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What turns cities into international financial centres?

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Globalisation and technology continue to fuel worldwide competition among cities for the status of an international financial centre. This study introduces novel data on revenues earned from international finance in 2000-14 by city, and investigates their determinants. It shows that IFCs develop in cities that are leading domestic financial centres, with large, deep, flexible and open labour markets and a large and internationalised non-financial sector, in countries with strong rule of law and contract enforcement. Stock market size and prices, corporate and finance-specific taxation, English as the official language, legal family of origin, and the GMT zone do not matter. (JEL F30, F60, F65, G24, R30)

The growth of financial and business services is one of the key economic trends of the last thirty years (Daniels, 1993; Desmarchelier, Djellal and Gallouj, 2013). Within the sector, financial firms tend to be larger[1] than other business services firms including those in law, accountancy, marketing, business or human resources consulting. The rise of financial and business services has thus unleashed a race among cities for the status of international financial centres (IFCs), understood as concentrations of firms in the sector engaged in cross-border business. This competition can be found in all parts of the world, in advanced, emerging, and developing economies alike.[2] While the US subprime and the Eurozone crises may have tempered such ambitions in some places, in others the crisis is seen as an opportunity to gain market shares from the established global financial centres with London and New York in the lead.[3]

IFCs remain icons of modern capitalism and centres of power, and their history is richly documented (Kindleberger, 1974; Cassis, 2010). The literature explains why technology facilitating financial transactions at a distance allows financial firms to operate out of ever fewer headquarter locations, consequently sustaining or even increasing the spatial concentration in the financial sector (Sassen, 1991; Krugman, 1991). What turns cities into IFCs is however still poorly understood. Why is London and not Paris Europe's financial capital? What are the chances of Shanghai becoming a global financial centre?

The paucity of research on the development of IFCs that goes beyond descriptive history and case studies is partly to blame on bias towards manufacturing in much economics and economic geography, treating the question of location in the services sector as trivial.[4] Indeed, the term financial centre

[1] In terms of assets, revenues, employment, profits, tax contributions and international reach.
[2] Examples include: Dublin's International Financial Services Centre built from scratch since the late 1980s; IFC-Montreal initiative, Frankfurt Main Finance; 'Making Mumbai an International Financial Centre' (Ministry of Finance, 2007); the International Financial Centre Act in Nepal (Bhetuwal, 2007). In China, the 12th five-year development plan named financial and business services as one of the drivers and foci of urban development.
[3] Building on its reputation in Islamic finance, Kuala Lumpur is developing an International Financial District, while in 2010 the Chinese government vowed to transform Shanghai into a major international financial centre by 2020. In 2013 a Chinese property company pledged to make Johannesburg into the "New York of Africa" (Kuo, 2007). The continued significance of IFC activity is also reflected in the rising international trade in financial services (Freund and Weihold, 2002).
[4] The bias can be traced back to Christaller's central place theory, according to which the location of services is driven simply by the distribution of demand reflecting the distribution of population, and thus gravitates towards central market places, with higher level services, like law or banking, having fewer centres in any economy than lower level services, like hairdressing. To be sure, Christaller never meant to explain the location of wholesale, tradable services, which international financial and many other services have become.

hardly features in economics literature, despite it being a self-evident preoccupation of both finance firms as well as local policy makers. This bias is compounded by empirical issues. Data on financial activities is available almost exclusively at the country level. As a result, research on financial centres resorts to proxies such as the size of a stock exchange, employment in financial services, counts of financial firms present or headquartered in cities, or indices of financial centre competitiveness (Kayral and Karan, 2012). Such proxies, however, cannot be used to distinguish between domestic and international activity, and indices of financial centres measure everything and nothing specific at the same time, making poor material for a systematic analysis of factors that affect the development of financial centres sensitized to local geography as the level of analysis. As a consequence, existing research tends to focus on success stories, neglecting the more analytical question of why most cities never become IFCs.

This paper analyses a novel dataset based on the combination of capital markets data from Dealogic and city-level data from Oxford Economics, enhanced with information from Bureau van Dijk's ORBIS and Bankscope, as well as corporate websites. Covering the period of 2000-14, this dataset allows us to estimate the gross fee revenues from nearly 600 thousand capital market transactions (equity, debt, syndicated loans, and M&As) worldwide, identify fees from cross-border deals, and assign these to cities hosting the operational headquarters of the subsidiary of the principal financial advisor that conducted the transaction. Thus, we obtain the first measure of international financial activity that we are aware of, based on the actual business transacted in cities.[5] This yields a new ranking of IFCs, arguably more direct than any existing indices. Most importantly it opens the door, for the first time, to a systematic analysis of factors that affect the development of IFCs.

We subject data on gross cross-border fees for a sample of 150 cities worldwide and over forty explanatory variables to correlated-random-effects quantile regression and extreme bounds analysis. The findings show that cross-border financial activity is strongly influenced by city size, institutional environment, labour market flexibility, and the concentration of financial advisors. A city needs size to offer a large and deep labour market necessary for the financial sector. This market has to be flexible to allow easy hiring and firing by what is a notoriously cyclical and unstable industry. Institutions such as rule of law matter, and it is almost impossible to become a top IFC without an effective and efficient enforcement of contracts. Once we account for these two institutional variables, it does not matter whether a city is in a country with an English or French legal system of origin. It is an advantage for an IFC to host large global financial firms rather than a myriad of small ones, but a very high concentration of advisors in a city becomes a disadvantage. EU membership seems to enhance the ability of cities to attract deals. IFCs also tend to flourish in cities that host many headquarters of large non-financial companies, particularly if those are active internationally. We also demonstrate that the status of the largest domestic financial centre strongly determines the ability of a city to attract cross-border deals.

Factors that do not seem to affect cross-border finance at city level include stock market returns, corporate and financial taxes, whether a city is the political capital of a country, location close to the GMT time zone or whether English is the official language. Overall, we conclude that IFC development is a complex phenomenon, subject to a wide range of factors operating at both country- and city-level. There are no quick fixes whereby an IFC could be built on the basis of a booming stock market or low taxes. Instead, IFCs rise through a slow and long process of economic and institutional development. Cross-border finance is a game played predominantly by large cities that already enjoy the status of top financial centres within their domestic economies. To succeed cities also need a large and internationally active non-financial corporate sector.

