currah and Wood 2003). The post-2008 activity has also investigated the role of investment banks in the securitisation of mortgages (Aalbers 2009; 2015; Martin 2011; Wainwright 2012; 2015), and the banks' relationship with institutional investors and asset managers (Clark and Monk 2017; Beaverstock, Hall and Wainwright 2013). Wójcik (2012, 349) has identified investment banking "as a hotspot of power, which was instrumental in generating the crisis, and whose potential restructuring in the wake of the crisis may lay foundations for a major transformation of the world economy in the 21st century". However the central question of that paper, expressed in the title 'The End of Investment Bank Capitalism?' awaits an answer.

In this paper we address this question by focusing on the size, institutional and geographical structure of core investment banking activity, which involves services related to equity and debt issuance, syndicated lending, and mergers and acquisitions. These services require close collaboration between providers and customers, predominantly large corporations, but also governments, which use investment banking services to arrange bond offerings. As such, we focus on demand-driven relationship-based activities (Grote et al., 2002), mindful that investment banks can also stimulate this demand to some extent, e.g. by advising clients on capital raising and M&A opportunities (Ho, 2009).

In addition to understanding the nature of core investment banking, we have to remember that investment banking is a differentiated industry and so allow for significant differences among investment banks between, and within, national economies. Some countries, notably the USA, have a tradition of specialist investment banks, while elsewhere, for example in continental Europe, investment banking has long been integrated within commercial or universal banking institutions (Story and Walter, 1997). Fligstein and Habinek (2014) show that not all banks in countries and supranational regimes, such as the EU, where financial sectors were deregulated in the 1980s and the 1990s imitated US investment banks in the run up to the crisis. In this sense, we take seriously the claims of the literature on variegated capitalism and varieties of financialised capitalism (Dixon, 2011; Engelen, Konings and Fernandez, 2010). Individual bank strategies matter and firm-level heterogeneity has to be considered seriously as well. As such our focus on investment banks incorporates an actor-oriented approach to understanding globalisation and global economic change since the crisis (Yeung, 2002). In what follows we develop hypotheses to each of our four questions, with particular focus on political and economic factors that have affected investment banking since 2008.

With investment banks central to the crisis, there are reasons to expect some decline in their level of activity. First of all, the crisis and the ensuing global economic slowdown have reduced demand for core investment banking services. A buoyant market for advice on capital raising and M&A comes with ongoing expectations of corporate growth, yet these were undermined by economic recession and uncertainty. Second, investment banking has faced significant new regulation, including increased capital requirements, bans on proprietary trading, taxes on short-term trading, regulations protecting retail from investment banking activities through ring-fencing, caps on remuneration, and so on. To be clear, the translation of regulatory ideas into laws has been slow. In the USA, for example, it took five years from the Dodd-Frank Financial Reform Act of 2010 to the introduction of Volcker rule limiting proprietary trading. In the UK, ring-fencing recommended by the Independent Commission on Banking (2011) is scheduled to come into effect only in

2019. Delays come from lobbying by the financial sector, but also from the failure of states to reach international agreement. Unilateral implementation of rules involves the risk of driving financial business out of a country or jurisdiction or even making new rules ineffective (Knaack, 2015). It should be noted that new regulations would have probably had a muted effect on core investment banking activity. While syndicated lending requires significant capital commitment from banks, underwriting and advising on equity and debt issuance requires minimal capital, while M&A advisory requires none. Often these core activities are referred to as traditional investment banking, in contrast to trading, loan securitisation and financial engineering, which boomed in the last 30 years and are targeted by new regulation (Morrison and Wilhelm, 2007).

Our expectation with regard to the internationalisation of investment banking, defined here as the share of cross-border in total transactions, is also mixed. The financial crisis that descended in September 2008 is the first in history to be tagged ‘global’. Indeed, many see it as a crisis of financial globalisation or globalisation in general (Stiglitz, 2010; Rodrik, 2011). Even the IMF (2016) has since acknowledged the perils of unrestricted cross-border capital flows. In addition to scepticism about free and open capital markets, in which investment banks are key agents, some new regulation specifically targets cross-border business. Many national and supranational regulatory regimes are moving from an approach that welcomes branches of foreign banks and relies on light-touch regulation by home-country institutions, to a model requiring foreign banks to operate well-capitalised subsidiaries subject to strict host-country regulation (Danisewicz, Reinhardt and Sowerbutts, 2015).

On the other hand, there are forces with the potential to counter the de-globalisation of investment banking. One is the need for ongoing assistance to corporations undertaking international capital investments. With the supply of finance drying out in the USA and Europe, but not in Asia and other parts of the world, corporations in Europe and the USA seeking capital, and those in Asia and elsewhere looking to place surplus savings, need the global reach of investment banks. This need is exacerbated by continued global imbalances, with large national trade deficits and surpluses mirrored by large capital flows (Pettis, 2013). Investment banks are major conduits of these flows. Many corporations, particularly those outside of the USA and Europe, have also seen the crisis as an opportunity to buy assets and companies at depressed prices. Uncertainty has provided an additional incentive for firms to hire the most experienced advisors globally for assistance in capital market transactions rather than, say, using the services of domestic banks.

Hypothesising about change in institutional concentration in investment banking since the crisis is also difficult. On the one hand, it is reasonable to expect the biggest investment banks to become smaller, and their market shares in core activities to decline accordingly. After all, the too-big-to-fail problem has been identified as one of the roots of the crisis, whereby big banks would undertake excessively risky ventures in the expectation of private gains if these ventures pay off, and the assurance of a taxpayer bail-out if they do not (Sorkin, 2010; Christophers, 2014). In 2011, the Financial Stability Board established by G-20, based at the Bank for International Settlements in Basel, issued a list of systemically important global banks. The list has been updated since and complemented with lists of systemically important domestic banks compiled in individual countries. The label implies higher capital and other requirements, such as additional risk management procedures and living wills. In 2015, the USA imposed a market concentration limit, prohibiting mergers and takeovers among financial firms if the liabilities of the resulting company would exceed 10% of aggregate financial sector liabilities ($1.8tr in 2015).

The intention of governments to make big banks smaller and therefore less likely a liability to taxpayers, however, is tempered by the fear of undermining home banks' international competitive advantage, a fear obviously stoked by the banks concerned (Johnson and Kwak, 2010). In addition, in the aftermath of the crisis we have seen many government-forced or -assisted M&A in the financial sector. While new regulations increase the costs of running a large bank and reduce internal rates of return, economies of scale in investment banking are strong, enhanced by the increasing capital intensity of the industry, driven by rising investment in technology (Morrison and Wilhelm, 2007). Moreover, large corporations, the main clients of investment banks, have not become smaller or less international in outlook with leading investment banks needing international presence and size to cater for clients. There is also a possibility that new financial regulations that apply irrespective of bank size actually work in favour of large banks more able to accommodate compliance costs (Wójcik and MacDonald-Korth, 2015).

Moving from the institutional to the geographical structure of the industry, we expect the impacts of the crisis to differ depending on the nationality or home jurisdiction of investment banks concerned. First of all, we would anticipate a difference in performance between the US and European banks on one side and those from the rest of the world on the other. The main triggers of the global financial crisis were the US subprime crisis and the following Eurozone crisis, that is, crises in the home markets of US and European banks. Between 1998 and 2008 France, Germany, UK and Switzerland registered much larger employment increases in the securities sector compared to the USA, ranging from 42% in Germany to 98% for Switzerland, suggesting that the sector in these countries was inflated even more than in the USA (Wójcik, 2012). While the removal of toxic assets in the US financial system was relatively quick, lack of expediency in the European Union combined with a persistent Eurozone crisis mean bad debts continue to threaten the stability of European banks, inviting the use of the term 'zombie banks' (Englen et al., 2011; Christopherson, Clark and Whiteman, 2015). Add a more zealous approach to financial re-regulation within the EU (and, arguably, a weaker financial lobby) than in the USA and we might expect a sharper decline of investment banking activity in Europe than across the Atlantic. Certainly, we would expect differentiation in investment bank performance within the EU, including the UK. The UK hosts the most influential financial lobby in Europe, and has already opposed some of the more radical financial regulatory initiatives from the EU (Christophers, 2016; Langley, 2014) - consider for example the financial transactions tax under consideration on the continent, but rejected by the UK.