[5] Our dataset does not cover transactions in asset management, insurance or non-syndicated bank lending. Investment banking activity that we cover, however, arguably represents a major part, if not majority of cross-border financial transactions, as it is more globalised than asset management, not to mention insurance or non-syndicated lending.

Practical implications of our findings can be illustrated with the example of China. The scenario with two or more Chinese IFCs of comparable size is unlikely. Worldwide, cities leading in domestic finance tend to dominate international finance in their countries. Though Shanghai is surrounded by so much hype in media as the rising start on the firmament of IFCs, Beijing has a large advantage over Shanghai, principally by the virtue of being China's top domestic financial centre. Both cities start from such a low position by international standards that Shanghai may yet overtake Beijing, particularly if it builds up a larger and more internationally active non-financial sector, and surpasses Beijing's labour market in size and depth. Our findings suggest however, that ultimately neither city can challenge Hong Kong, let alone foreign IFCs, without radical legal forms in Mainland China.

I. The development of international financial centres

There is no theory of financial centre development, and it is not the goal of this paper to propose one. In this section we assemble a list of factors that can be expected to affect cross-border financial activity in cities, and related hypotheses, summarised in table 1. We draw from research on factors that affect financial development, historical works and case studies of IFC development, and literature on location of economic activity. We also contextualize our hypotheses using insights from hundreds of interviews we have conducted over the last decade with experts in financial firms and related organisations worldwide.

TABLE 1–FACTORS OF IFC DEVELOPMENT

	Scale		Expected
	City	Country	impact
Political and legal institutions			
Political stability		X	+
Control of corruption		X	+
Protection of property rights		X	+
Rule of law		X	+
Quality of regulation		X	+
Enforcement of contracts		X	+
Protection of creditor rights		X	+
Protection of shareholder rights		X	+
Legal system origin		X	+
Political capital	X		+
Labour market			
Size of the labour market	X		+
Quality of education	X	X	+
Flexibility		X	+
Openness		X	+
English language		X	+
Infrastructure			
Information	X		+
Transport	X		+
Non-financial sector development			
Presence of large non-financial firms	X	X	+
Internationalisation of large non-financial firms	X	X	+
Openness of the domestic economy		X	+
Seaport	X		+/0
Financial sector development			
Domestic financial activity	X		+
Presence of a stock exchange	X		+/0
Stock market development		X	+
Financial market valuations		X	+/-
Presence of large institutional investors	X	X	+
Competition in the financial sector	X		+
Government debt burden		X	-
Taxation			
Personal taxes		X	-
Corporate taxes		X	-/0
Taxes specific to financial transactions		X	-/0
Macroeconomic conditions			
Real interest rates		X	-
Inflation		X	-
Other conditions			
Greenwhich Mean Time	X		+
Quality of life	X		+

Financial development requires political and legal foundations. Political instability and corruption destroy trust necessary for the functioning of a financial market (Rajan and Zingales, 2003). As financial transactions involve claims to private property, it is hard to imagine a financial market without strict protection of property rights (Beck, Demirguc-Kunt and Levine, 2003). Rule of law is needed, including independent courts, to protect the parties to financial transactions from arbitrary decisions of governments. At the intersection of law and politics, flexible and predictable financial regulation can enhance and safeguard the quality of the financial system. As financial contracts can be very complex, with many contingent outcomes, and can cover long periods of time, the effectiveness and efficiency with which they can be enforced is particularly important (Chinn and Ito, 2006). To allow credit and equity transactions to flourish, law also needs to offer protection for creditors and shareholders alike. According to some these protections are embedded in the English common law more than in other legal systems, particularly that of French origin (La Porta et al., 1997, 1998).

While political and legal factors typically apply to whole countries, there is a potentially significant political and legal factor specific to cities. If a city hosts central political, regulatory and legal

institutions of country, it may offer advantages to international financial firms, for example, better access to information about laws and regulations relevant to finance (Lai, 2012).[6] IFCs are mostly capital cities, and exceptions to this rule may look less exceptional on closer scrutiny. New York, for example, hosts the most influential part of the country's central bank – the Federal Reserve Bank of New York – as well as its most influential courts.

IFCs need highly educated and qualified labour in a large, deep, flexible and open labour market (Ellison, Glaeser and Kerr, 2010). Openness makes the supply of labour more flexible, but also provides expertise in foreign markets, particularly important for internationally active firms. As English is the international language of finance, we might expect cities where English is the main language to enjoy an advantage (Stulz and Williamson, 2003).[7]

Cross-border financial deals require a lot of face-to-face and long-distance interactions, which complement each other (Gaspar and Glaeser, 1998).[8] Consequently, infrastructure that facilitates mobility of people and information, within and between cities, including high-speed internet, intra- and inter-urban urban transport networks and airports, is necessary for an IFC. While high-quality office space is also a basic necessity, its supply may be expected to adjust to demand so quickly, that it should not be considered a significant factor that affects the development of IFCs.[9]

The next two groups of factors have to do with the development of the corporate sector, the major source of demand for cross-border financial deals. While services rendered in a financial centre to domestic firms represent domestic, not international finance, nevertheless a large domestic corporate sector, and particularly the presence of large domestic companies, increases the potential for cross-border M&As.[10] Foreign firms interested in M&As in a country often hire advisors operating in that country (Very and Schweiger, 2001). This factor may operate at both city and country level. Although financial firms are also subject to cross-border M&As and hire advisors in the process, we have to limit the definition of this factor to non-financial firms. Otherwise, we would run into the problem of trying to explain the international activity of financial firms with a factor that already measures this activity.

If large domestic or local non-financial companies operate internationally they are more likely to become targets of cross-border M&As. Generally, IFCs are expected to thrive from economic openness (Rajan and Zingales, 2003; Baltagi, Demetriades and Law, 2009). International trade, for example, is accompanied by international financial transactions such as trade credit or insurance. Foreign investment that it encourages can take the form of cross-border M&As, but also includes firms raising capital in foreign markets through syndicated loans, equity and bond issuance. To conduct these activities firms often hire advisors in foreign markets.

Close relationship between international trade and cross-border finance is evident in history. Venice, Antwerp, Amsterdam, and London built up their financial prowess on the back of maritime commerce (Cassis, 2010). New York's ascent to the top of the U.S. financial centre hierarchy was helped by the Erie Canal, built in 1825, which connected its seaport with the Great Lakes (Kindleberger, 1974). Merchant banks – specialists in international trade and finance – gave rise to modern investment banks. Arguably, financial transactions related to trade in goods have long been overwhelmed by other types of cross-border financial activity, and airborne trade as well as trade in services have

[6] For example, foreign financial firms seated in Beijing stress the proximity to government, central bank, and central regulatory agencies as the key reason for their location.
[7] While the size of the labour market and language are factors that operate primarily at the city level, and flexibility and openness are decided by national laws and policies, quality of education may matter at both the city and country level. After all the best educated graduates in a country should be attracted to jobs in an IFC even if they come from outside the city.
[8] The image of a high-finance professional jetting in and out of cities to solicit and execute deals is as accurate, or even more true now than ever before. Our interviewees often stressed an increasing amount of international business travel.
[9] A similar argument could apply to ICT and transport infrastructure, but to a much lesser degree.
[10] Small and medium-sized firms are less likely to attract cross-border M&As than large firms.

grown faster than the seaborne variety. As a result access to sea and the presence of a large seaport may no longer matter to IFCs in the 21st century.

Since we measure international financial centre activity with gross fees from cross-border capital market transactions (equity, debt, syndicated loans, and M&As), we are free to investigate a number of factors related to financial sector development, as long as they do not encompass the activity we are trying to explain. The first candidate is the domestic financial activity. It is hard to think of any country, where the leading IFC is not the top domestic financial centre. Large financial firms have no reason to specialise in foreign transactions only; they serve both domestic and foreign clients. In evolutionary terms, many firms gain expertise and market shares in domestic finance before they develop international activities (Morrison and Wilhelm, 2008). Both reasons should lead to a coincidence of international and top domestic centres.

IFCs are often associated with stock exchanges. With virtualisation of trading, exchanges no longer serve as key meeting points of traders, and thus their location should matter less than in the days of physical trading floors. However, when a foreign company wants to raise capital through the Hong Kong Exchanges, for example, it is still likely to seek advisors in Hong Kong, who have established relationships with the local exchange. Considered in relation to the size of the domestic economy, the size of the stock market may reflect the popularity of securities in the domestic economy, which may not only attract foreign issuers, but also enhance domestic and local expertise and environment conducive to the development of internationally active securities industry (Wójcik, 2011). The level of stock prices may also matter for cross-border financial activity, since bull markets attract equity issues, both domestic and foreign (Sarkissian and Schill, 2004). On the other hand, low valuations may attract M&As by foreign firms (Erel, Liao and Weisbach, 2012). Both equity issues and M&As may raise demand for local financial advisors.

Institutional investors focus on buying securities on behalf of their beneficiaries, while investment banks focus on selling them on behalf of their issuers. The two sides of the securities industry work closely with each other, and issuing companies often reach institutional investors through investment banks that have close relationships with institutional investors (Morrison and Wilhelm, 2008). For that reason we may expect the presence of large institutional investors, at both country and city level, to be conducive to the development of an IFC.

Investment banking market structure may be of consequence to IFC development. A single provider of capital market services in a city would have a monopoly power on all firms that need a service provider in this city. Lack of competition could deter customers, and limit incentives for innovation. We therefore expect competition to be beneficial to the development of an IFC.

As a final factor within financial sector development, we could consider large government debt, measured for example as percentage of GDP, as a burden to the attractiveness of this country's IFCs. Large government debt may crowd out private equity or debt sought by foreign issuers, and raise the perceived risk of a financial crisis, deterring foreign firms from using the services of the country's financial sector.

We expect a negative impact of high taxes on the development of IFCs, particularly with regard to personal taxes, since corporate taxes and those specific to financial transactions, such as interest or dividend tax, can be more easily avoided through incorporation and booking assets in low-tax jurisdictions (Haberly and Wójcik, 2015). In addition to taxation, general macroeconomic conditions such as high real interest rates and high inflation may dampen international financial activity. High real interest rates imply a high cost of capital, while inflation distorts financial decision-making and adversely affects financial development in general.

Much has been written about the advantages enjoyed by London as the financial centre located on the prime meridian (Clark and Thrift, 2005). Proximity to the GMT zone increases the daytime overlap of

an office with offices in Americas and Asia. This is particularly relevant in international finance, where up-to-date information from around the world is critical to pricing assets and executing deals. On the other side of the spectrum from physical geography lies the general quality of life in a city. Finance professionals, particularly those who work on international deals, are high-earners expecting a high standard of living. Some of their needs, like high-quality housing, can probably be met in almost any place. Other place attributes, like clean environment or high-level cultural amenities cannot be easily adjusted to the needs of finance professionals. Professionals in international finance tend to be quite mobile, and likely to take quality of life into account when choosing among cities where they could work.

Our classification of major factors expected to influence the development of IFCs offers a number of contributions. In contrast to literature on financial development, which is devoted entirely to countries as units of analysis, we pay equal attention to city- and country-level factors. Second, our precise definition of IFC activity allows us to investigate the impact of the financial sector development itself. Finally, the list is based on a review of state-of-the art interdisciplinary literature, reflecting the complex, multi-faceted nature of IFCs, affected by politics, law, culture and geography in addition to economic forces. Our task now is to subject this list to econometric scrutiny.

II. Data & Methodology

A. *Dependent variable*

To the best of our knowledge, no publicly available database offers data aggregated at city level that could be directly used to study development and competitivness of IFCs. In this paper we use propriatory data from a premier investment banking data provider Dealogic, which offers comprehensive coverage of investment banking deals across equity capital markets (ECM), debt capital markets (DCM), syndicated loans (Loans) and mergers and acquisitions (M&As) across the world from 2000 onwards. To create a sample for our analysis we have used data on all deals covered by Dealogic that satisfy the following criteria. They have been completed within the 2000 – 2014 time period, have data available on the deal value and offer the name of a principal financial advisor(s)[11]. Totalling 593,462 deals across the four groups of products (table 2), our sample offers a representative record of capital market activity worldwide. Dealogic data does not come with geographical information regarding any of the advisors, but provides names of financial advisors at subsidiary level. We used those names to identify the location of the operational headquarters[12] of the top 500 financial advisors for every product-year combination[13] by searching through Orbis database, Bankscope and company websites. For the purpose of building our list of advisors, we have considered five distinct services – equity underwriting, debt security underwriting, underwriting of syndicated loans, acquiror advisory and target advisory. Each deal is assigned to the city where the principal advisor has operational headquarters[14]. Cities are defined as metropolitan areas, in accordance with the conventions used by Oxford Economics – Global Cities database[15].