A concentration of problems facing investment banks from the USA and (especially) Europe implies opportunities for the rest of the world. Well positioned to take advantage of these circumstances are banks from advanced economies less affected by the crisis, particularly Japan, Canada and Australia. In their favour - rather than, say, the emerging economies or the Global South - is the fact that investment banking is not an industry that can grow overnight; it requires a sophisticated financial system, rooted in a legal system with strong enforcement of financial contracts, and strong networks and relationships with clients that take a long time to build (Wójcik, Knight and Pažitka, 2017). Opportunities for the growth of investment banks from outside the USA and Europe could also be affected by the slower uptake of stricter financial regulation. Even though the post-crisis regulatory initiatives are led by G20 and international organisations like the BIS, their implementation is overwhelmingly at the national scale, with authorities further away from the USA and Europe under less pressure to comply. Finance professionals talk about the late-mover advantages Asian countries enjoy with regard to new regulation.

In summary, when hypothesising the trajectory of investment banking we should be mindful of inertia. While the global financial crisis has unsettled the status quo in the industry, the time that has elapsed since 2008 may be insufficient for a major change to the landscape of investment banking. Institutions conducive to capital market development are slow to take root while investment banks take a long time to grow. Household names in the industry - such as Goldman Sachs and J.P. Morgan - have origins in the 19th century. This inertia in the evolution of investment banking, combined with the historical capacity of the industry to reinvent itself make the investigation of its potential reconfiguration since the crisis only more important.

**Data and methodology**

Data we have used to map the investment banking industry come from a proprietary database by Dealogic, a specialist financial data provider headquartered in London, which collects information on primary capital market transactions from thousands of banks around the world. The database covers over a million deals completed in the period 2000-15, classified into four groups: issuance of equity, debt (corporate and government bonds), syndicated loans, and mergers and acquisitions (M&A). A marker of the quality of the database is its routine use by The Economist, The Financial Times and The Financial News in reports on developments in the industry, and by investment banks as a tool for evaluating their changing market shares.

The Dealogic database specifies the subsidiary of an advisor (typically a bank) that conducted a transaction as well as its parent company. For cases where the parent bank has changed, we used M&A data and press releases to obtain the correct historical record. The Dealogic database does not contain information on bank locations, so we hand-collected information on the location of operational headquarters from the websites of Bureau van Dijk's Orbis, Nexis UK, Bloomberg and individual companies. By focusing on operational headquarters we limit our ability to consider the offshore finance element of investment banking activity. Assigning subsidiaries to their place of incorporation would allow a focus on the offshore, but at the expense of losing sight of the actual command centres of the industry.

To make the task of hand-collecting data efficient, we selected the top 500 advisor subsidiaries for each year/deal group combination, leading to a sample of 7,458 unique names. We then allocated these to their respective parents in each time period (parents were assigned based on control over a given subsidiary at the end of the year), which yielded a sample of 3,558 advisor parents. This sampling procedure has allowed us to cover in excess of 99% of the value of transactions for all year-deal group combinations and is therefore seen as highly representative of the underlying population.

While the deal value – the value of funds raised through an equity, debt or syndicated loan transaction or the price paid in an M&A – is available for majority of deals covered by Dealogic[1], the fee paid by the issuer, target or acquirer to an investment bank/s involved in the transaction is only available for 26.2% of deals. As fees expressed as a percentage of deal value vary significantly, and can reach as much as 7% on equity issuance but fall below 0.5% on other transactions, estimation of missing fees was necessary for a meaningful aggregation of investment banking activity across the four deal groups. This estimation, made separately for each service category, proceeded as follows:

- Fees as percentage of deal value for each group were modelled as a function of transaction size, industry, nationality of operations and type of the client for each product. We also included service specific deal characteristics and distinguished between initial and secondary public offerings while controlling for stock exchange listing for ECM. We also controlled for creditworthiness of the issuer of bonds (DCM) and borrower (loans). In the models for M&A we controlled for the presence of the opposing party's advisor, deal technique and cross-border nature of M&A based on acquirer's and target's nationalities. We also incorporated a full set of time period fixed effects.
- The models were then used to predict percentage fees for deals that had missing fees data. To prevent outliers from skewing the results and to ensure consistency between the distributions of hard data on deal pricing and its estimates, the distributions of estimates have been winsorized using the maximum and minimum values of the hard data.
- Finally, percentage fees were multiplied by deal values to generate actual value of fees. The latter have been adjusted for inflation using GDP deflators from Oxford Economics to convert to constant 2012 USD. We have allocated

[1] 15.9% of deals in Dealogic ECM, DCM, Loans and M&As databases combined are missing data on deal value and are therefore excluded from the analysis.

fees to lead advisors working on every deal. In cases where more than one lead advisor was involved in a deal, we have apportioned the fee among all lead advisors either according to their respective shares in the deal (if available from Dealogic) or on an equal basis[2].

This procedure for treating missing data naturally suffers from some limitations An inherent feature of this procedure is that gross fees are extrapolated from deals with disclosed data to those with missing data using a linear regression model. Yetwe are reassured about the robust quality of our results by comparing our estimates of gross fees per deal to those from a proprietary deal pricing model developed by Dealogic and obtaining a correlation coefficient of 0.945. Estimation of missing data on gross fees has been previously undertaken by Wójcik et al. (2017) as well as Dealogic. Additionally, vast literature in finance links deal and issuer characteristics including size of offering, nationality, industry and credit rating, to the fees charged in debt and equity issues (Butler, 2008; Abrahamson et al., 2011). In the analysis we focus on fees aggregated by: bank parent; nationality of bank parent, defined as the country hosting its operational headquarters; time-zone, using the division into Americas, Europe, the Middle East and Africa (EMEA), and Asia-Pacific, as defined by MSCI. Global and national aggregates help us address questions of industry size, and internationalisation and geographical structure, while parent-bank-level data help tackle issues of institutional structure. Where relevant we have also used data from the World Bank (for country-level GDP and savings), the IMF World Economic Outlook database (global GDP), and the World Trade Organisation (global exports). All values expressed are USD unless otherwise stated.

[2] This is only expected to yield small inaccuracies, as we focus only on lead advisors, while fees vary primary between rather than within syndicate roles.

### The size and internationalisation of investment banking activity

As figure 1 shows, from the peak in 2007 of approximately $134bn (earned from over $10trn of underlying deals), fees worldwide fell by 2009 by nearly 40%. When the global stock market and economy started to recover in 2009 and 2010, investment banking activity stopped plunging, and started fluctuating at around 70% of 2007 activity. However, the situation has since deteriorated. In 2013 and 2014 the industry lagged recovery in the stock market and then in 2015 contracted by more than falls in the stock market would justify. In 2015 core investment banking activity in relation to GDP was only half of its 2007 level. However, we have too little evidence to talk about a secular decline of the industry. If we exclude 2007 and calculate the average level of fees in the 2000-6 and 2008-15 periods, the figure for the latter is actually 12.5% higher, with even the low 2015 fee level comparable to the 2000-6 average. In this sense, we could conclude that core investment banking has returned to pre-crisis levels of activity.