TABLE 2–SUMMARY OF CAPITAL MARKET TRANSACTIONS

[11] Bookrunner subsidiary (ECM), bookrunner subsidiary (DCM), mandated lead arranger (Loans), acquirer/target advisor (M&As)

[12] The use of operational headquarters instead of nationality of incorporation reflects our focus on international financial centres as cities where transactions are actually conducted rather than just booked.

[13] This process has led to a list of 7165 unique names of financial advisors.

[14] In the event that there were multiple principal advisors involved in the deal, the deal has been apportioned among them based on the available breakdown in Dealogic data and subsequently a single deal has been often apportioned to multiple cities based on the shares of the underlying advisors.

[15] As an example, in the United States cities are defined as Metropolitan Statistical Areas (MSAs). This means for example that Jersey City is allocated to the same MSA as New York City, called New York – Northern New Jersey – Long Island, NY-NJ-PA.

	ECM		DCM		Loans		M&As		Total	
Year	Count	Deal Value	Count	Deal Value	Count	Deal Value	Count	Deal Value	Count	Deal Value
2000	4,116	630,071	13,390	2,550,317	5,713	2,313,271	4,906	3,313,823	28,125	8,807,483
2001	3,223	457,084	21,824	3,682,998	4,999	1,844,900	4,266	1,864,220	34,312	7,849,203
2002	3,223	344,293	21,992	3,888,240	4,980	1,771,379	3,668	1,173,162	33,863	7,177,074
2003	4,181	450,165	27,020	4,815,882	5,417	1,924,579	3,909	1,093,035	40,527	8,283,661
2004	5,433	570,071	27,015	5,285,559	6,660	2,600,322	4,385	1,624,294	43,493	10,080,246
2005	5,401	601,839	23,934	6,001,798	8,551	3,420,141	4,751	2,100,713	42,637	12,124,492
2006	5,626	781,776	22,376	6,599,316	9,457	3,999,219	5,056	2,892,063	42,515	14,272,376
2007	6,555	944,112	22,259	6,286,468	9,488	4,891,570	5,908	3,784,708	44,210	15,906,857
2008	3,194	635,042	19,876	4,620,167	7,660	2,981,840	5,435	2,719,784	36,165	10,956,833
2009	5,169	907,923	21,085	6,179,951	5,913	1,856,838	4,074	1,879,200	36,241	10,823,913
2010	6,183	896,452	26,838	6,097,261	7,487	2,933,385	4,990	1,934,608	45,498	11,861,706
2011	5,292	630,766	24,560	5,771,269	9,001	4,066,547	4,828	2,270,209	43,681	12,738,791
2012	4,342	663,482	24,170	6,498,912	8,801	3,477,540	4,602	1,965,481	41,915	12,605,415
2013	5,053	834,400	20,818	6,073,543	9,541	4,352,529	4,289	2,059,760	39,701	13,320,232
2014	5,475	936,406	20,774	6,272,337	9,863	4,726,660	4,467	2,361,828	40,579	14,297,232
Total	72,466	10,283,882	337,931	80,624,018	113,531	47,160,722	69,534	33,036,890	593,462	171,105,513

Notes: ECM – Equity Capital Markets, DCM – Debt Capital Markets, Loans – Syndicated Loans, M&As – Mergers and Acquisitions. Count is the number of deals. Deal value is denominated in current USD million. Source: Authors' calculations based on Dealogic data.

As a measure of activity we use the gross fee revenue, which is additive across products, unlike deal values which are not directly comparable due to large variation of fee margins across products. Gross fee revenue shows how much firms based in a city actually earn from capital market transactions. Using operational headquarters at subsidiary level is vital, allowing us to escape the trap reproduced in existing research of allocating financial activity to the headquarters of the parent company.

As we study IFCs, we have focused on cross-border deals, defined as those in which a financial advisor works for a client of a different nationality than their own. Nationality of both the advisor's subsidiary and the client have been determined based on their operational headquarters.[16] The formula used to allocate fee revenue to cities takes into account the possiblity that multiple financial advisors could have been involved in a deal or that a deal could have been composed of multiple tranches with different set of advisors involved in each tranche[17]. Consequently, it was not necessary to mark each deal as a cross-border or domestic. Instead the fee earned by a articular advisor from each deal was marked as cross-border or domestic based on advisor's and client's nationalities of operations. Our dependent variable therefore measures the aggregate gross fees that the financial advisors in each financial centre earned from their involvement in cross-border deals in a given year. In order to adjust this figure for inflation, we have used a GDP deflator derived from Oxford Economics – Global Cities database, thus normalizing all of the aggregate gross fees to 2012 USD.

B. *A new ranking of international financial centres*

Table 3 shows the top 25 international financial centres for the 2000 – 2014 period by gross fees earned from cross-border transactions. Figure 1 illustrates the temporal dynamics of gross fees in London, New York, and Tokyo (Panel A) and leading centres of Asia-Pacific ex-Japan (Panel B), respectively. The figures clearly reflect the impact of the dot.com bust in 2001, investment banking boom of 2004-2007, and the subsequent crisis and recovery.

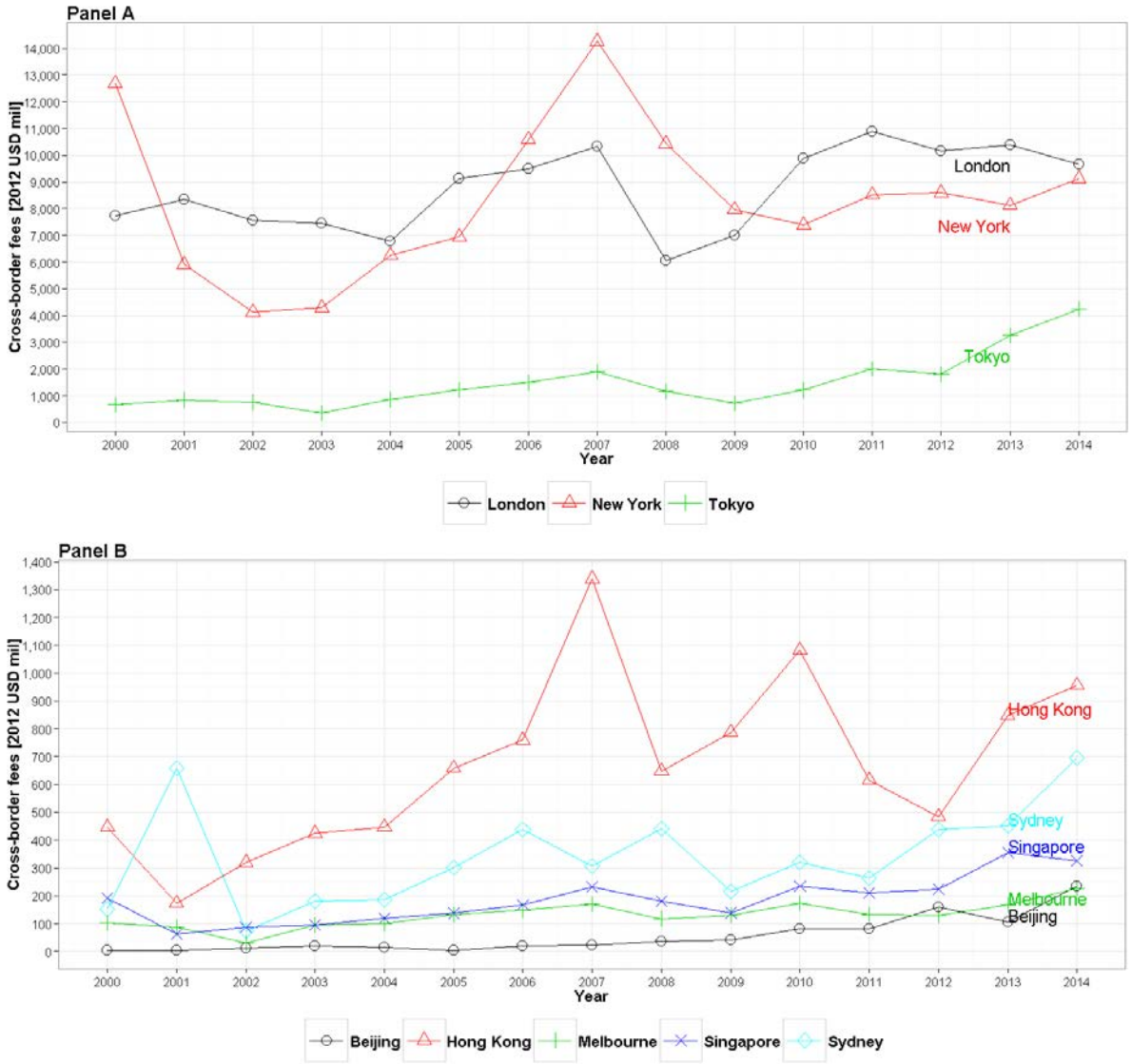
[16] As an example, if Goldman Sachs Australia Pty. Ltd, a Melbourne based subsidiary of Goldman Sachs, underwrote an IPO of a company with operational headquarters in Australia, this is considered a domestic deal. On the contrary, if the leading Australian mining company BHP Billiton embarked on acquiring a stake in Glencore Xtrata, a Switzerland based mining mining giant and has used the services of Goldman Sachs International Ltd, a London based subsidiary of Goldman Sachs, this is categorized as a cross-border deal.

[17] Deals composed of multiple tranches were split up to individual tranches and these were then allocated to advisors involved in each tranche either based on available allocations disclosed in the deal records or on equally allocated basis if the allocation was not disclosed.

TABLE 3–TOP 25 IFCS BY CROSS-BORDER FEES TOTALLED OVER THE PERIOD 2000-14

	City	Country	Cross-border fees [2012 USD mil]
1	London	United Kingdom	130,943
2	New York	United States	125,242
3	Zurich	Switzerland	100,430
4	Frankfurt	Germany	53,277
5	Paris	France	40,482
6	Toronto	Canada	32,967
7	Tokyo	Japan	22,522
8	Amsterdam	Netherlands	17,948
9	Hong Kong	China	9,996
10	Sydney	Australia	5,126
11	Stockholm	Sweden	4,437
12	Milan	Italy	3,017
13	Brussels	Belgium	2,905
14	Singapore	Singapore	2,758
15	Munich	Germany	2,513
16	Melbourne	Australia	1,937
17	Charlotte	United States	1,928
18	Düsseldorf	Germany	1,665
19	Copenhagen	Denmark	1,480
20	San Francisco	United States	1,432
21	Chicago	United States	1,043
22	Montréal	Canada	955
23	Vienna	Austria	916
24	Los Angeles	United States	885
25	Beijing	China	835

Notes: Cross-border fees [2012 USD mil] column represents an inflation adjusted sum of fees earned by financial advisors with operational headquarters in the given city from cross-border deals during the 2000 – 2014 time period.Source: Authors' calculations based on Dealogic data.



Notes: The horizontal axis measures the time [years] and the vertical axis measures cross-border fees [2012 USD mil]. Panel A shows the temporal dynamics of cross-border fees for London, New York and Tokyo over the 2000 – 2014 time period. Panel B presents data for Beijing, Hong Kong, Singapore, Sydney and Melbourne. Source: Authors' calculations based on Dealogic data.