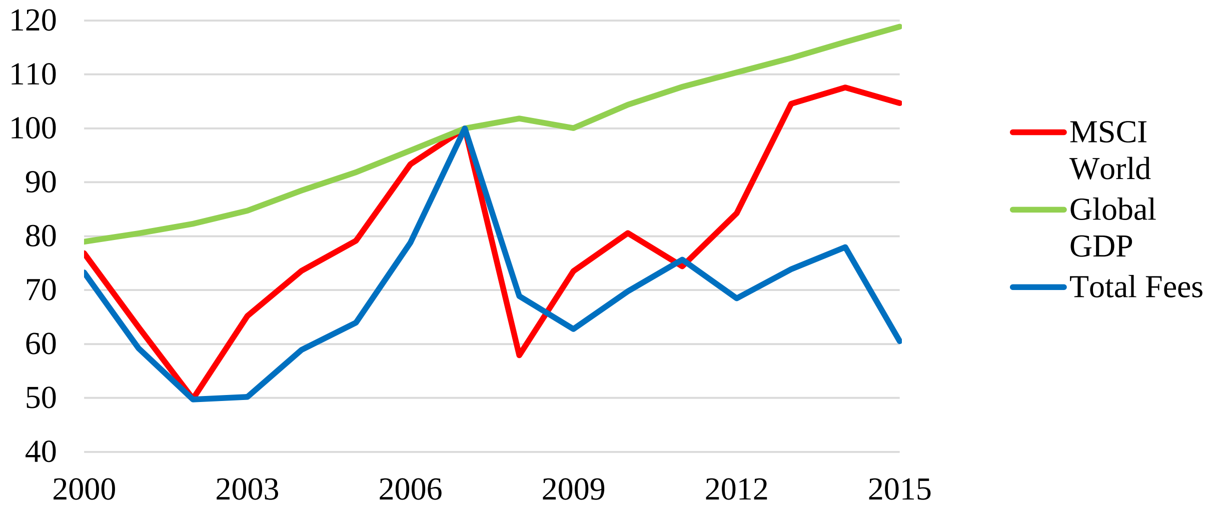



Figure 1. Total fees in investment banking in relation to global GDP and MSCI World stock market index (2007 = 100).
Source: Authors' calculations based on data from Dealogic, MSCI and the IMF.

For the analysis of the internationalisation of investment banking we define cross-border transactions as those where the country hosting operational headquarters of a parent bank is different from the country hosting operational headquarters of the client. The share of cross-border transactions defined in this way has been quite stable since at least 2000 at around 45% with only minor falls during the crisis (figure 2). When we group home countries of banks by time-zone, we see the degree of internationalisation differs considerably. Over three-quarters of deals in the European time-zone (EMEA) are cross-border, compared to just above a quarter in the Americas and Asia-Pacific. This reflects the relatively small domestic markets and high level of financial integration in the European Union, fledgling financial integration in Asia-Pacific, and the size of the US domestic market in the American time-zone. Percentages of cross-border fees by time-zone, however, show no clear trends over time.

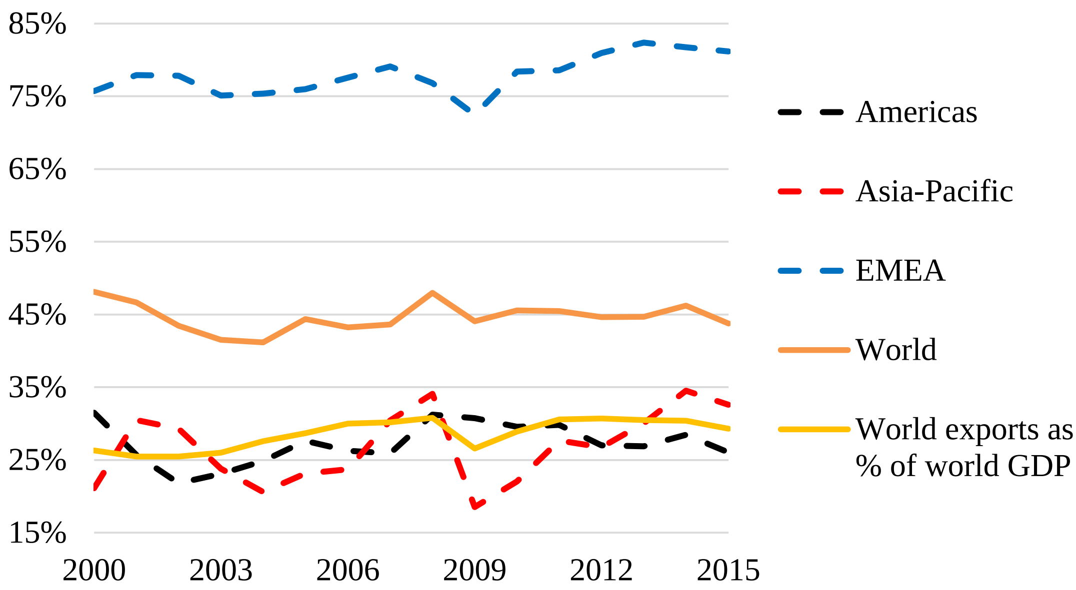


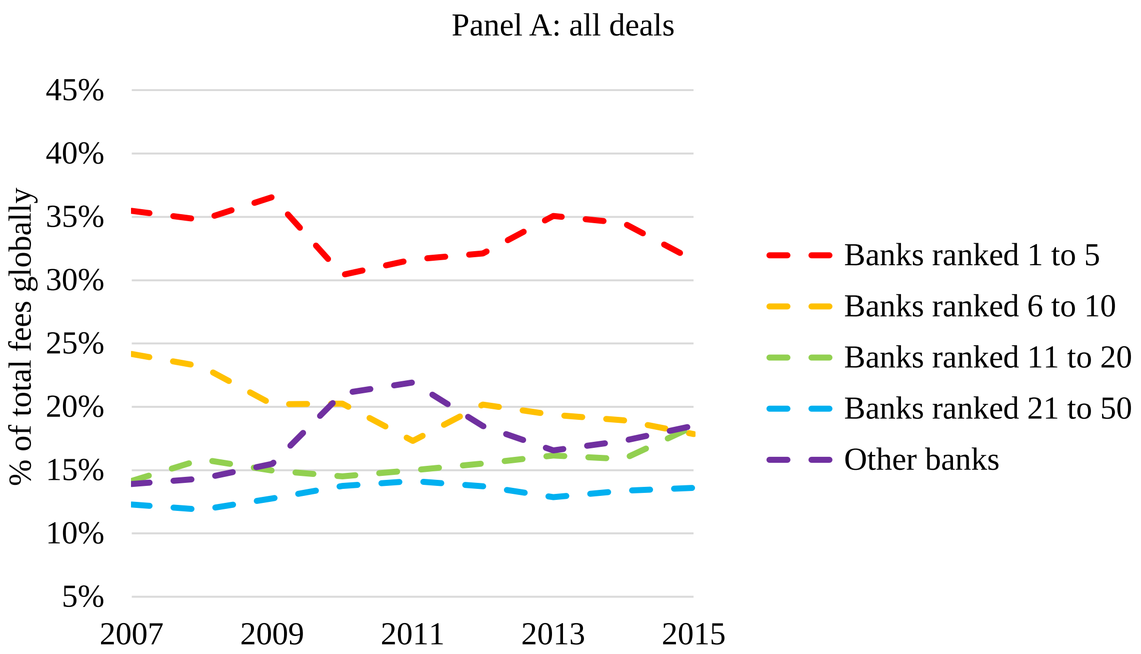

Figure 2. Fees from cross-border deals as percentage of total fees (according to the nationality of parent bank).
Source: Authors' calculations based on data from Dealogic, WTO and the IMF.