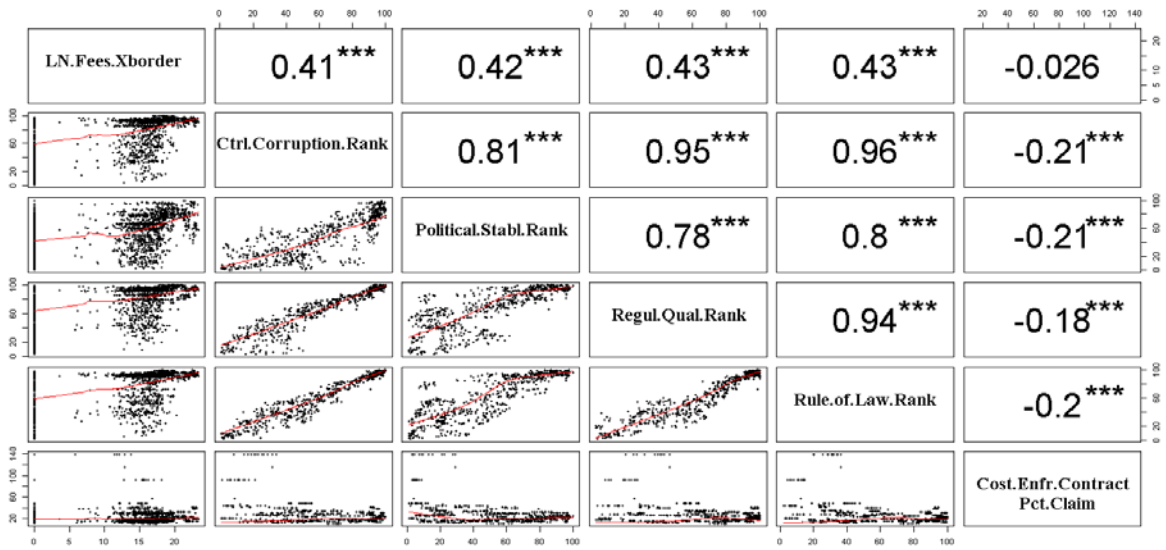
FIGURE 1. CROSS-BORDER FEES IN SELECTED IFCS BY YEAR

C. *Explanatory variables*

To test the factors of IFC development summarised in table 1, we represent them with over forty variables. Definitions and sources are presented in appendix I, descriptive statistics in table 4. Here we briefly discuss key choices involved in translating factors into specific variables, and their impact on econometric modelling.

Political and legal institutions.– As figure 2 shows, rule of law, control of corruption, regulatory quality and political stability are all correlated with natural logarithm of cross-border fees and highly correlated with each other. In contrast, the cost of contract enforcement is negatively correlated with institutional variables, which suggests that it should be included along with exactly one other institutional variable at a time in each model in order to avoid both multicollinearity and omitted variables bias. Legal origin has been controlled for by two binary variables – English.Common.Law and French.Civil.Law. La Porta et al. (1997, 1998) have shown English law to have the most positive

and French law most negative impact on financial development. No prior research, however, has examined their impact on the development of IFCs.



Notes: Figure 2 presents scatterplots and correlation coefficients among cross-border fees (LN.Fees.Xborder), control of corruption (Ctrl.Corruption.Rank), political stability (Political.Stabl.Rank), regulatory quality (Regul.Qual.Rank), rule of law (Rule.of.Law.Rank) and cost of enforcement of contracts (Cost.Enfr.Contract.Pct.Claim). The panel to the left of the diagonal shows scatterplots with the Loess curve (red) plotted and the the panel to the right of the diagonal shows estimated correlation coefficients and their respective levels of signficance (*** stands for statistical significance at 1% level). The horizontal axis of each scatterplot is in the units of the variable named above the respective scatterplot and the vertical axis is in the units of a variable named to the right of the respective scatterplot. Source: Authors' calculations based on Dealogic data.

FIGURE 2. RELATIONSHIPS AMONG INSTITUTIONAL VARIABLES

Labour market.– To capture size and depth of the labour market we have used total population of a city as proxy for the available labour pool. While we have data on employment in financial and business services of each city, using it would lead to endogeneity problems. For quality of education, we have constructed count variables for top 100 and top 500 universities worldwide at both city and country level. To represent labour market flexibility, we have used the number of weeks of statutory redundancy pay. Given the freedom of movement within the EU, we have included EU membership as a proxy for labour market openness.

Infrastructure.–To proxy for infrastructure we have used the number of secure interet servers per million people (Secure.Net.Servers) for information, and the number of metro stations (Metro.Stations) for transport.

Non-financial sector development.–To capture the presence of large non-financial firms at both country and city level we have focused on all firms firms with assets over $10bn. Internationaliztion of domestic companies has been measured by calculating the average % of foreign sales to total sales of domestic non-financial publicly listed companies (Foreign.Sales.Pct)[18]. Exports and imports as a percentage of GDP (Exp.Imp.Pct.GDP) has been used to proxy for the openess of national economy in general terms. As a city specific measure, the size of the local seaport (Seaport.TEU) has been used to capture maritime trade connectedness.

Financial sector development.–To test the proposition that the leading financial centre in the domestic transactions (Top.Dom.Fin.Centre) has a poll position in the cross-border market and enjoys particular benefits from any reforms implemented at the national level, a binary dummy variable has been

[18] Given that the data on foreign sales was not available for all companies, this indicator is reliable only at country rather than city level.

included to identify the city in each country with the highest level of domestic fees in the given year. The total stock market capitalisation as a percentage of GDP (Stock.Tot.Val.Pct.GDP) has been used as proxy for stock market development. Percentage annual return on a national/regional/global[19] leading stock market index has been used as a proxy for stock market valuations (Stock.Market.Return). We have used data on top 500 asset managers to control for the presence of institutional investors (Assets.U.Mng.City, Assets.U.Mng.Country). Herfindahl index (Advisor.HF.City) based on the market shares of financial advisors in terms of gross fees earned at city level has been used to account for the effects associated with the level of concentration and consequently competition in the financial advisory market. The usual definition of Herfindahl index – the sum of squared market shares has been applied. Level of gross government debt as a percentage of GDP has been used to control for government debt burden (Gov.Gross.Debt.Pct.GDP).

Taxation.–Personal taxation is measured with the sum of the top rate of personal income tax and national insurance contributions (Pers.Inc.Tax.Soc.Sec). For taxes specific to financial transactions, we used interest income tax (Interest.Tax) and dividends tax (Dividends.Tax).