If cross-border transactions are defined as those where the country hosting the operational headquarters of the bank subsidiary (not parent) involved in a transaction is different than the home country of the client, the share of cross-border fees falls to approximately 36%. This drop of 9 percentage points is not surprising. For example, if a US bank serves a British client through a subsidiary in London, this would count as a cross-border transaction under the first definition, but domestic under the second. Importantly, the level of internationalisation in investment banking according to the second definition is as stable over time as that under the first definition. To investigate this further, we distinguished between cross-border fees from clients in the same time-zone as the parent bank and those elsewhere. Here again we see a picture of relative stability, with fees earned from foreign clients in the same time-zone constituting between 12% and 13% of total fees throughout the period and those from clients in a different time-zone between 31% and 34%.

In summary, although international core investment banking activity globally has declined since 2007 in both absolute terms and in relation to world GDP, the share of international transactions in total activity has been stable, reflecting the relative stability of international integration in the world economy as a whole, with total world exports consistently representing approximately 30% of global GDP, with only a minor dip in 2009 (figure 2). This ratio also provides a benchmark for assessing the significance of the 45% share of total fees attributable to cross-border transactions. Financial markets, particularly wholesale financial markets (the domain of investment banking), remain more internationalised than global trade, which is still dominated by tangible goods. It also appears that despite new regulation and the crisis of financial globalisation as an idea, investment banks have not retreated to serving clients in domestic markets, and companies have not turned away from foreign towards domestic service providers.

## Institutional concentration

Figure 3 shows institutional concentration in core investment banking activity, based on total fees and fees from cross-border transactions only, the latter defined as deals where the country hosting the operational headquarters of a parent bank is different from the country hosting the operational headquarters of the client. While it is evident that investment banking is more concentrated than retail banking or insurance, it is less concentrated than re-insurance and many other globalised industries such as the production of mobile phones, computers, soft drinks or even cars (Nolan, 2012). Assistance with capital market transactions – the core of investment banking – is still about close long-term relationships with client companies rather than about producing standardised services where lower barriers to entry can readily erode privileged market positions. As the figure shows, concentration in the market for cross-border services is higher than in the market for all transactions. This makes sense considering that the market for domestic transactions is more fragmented, with domestic banks playing a major part. While banks operating across borders are also active in domestic markets, we expect there to be many banks that operate only domestically.


Panel A: all deals
45%
40%
35%
30%
25%
20%
15%
10%
5%
% of total fees globally
2007
2009
2011
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Banks ranked 1 to 5
Banks ranked 6 to 10
Banks ranked 11 to 20
Banks ranked 21 to 50
Other banks

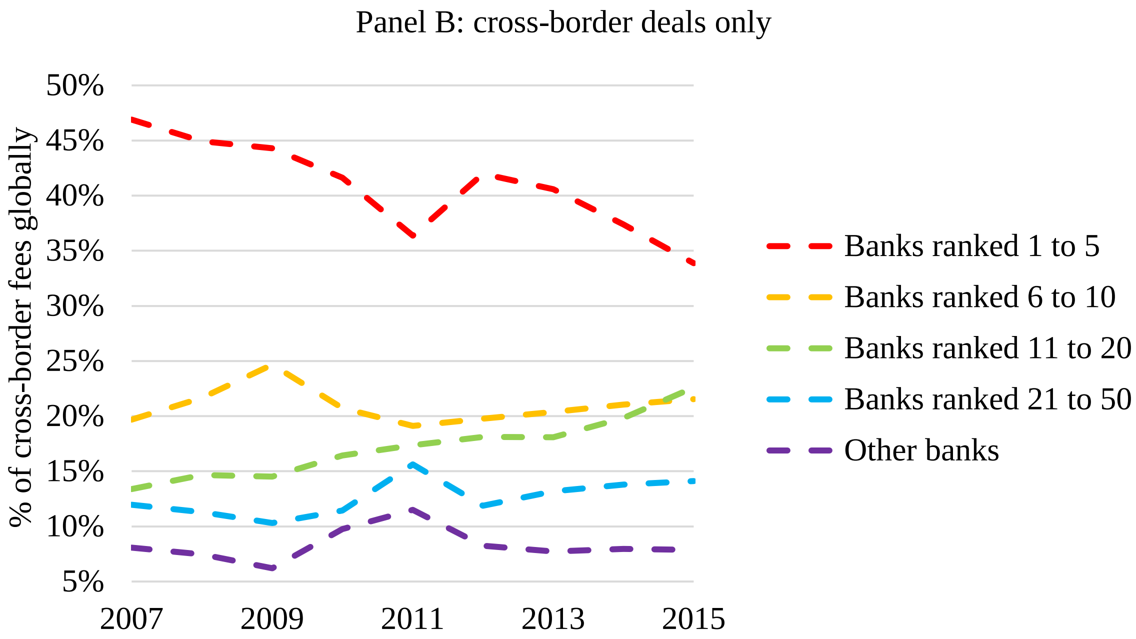


Figure 3. Institutional concentration in investment banking.
Source: authors based on data from Dealogic.

That said, institutional concentration declined considerably between 2007 and 2015. The top 5 banks' share of total fees fell from 36% to 32%, the top 10's from 60% to 49%, and the top 20's from 74% to 68%. The share of the top 5 in cross-border fees in this period plunged by over a quarter from 47% to 34%. While the top 10 banks, and particularly the top 5, lost market shares, banks in the second group of ten (ranked 11th to 20th) became significantly stronger, and those beyond the top 20, even beyond the top 50, grew market shares as well. The top 5 banks saw their market presence eroded between 2007 and 2011; then their market shares stabilised briefly, followed by further decline in 2014 and 2015.

Figure 4 further illustrates the trend towards market de-concentration. Of the top 5 banks in 2015 (J.P. Morgan, Citigroup, Goldman Sachs and Morgan Stanley) 4 had experienced shrinkage in total fees since 2007 by at least 40%. The exception was Bank of America which acquired Merrill Lynch in 2008. In contrast, the second group of 10 (ranked 11th to 20th) is comprised of banks that grew in absolute terms:

Canada’s RBC, Japan’s Mizuho, Mitsubishi UFJ, Sumitomo Mitsui and Nomura (which took over Lehman’s operations in Europe and Asia), US bank Jeffries; and 3 French banks that, while declining slightly in absolute terms, grew their market shares (BNP Paribas, Société Générale, and Crédit Agricole). A closer look at the identities of the leading banks also shows that independent investment banks - not operating as part of universal banking groups - have declined in significance. Their number in the top 50 has fallen from 19 in 2007 to 15 in 2015, with Goldman Sachs and Morgan Stanley the only independent investment banks remaining in the top 10.

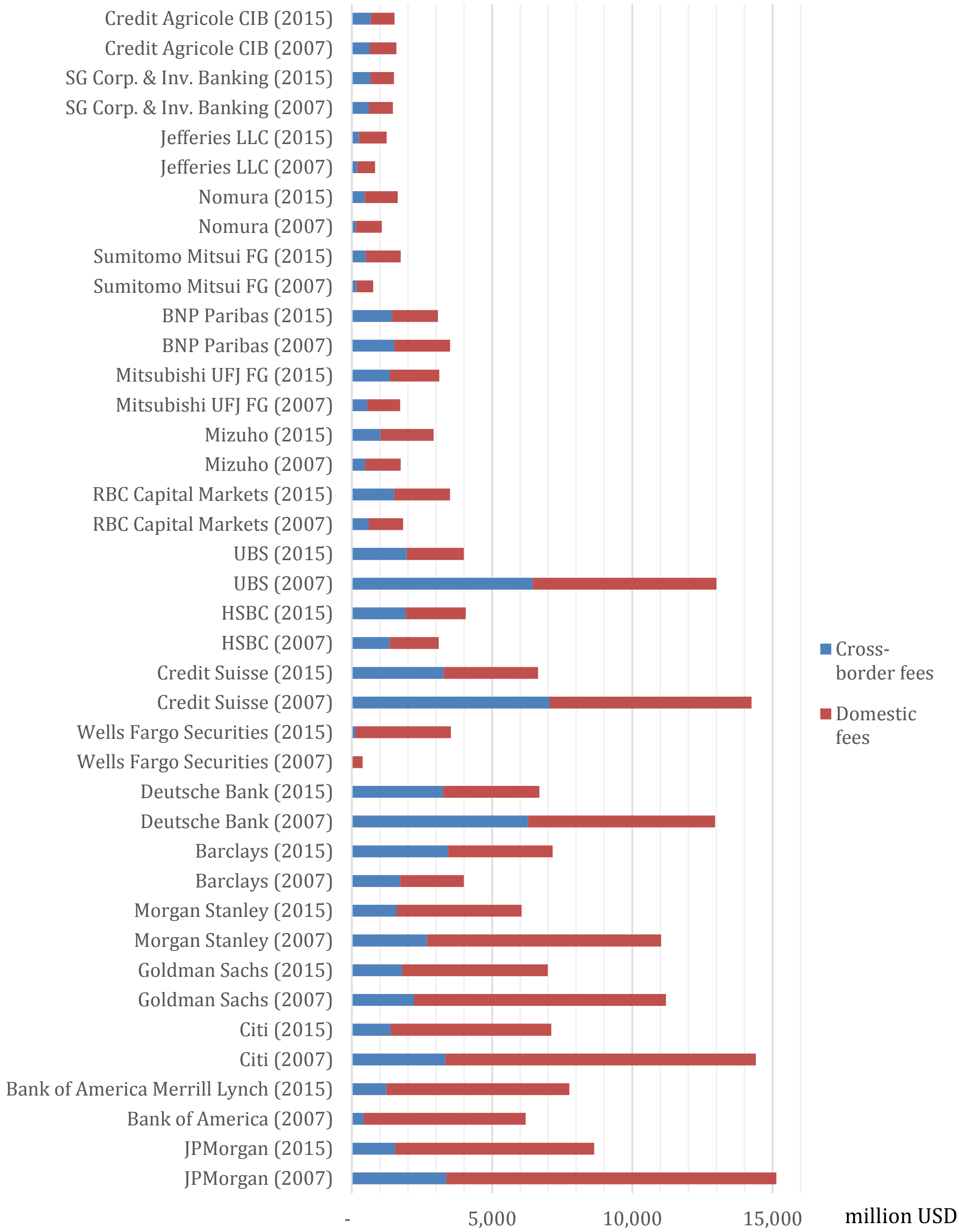


Figure 4. Top 20 investment banks in 2015 (based on total fees) and their fees before the crisis and in 2015.
Source: Authors' calculations based on data from Dealogic.

In summary, despite some consolidation in investment banking during and after the crisis, the biggest investment banks now have smaller market shares in core services in both absolute and relative terms. As a result, 2015 saw a much flatter hierarchy of investment banks, possibly reflecting the impact of the regulatory pressures on the largest banks. While no government has resorted to breaking down their large banks as an aggressive solution to the too-big-to-fail problem, higher capital requirements, new regulation, and fines resulted in most of the largest banks losing market share, accompanied by a decline of core investment banking revenues in absolute terms. One consequence has been reinvigorated competition from second-tier institutions. These findings also presage significant reshuffling in the geographical structure of investment banks, which we now explore.

**Geographical structure**

In this section we report on the geographical structure of core investment banking activity by nationality, defined as the country hosting the operational headquarters of the parent bank. Before we embark on a country-level analysis, however, it is useful to start with world regions defined by time-zones.

In cross-border markets, there has been a marked increase in the share of banks headquartered in Asia-Pacific, up from 5% to 17%, two-thirds of which took place at the expense of EMEA banks (almost exclusively European), down from 59% to 51%, with American banks down from 36% in 2007 to 32% in 2015 (figure 5). In domestic transactions, the share of the Americas fell from 80% in 2007 to 62% in 2009 - a result of recession in the USA - and recovered partly to 67% in 2015. EMEA's share increased from 11% in 2007 to 17% in 2009; but, following the ensuing Eurozone crisis and recession, declined to 9% in 2015. The share of Asia Pacific in domestic transactions jumped from 9% to 24% over the entire period. When cross-border and domestic fees are aggregated, we see the share of Americas fall from 61% to 52%, EMEA's from 32% to 27%, with Asia-Pacific growing from 7% to 21%. These changes look less dramatic if we relate them to the changing shares of different time-zones in global GDP (panel C of figure 5). In general, in investment banking the Americas punch much above their weight in GDP, Asia-Pacific much below, and EMEA slightly below. Since 2007, however, there has been some convergence across the time-zone groups.