Macroeconomic considtions.–We have used inflation rate (Inflation.Avg.Prices) and the real interest rate (Real.Int.Rate) in each country.

Other conditions.–We have used a binary variable, with 1 for cities located within 1 hour (+/-) from the Greenwich Mean Time (GMT), and 0 for the rest of the world. Quality of life has been controlled for using the spatially adjusted liveability index (Spat.Adj.Live.Top.25).

[19] If available, preference has been always given to broad national index (e.g. S&P500 in the United States), however if a country did not have its own stock market index available for the entire sample period, then a regional or global (as last resort) stock market index has been used.

TABLE 4–DESCRIPTIVE STATISTICS

	N	x = 0	Missing	Min	Median	Mean	Max	Sum	SD
Cross-border fees and employment									
Xborder.Fees	2250	1125	0	0.00	18.55	257,248,350.85	14,264,224,848.10	578,808,789,405.45	1,231,803,452.43
Employ.FABS.City.Mean	2250	0	0	149.53	278.35	422.98	3,190.73	951,698.47	437.50
Political and legal institutions									
Political.Stabl.Rank	2250	0	0	0.94	55.29	51.53	100.00	115,946.38	24.02
Ctrl.Corruption.Rank	2250	0	0	0.96	85.02	69.29	100.00	155,905.93	25.81
Property.Rights	2220	0	30	2.50	5.30	4.88	6.20	10,825.50	0.83
Rule.of.Law.Rank	2250	0	0	1.91	86.06	69.70	100.00	156,831.91	26.08
Regul.Qual.Rank	2250	0	0	2.87	83.25	72.34	100.00	162,769.21	24.29
Cost.Enfr.Contract.Pct.Claim	2250	0	0	10.30	18.40	22.50	139.40	50,631.30	14.43
Creditor.Rights.Djankov2007	2220	150	30	0.00	2.00	1.75	4.00	3,885.00	0.99
Investor.Prot.Index.DB	2250	0	0	1.70	6.00	6.33	9.30	14,241.60	1.68
English.Common.Law	2250	1230	0	0.00	0.00	0.45	1.00	1,020.00	0.50
French.Civil.Law	2250	1695	0	0.00	0.00	0.25	1.00	555.00	0.43
Political.Capital	2250	1620	0	0.00	0.00	0.28	1.00	630.00	0.45
Labour market									
Total.Population.City	2193	0	57	1,254.13	4,228.11	6,290.53	37,027.83	13,795,121.69	5,734.53
Top.100.Uni.City	2250	1620	0	0.00	0.00	0.70	6.00	1,575.00	1.22
Top.100.Uni.Country	2250	1200	0	0.00	0.00	14.23	53.00	32,010.00	22.31
Top.500.Uni.City	2250	630	0	0.00	2.00	2.37	11.00	5,340.00	2.22
Top.500.Uni.Country	2250	780	0	0.00	5.00	12.11	40.00	27,255.00	14.26
Redundancy.Costs.Weeks	2220	570	30	0.00	12.00	13.44	57.80	29,829.00	11.11
EU.Member	2250	1753	0	0.00	0.00	0.22	1.00	497.00	0.41
English.Language	2250	1275	0	0.00	0.00	0.43	1.00	975.00	0.50
Infrastructure									
Secure.Net.Servers	1922	0	328	0.01	162.48	478.84	2,820.43	920,331.07	588.53
Metro.Stations	2250	947	0	0.00	19.00	49.71	472.00	111,838.00	81.27
Non-financial sector development									
HQ.10bn.Count.City	2250	420	0	0.00	5.00	13.35	246.00	30,045.00	28.05
HQ.10bn.Count.Country	2250	135	0	0.00	106.00	136.12	308.00	306,270.00	113.89
Foreign.Sales.Pct	2134	9	116	0.00	20.47	25.83	86.11	55,117.92	15.38
Exp.Imp.Pct.GDP	2182	0	68	20.26	48.83	57.38	455.28	125,213.68	49.36
Seaport.TEU	2250	1635	0	0.00	0.00	1,899.67	33,617.00	4,274,260.00	5,025.15
Financial sector development									
Top.Dom.Fin.Centre	2250	1681	0	0.00	0.00	0.25	1.00	569.00	0.43
Stock.Exchange	2250	1170	0	0.00	0.00	0.48	1.00	1,080.00	0.50
Stocks.Tot.Val.Pct.GDP	1907	0	343	0.04	73.68	110.38	741.59	210,487.74	103.55
Stock.Market.Return	2099	0	151	-1.60	0.08	0.03	0.99	62.60	0.31
Assets.U.Mng.City	900	444	1350	0.00	1.00	392,867.63	14,382,293.00	353,580,868.00	1,282,026.50
Assets.U.Mng.Country	900	168	1350	0.00	641,594.00	7,910,896.66	32,173,639.00	7,119,806,990.00	11,754,041.70
Advisor.HF.City	2250	1413	0	0.00	0.00	0.10	0.95	231.45	0.17
Gov.Gross.Debt.Pct.GDP	2206	0	44	3.22	62.07	63.17	246.42	139,354.78	34.96
Taxation									
Dividends.Tax	2190	375	60	0.00	15.75	16.98	35.00	37,182.00	11.01
Interest.Tax	2205	210	45	0.00	15.00	13.56	30.00	29,899.20	5.92
Corp.Tax.Rate	1933	0	317	10.00	33.00	32.25	40.69	62,330.02	6.97
Pers.Inc.Tax.Soc.Sec	1524	0	726	13.00	42.65	46.00	83.15	70,107.02	12.26
Macroeconomic conditions									
Real.Int.Rate	1953	0	297	-60.80	3.09	5.52	48.71	10,784.94	9.86
Inflation.Avg.Prices	2248	1	2	-3.72	2.74	3.99	325.03	8,967.36	9.27
Other conditions									
GMT	2250	1725	0	0.00	0.00	0.23	1.00	525.00	0.42
Spat.Adj.Live.Top.25	2250	1890	0	0.00	0.00	0.16	1.00	360.00	0.37