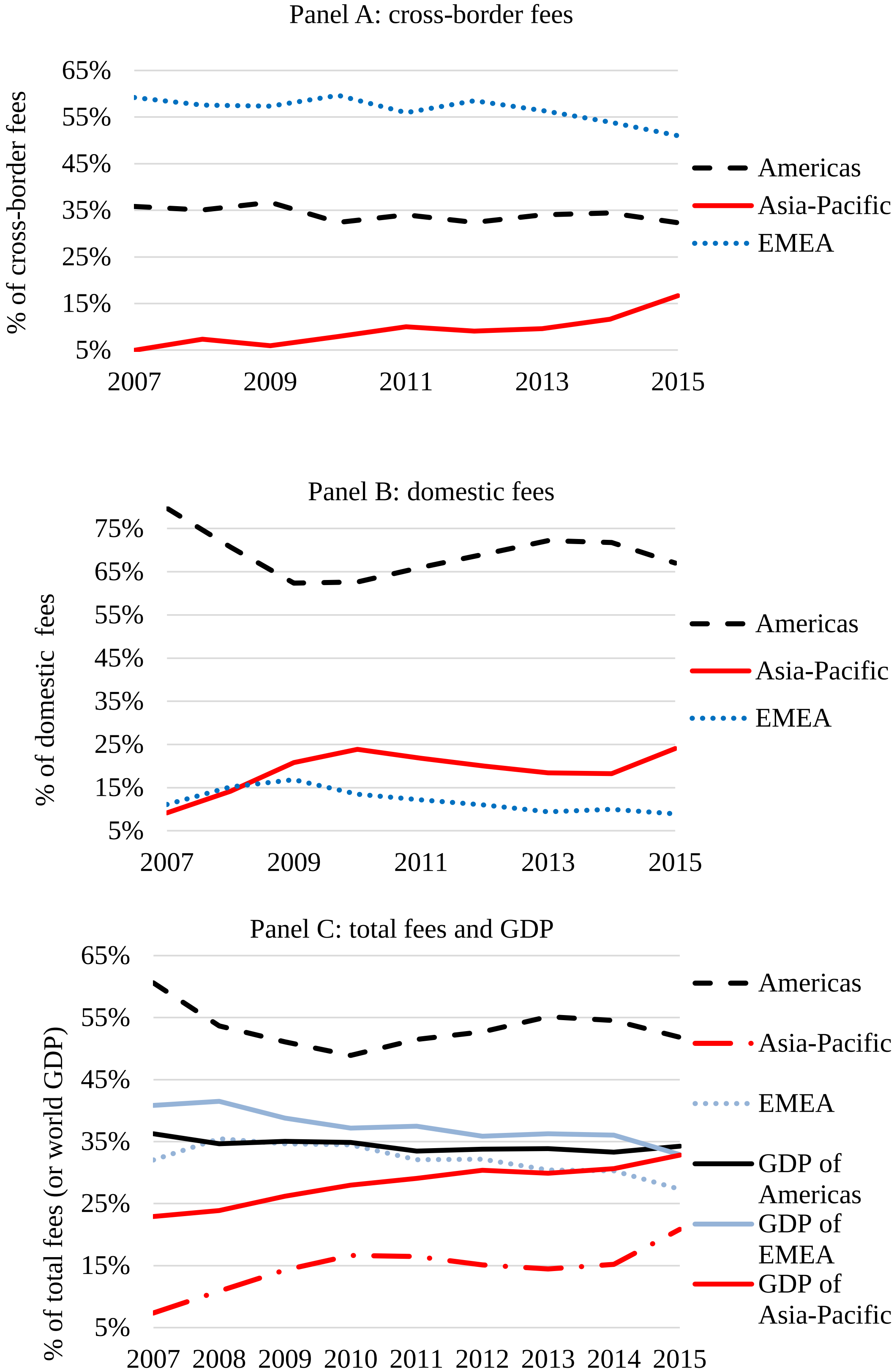


Figure 5. Market shares of parent banks based on the time-zone of their headquarters. Source: authors based on data from Dealogic, and the World Bank.

While GDP level in a region is a useful proxy to measure potential for capital market transactions, how GDP affects the volume of investment banking activity conducted by banks headquartered in a region depends on the level of capital market development in the region, as well as the strategies of investment banks. In contrast to the USA and much of Europe where the global financial crisis exposed abuses and excesses, capital market development has progressed in the Asia-Pacific, the region affected least by the crisis and subsequent new regulation, and where integration of financial markets has intensified (Ananchotikul, Piao and Zoli, 2015). Regarding bank strategies, closer examination shows that while banks from the Asia-Pacific have continued to focus on regional customers, their shares in the Americas and EMEA markets have increased significantly, from 2% to 8%, and from 2% to 7% respectively across the measured period. In their home Asia-Pacific region, their dominance has increased, from 51% to 72%. As a corollary, American and European banks lost market shares, predominantly in the Asia-Pacific. It is also worth positioning these shifts in respect to savings levels in addition to GDP. In 2009 Asia-Pacific surpassed EMEA in terms of the total value of savings with the Asia-Pacific increasing its global share steadily to 45% in 2015, compared to 30% for EMEA and 25% for the Americas. It seems, then, that Asian banks are managing an increasing share of their home region's capital.

At the country-level (figure 6) we observe a gradual decline in the share of US banks in cross-border transactions from 32% in 2007 to 23% in 2015. Aggravated by the fall in the US domestic market, the US banks' share of total fees declined from 56% to 44%. It is worth noting, however, that domestic US transactions still represent 61% of the world's domestic fees, and a third of the world's total investment banking fees: a reminder of how the US domestic market underpins the power of US investment banks. As they did in 2007, US banks earn approximately three-quarters of their fees from US clients, be they served through US-based or foreign-based subsidiaries. While in 2007 J.P. Morgan and Citi were ranked $4^{th}$ and $5^{th}$ in the world, based on cross-border fees, with a further 3 US banks in top 10, in 2015 the top 5 spots were occupied by European banks, with only 3 US banks in the top 10: J.P. Morgan, Goldman Sachs and Morgan Stanley.

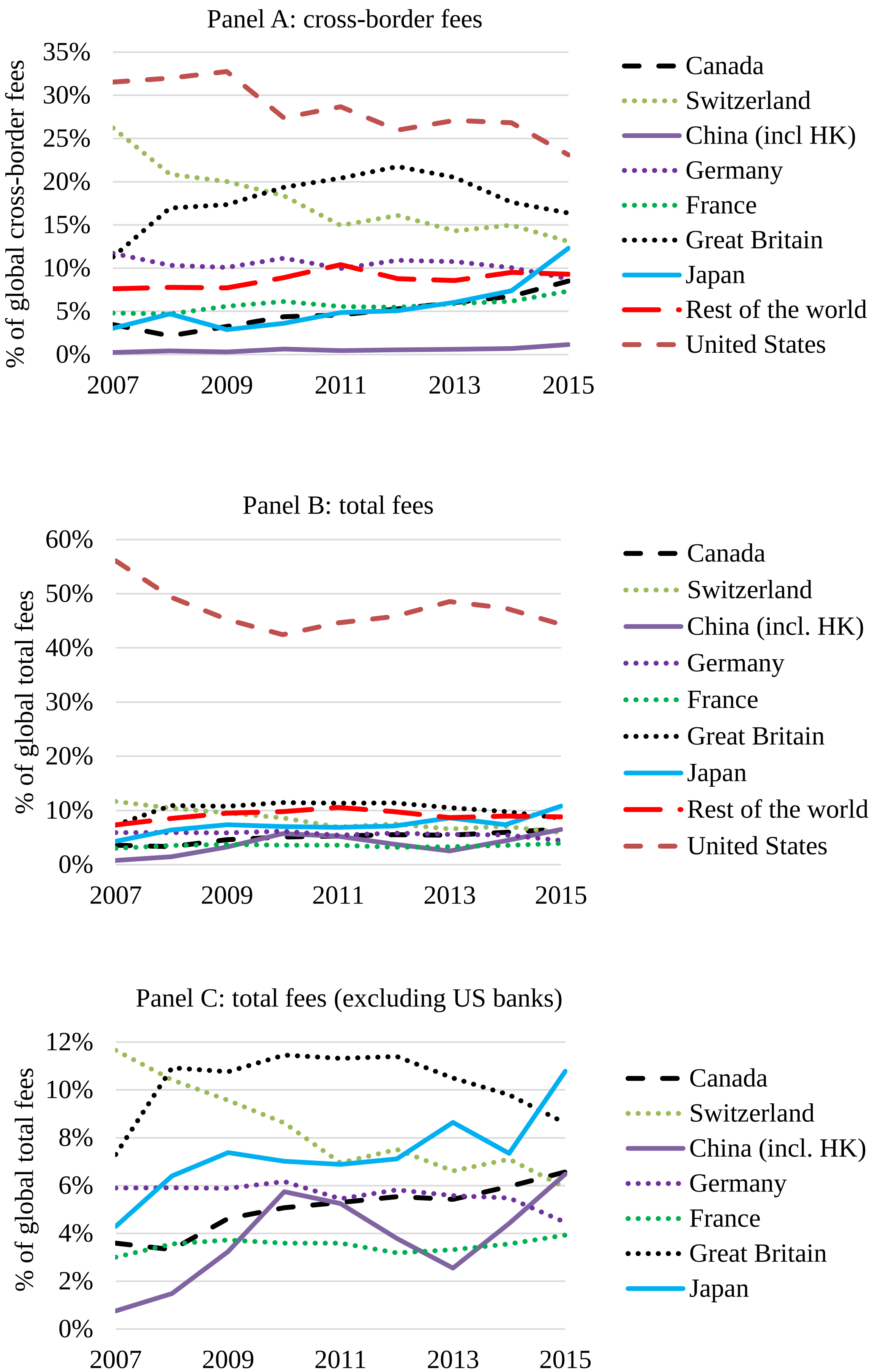


Figure 6. Market shares of parent banks based on the country of their headquarters. Source: authors based on data from Dealogic.

The biggest decline in fees earned, however, was by the Swiss banks. In 2007 the Swiss banks were second in total fees, and nearly matched the US banks in terms of cross-border fees. By 2015 the Swiss banks fell to 3rd position in cross-border and 7th in total fees. With a small domestic market, Swiss banks rely heavily on cross-border deals. In 2007, Credit Suisse was the largest bank in the world in terms of cross-border fees, and the largest non-US bank in terms of total fees. In 2015, Credit Suisse was the 3rd largest in total, and 2nd largest in international markets.. The decline of Swiss banks since 2007 has been due in no small part to the stern response of Swiss authorities to the crisis, including new minimum capital requirements significantly higher than those recommended by the Basel III framework. It appears that in the wake of the crisis Swiss authorities became nervous at underwriting those banks with balance sheets many times the Swiss GDP. Instead, banks seem to have refocused their strategy towards asset and wealth management, where capital requirements are lower, as are the risks as perceived by banks and regulators (Carney, 2016).

Japanese banks have shown the largest gains, rising from the 5th to the 2nd position in total fees, and from 6th to 4th in cross-border fees. In part, Japanese banks have benefited from a large and relatively stable domestic market, second in size only to the US market, and representing approximately 5% of the global market for investment banking services. Gains in international transactions, however, have been remarkable. In 2007, only Mitsubishi UFJ made the world top 20 in cross-border deals. In 2015, it rose from 20th to 12th place, with 3 more Japanese banks entering the top 20. The number of Japanese banks in the top 20 based on total fees doubled from 2 to 4.

Many factors have contributed to the success of Japanese investment banking. Following the crises of the 1990s, Japanese banks entered the 2000s with more capital, less leverage, and less risk appetite than their European and American counterparts. When the crisis erupted in 2008, the Japanese economy was not affected directly, and Japanese banks stood ready to take advantage of their competitors' weaknesses. In fact, Nomura took over Lehman Brothers' operations in Europe and Asia, while Mitsubishi UFJ invested $9bn to buy 10% of Morgan Stanley's equity and created successful investment banking joint ventures with the American bank. In addition, Japanese banks took advantage of the rise in the foreign activity of Japanese companies. Japan's outward FDI rose by approximately 50% between 2010 and 2015, much above the world average of 20% (UNCTAD, 2016). This activity has focused on Asia, and is related to the government strategy of increasing Japanese economic and political presence and influence on the continent. Abenomics has played a part, as some of its economic reforms – including change in corporate governance to make companies more shareholder value-oriented, revitalisation of capital markets, and a push towards a more diversified investment strategy of the Government Pension Investment Fund – directly or indirectly generate demand for investment banking services.

Although their core investment banking fees decreased in absolute terms, British banks performed well in terms of market shares, particularly in international markets, taking second position in the world from the Swiss. Barclays has grown in absolute terms, boosted by the takeover of Lehman Brothers' US operations, and is now the largest investment bank in the world in terms of cross-border fees and the largest non-US bank in total fees. HSBC has grown in absolute terms as well, while RBS has gradually withdrawn from investment banking. Since 2013, however, market shares of the British banks have declined. This may reflect a delayed restructuring process. Barclays, for example, has re-emphasised its trans-Atlantic positioning, and announced plans to reduce its presence in Asia and Africa. HSBC, in turn, has concentrated more on Asia, reducing its presence in the Americas, including withdrawal from Brazil (Steinberg and Patrick, 2016).

Core investment banking fees of German banks have been shrinking significantly. While in 2015 Deutsche Bank was still the 3rd largest in the world in cross-border fees, after Barclays and Credit Suisse, and, after Barclays, the 2nd largest non-US bank in total fees, Deutsche Bank's fee intake in absolute terms has nearly halved since 2007. Alongside Credit Suisse and UBS, Deutsche Bank in 2007 was one of the three investment banks with by far the largest cross-border fees, significantly larger than those of any US bank. All three grew through acquisitions of major US investment banks. Credit Suisse bought First Boston in 1988, Deutsche Bank purchased Bankers Trust in 1999, and UBS acquired Paine Webber in 2000. All three expanded by establishing themselves as major players on Wall Street and in the City of London (Augar, 2008)

French banks contracted less in absolute terms than the German ones, and closed the gap on the latter in both total and international markets. BNP Paribas was joined by Société Générale and Crédit Agricole in the world top 20 by total fees. While both French and German banks faced sharply declining domestic markets in investment banking services, the lesser decline of French banks (see also figure 4), may have been due to the French banking system as a whole being much more concentrated and centralised than that of Germany. As a result, leading French banks can shore up their balance sheets with profits from domestic retail and commercial banking, whereas their German counterparts have to compete with numerous strong regional and local banks (Buell, 2016).

Canadian banks have risen most notably alongside the Japanese banks, growing in absolute not just relative terms. While the Canadian domestic market shrank in absolute terms, the contraction was smaller than in the UK, France and Germany. Canadian banks made significant gains internationally, with RBC in the lead, rising from 19th place in total and cross-border fees to 12th and 9th respectively. With a relatively buoyant economy and arguably better financial regulation than in the USA and European Union, Canadian banks' much stronger balance sheets and reputations allowed them to expand internationally (Bordo et al., 2011).

Our survey period coincides with the international emergence of the mainland Chinese banks, which by 2015 surpassed Swiss banks in total fees. This growth was based mainly in Mainland China, by 2009 the third largest domestic market in the world, after the USA and Japan. As China maintains a separation of commercial from investment banking, specialist investment banks have benefited from a booming demand from domestic companies, including soaring numbers of Chinese companies seeking listing on foreign stock markets (Zhang and Peck, 2016). Yet while 6 independent Mainland Chinese investment banks joined the world top 50 ranking,in aggregate they still earned 4 times less in fees than J.P. Morgan on its own. Moreover, the share of Mainland Chinese banks in cross-border business remains negligible, even when we add Hong Kong to Mainland Chinese figures. Hong Kong may be a major location for investment banks, but it does not host their headquarters. 13 other Chinese institutions made it to the world top 100 in 2015, compared to one from India and none from Brazil or Russia.

We focus on the above eight countries, because each had at least 3% share of the global core investment banking services market in 2015, with combined coverage of over 90%. The 9th country in the ranking is Australia, with 1.3% share in both total market and cross-border transactions (up from 1.1% and 0.9% in 2007 respectively). Like their Canadian counterparts, Australian banks benefited from milder impact of the global financial crisis on their domestic economy, leaving them with relatively strong balance sheets and resources for expansion. In cross-border markets, three other countries had market shares exceeding 1%: Italy (1.2% in 2015, down from 1.3% in 2007), Netherlands (1.7% up from 1.2%), and Spain (1.3% in 2015, up from 0.9% in 2007). Conspicuous by its absence is Singapore, with a share in cross-border deals of merely 0.2% in 2007 and 0.5% in 2015. Like Hong Kong, Singapore is home to the subsidiaries of many global investment banks, but does not host their headquarters (Wójcik et al., 2016). Singaporean banks DBS and OCBC have been expanding their investment bank activities in the last decade, but remain small players by international standards (Lai and Daniels, 2017).

Overall, based on bank nationality, the geographical concentration of core investment banking has declined (figure 7). The Herfindahl index for total fees fell sharply by 2010, then rose over the following 3 years, and fell again in 2014 and 2015. The post-2010 increase was due mainly to a rebound in the share of US banks in 2011-3, driven by increased demand in the US domestic market. Concentration in the market for cross-border transactions declined consistently throughout the period. When we consider the performance of the top five nationalities of investment banks in cross-border markets, the share of Japan rose while that of the UK remained stable; however, the shares of the USA, Germany, and (particularly) Switzerland plunged. The shares of 4 of the next 5 nations – France, Canada, Australia, and Netherlands, but not Italy – increased significantly. The shares of most countries in the second 10 – specifically Spain, Sweden, China, Norway, Singapore, Denmark, and Brazil – increased as well.

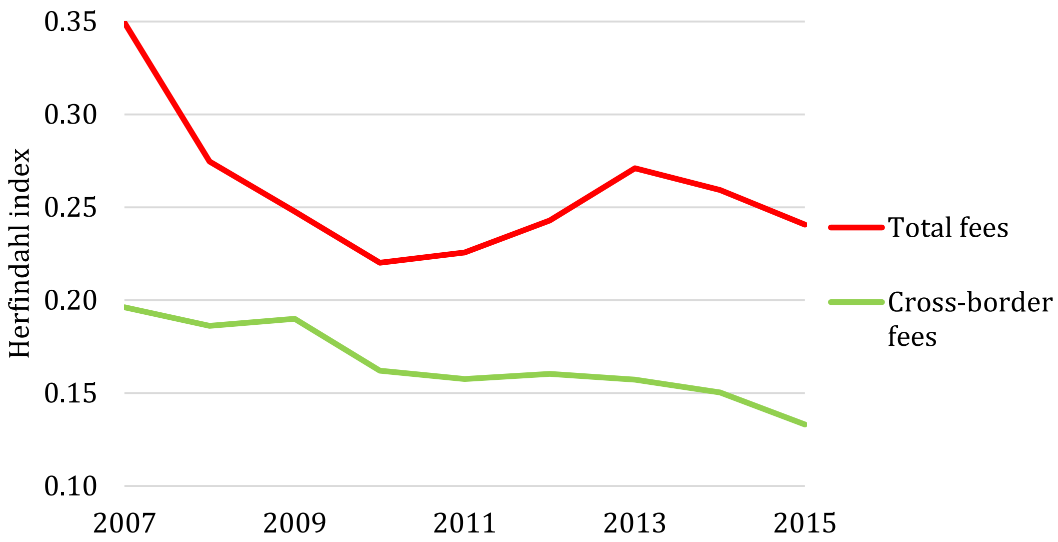


Figure 7. Herfindahl index based on national markets shares in investment banking. Source: Authors' calculations based on data from Dealogic.

In short, the world of investment banking has become less US-dominated, at least as far as market shares in core investment banking services are concerned. The biggest losers of market share, however, are European banks (with few exceptions), with Asian banks emerging as market-share winners thus far. This is a reflection of economic trends; a short recession in the USA, a long recession in Europe, and continued though slower growth in Asia. In contrast to the USA and Europe, Asia has also experienced continued capital market development and integration. The changing landscape of investment banking also appears to have responded to the changing geography of regulation, with radical changes in Europe, delays and dilution of new regulation in the USA, and Asian countries as reluctant and late adopters of post-2008 international financial regulation.

## Conclusions and implications

The objective of the paper was to map investment banking activities since the global financial crisis. Our results show a significant change in the industry in terms of size and structure. First, since its peak of 2007 core investment banking activity globally has nearly halved in size in relation to the size of the global economy, and has returned to levels comparable to the early 2000s. Second, the global financial crisis has not had a negative impact on the involvement of investment banks in cross-border business. In other words, internationalisation of core investment banking activity has not decreased since the crisis. Third, the largest banks have suffered losses in market shares and the hierarchy of the providers of core investment banking services has become flatter. Finally, the geographical concentration of the industry has declined, with a less uneven spread of activity across time-zones and countries. US banks have become slightly less dominant while European banks, particularly Swiss banks have suffered large losses. These changes presented an opportunity to smaller players, with banks from Japan and Canada the most responsive. Mainland Chinese banks have also boomed, although thus far feeding almost exclusively on their domestic market.

Our results offer important contributions to mapping and understanding the post-crisis map of global finance. They highlight the variegated nature of change underway in the global financial system, and its implications for understanding geo-politics and geo-economics in the wake of the crisis. Investment bank capitalism cannot be characterised simply as a product of liberal market economies. The largest investment banks at the peak of their activity in 2007 included Swiss and German banks, and since then the fastest growing investment banks can be found in Asia-Pacific. In sum, what we see in our results is a complex geography of investment banking responding to a variegated landscape of post-2008 national and international financial regulation, changing demand for investment banking services, and other factors including the structure of the national financial system (for example in the case of centralised financial system of France), and specific corporate events, such as the purchase of Lehman Brothers operations by Barclays and Nomura.

The rise of Asia-Pacific as home to both clients and providers of core investment banking services is a reflection of the growing presence of the region in geopolitics and geo-economics. Banks from Asia-Pacific have dominated the region's growing investment banking market more than ever before. In addition, Asia-Pacific banks have made forays into America and Europe. While most research on this global financial shift focuses on China, our results indicate that the role of Japan is not to be underestimated either. As Chinese banks expand internationally, in assisting Chinese corporate expansion, RMB internationalisation and the Belt and Road Initiative, it will be interesting to watch Chinese competition with Japanese banks, as part of a rivalry between China and Japan in Asia-Pacific and globally.

To be sure, it is premature to talk about a long-term fall in American investment banking. In this sense, we cannot agree with claims referring to US investment banks as dinosaurs and threatened with extinction (Fergusson, 2008). US banks still command the largest share of international markets and, due to the size of their domestic market, nearly half of the global market share, four times that of second-placed Japan, and seven times that of China. The crisis has shocked the whole industry and has shaken US investment banks, but in our view, it would take a prolonged geo-economic and geopolitical transformation to de-throne them. Direct access to the world's largest domestic capital market, to USD as the world's most powerful currency, and the support of the world's most powerful government remain key assets of US investment banks (Agnew, 2012; Wójcik, MacDonald-Korth and Zhao, 2016).

The continued high level of internationalisation of core investment banking contradicts expectations of declining financial globalisation, common in the wake of the crisis. It appears that globalising corporations continue to generate demand for cross-border capital market services, and without retreat to domestic capital markets. Indeed, our results suggest that these companies may be enjoying stronger competition for their custom among investment banking services providers. Moreover, new technology allowing more direct interaction between providers and users of capital may intensify competition and squeeze profit margins of intermediaries even further (Clark and Monk, 2017).

Considering that our data uncovers only a partial picture of investment banking activities, there are many directions in which the geographical analysis of the industry could be extended. The first is the overlap between investment banking and shadow banking. The latter has grown since the crisis (Ban and Gabor, 2016; FSB, 2017), and it is possible that many banks, particularly large international banks, have expanded their shadow banking activities partly because of diminished demand for core investment banking services documented in this paper. Another area that requires research is the engagement of investment banks with new financial technology. Will technologies like blockchain erode employment and profits in investment banking or can they be turned into a new profit generation tool of the industry? A third area ripe for enquiry is the role of investment banks in lobbying, regulation and governance, including the issue of 'revolving doors' and regulatory capture. In this regard, it is instructive to see the emergence of Global Financial Markets Association since 2008 as a global financial industry lobby, dominated by former investment bankers and representatives of investment banks.

While our data conclude at 2015, it is clear that 2016 was not a very good year for investment banking. It started badly, with falling stock market indices led by a faltering Chinese market. Then followed low levels of primary capital market activity and M&A, and the UK's EU referendum, which have increased financial market uncertainty, and put at risk the prospect of a Capital Market Union in Europe, a hitherto UK-led initiative. While this is bad news for investment banking globally, European banks, London as the centre of investment banking activity, and US banks operating in Europe are likely to be most affected. Asian banks, which draw only a small part of earnings from Europe should be affected least. It may be symptomatic that with reports of investment banks considering moving operations away from the UK, the Japanese bank Mitsubishi UFG was planning to expand its London footprint (Burke, 2016). Whatever the future holds, investment banks – the keystone species of a version of investment bank capitalism which imploded in 2008 – should remain an important subject of inquiry in geography.

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