D. *Sample selection and modelling*

To investigate factors that turn cities into IFCs, we need a sample including cities that have no IFC activity. We have used a sample of 150 cities with the highest average employment in financial and business services (FABS) over the period 2000-14, according to Oxford Economics – Global Cities Database (see appendix VII). This allowed us to build a balanced panel dataset with 2,250 city/year observations[20], sufficiently large for the estimation methods employed in this study. Approximately 50% of the observations of our dependant variable equal 0, which represents a significant degree of censoring (figure 3). Given that our dependent variable is bound by a natural

[20] Naturally, depending on the functional form of the model estimated, the balanced structure of the panel dataset can be compromised due to missing observations, however the estimator(s) employed are fully compatible with unbalanced panel datasets due to innovative way to calculate correlated random effects (CRE) covariates proposed by Bache et al. (2013).

non-negativity condition, we are effectively facing a scenario similar to that of Tobin (1956). As we do not have any prior knowledge about the form of the distribution of residuals in our model and keeping in mind the reliance of maximum likelihood estimator (MLE) for Tobit models on the correct parametric specification of the error term distribution (Arabmazar and Schmidt, 1982), we have followed the avenue of semiparametric estimators for conditional quantiles in contrast to the more conventional conditional mean estimators.[21]

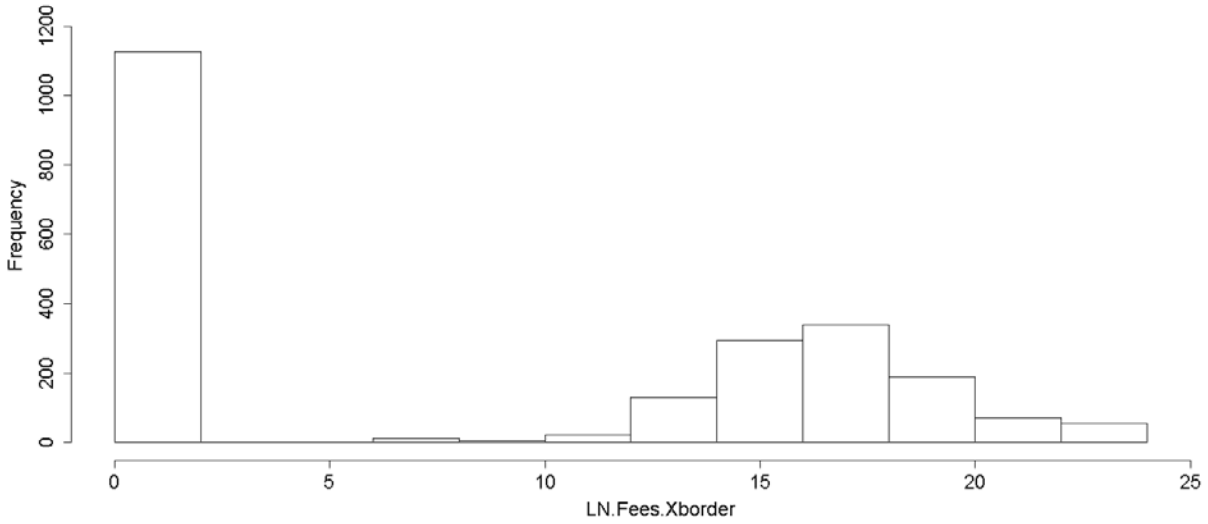


FIGURE 3. HISTOGRAM OF DEPENDENT VARIABLE – LN.FEES.XBORDER

Within the quantile regression (QR) framework we have used a specification of correlated-random-effects quantile regression (CREQR) estimator for panel data proposed by Bache et al. (2013), which extends a similar estimator proposed by Abrevaya and Dahl (2008) to unbalanced panels. This has allowed us to break the correlation between regressors and time constant unobserved heterogeneity by including correlated random effects (CRE) terms in the regression equation, thus correcting for the potential bias in our coefficient estimates. Given the presence of missing values in some of our explanatory variables, the method proposed by Bache et al. (2013) allows us to construct CRE terms even for an unbalanced panel dataset and thus is directly applicable simply by using averages of explanatory variables calculated for each city across the available time periods as covariates in the model along with the original variables[22]. This then gives the estimated coefficients on variables treated in this way a counterfactual interpretation, and they can be seen as causal effects rather than just partial correlations, as they would have been with the application of standard cross-sectional QR. This estimator is available as part of the rqpd package in R and uses generalised bootstrap standard errors proposed by Bose and Chatterjee (2003) with unit exponential weights,

[21] Quantile regression (QR) has been popularized by Koenker and Bassett (1978) upon introduction of the Least Absolute Deviations (LAD) estimator, which has been extended to cases of censored dependent variables by Powell (1984, 1986), who proposed a data trimming procedure, which limits the analysis to only those observations that are informative of the coefficients being estimated and trims away the rest of the data. The fraction of data being 'trimmed' away depends crucially on the level of censoring and the conditional quantile being estimated and it is often possible to avoid any loss of data by choosing a sufficiently high quantile, at which the regression function remains possitive for all of the observations in the dataset.

Thanks to recent contibutions by Koenker (2004), Abrevaya and Dahl (2008) and Bache et al. (2013) it is now possible to deal with time constant unobserved heterogeneity in the QR framework and thus address a potentially serious form of endogeneity originating from the correlation between the time constant unobserved heterogeneity and regressors. Koenker (2004) has proposed a shrinkage method for dealing with the incidental parameter problem in fixed effects QR models, however the proposed estimator restricts the fixed effects to a pure location shift of the distribution of the dependent variable and as pointed out by Bache et al. (2013), this can impede the performance of this estimator at conditional quantiles in the tails of the distribution.

[22] This approach is naturally only feasible for time varying variables and therefore only such variables can have CRE terms constructed for them in order to account for potential correlation between regressors and time constant unobserved heterogeneity. Time constant variables can still be included in the model, however without the respective CRE terms.

which recognize the panel structure of our dataset and are estimated based on random draws of cross-sections rather than individual observations, thus accounting for the dependece between individual observations for the same cross-section.

The lack of an integrated theory of IFC development implies model uncertainty, and thus we have subjected our coefficient estimates to Extreme Bounds Analysis (EBA) similar to that of Sala-i-Martin (1997) by estimating a series of models with varying sets of explanatory variables using the ExtremeBounds package in R developed by Hlavac (2014). An explanatory variable is deemed to be robustly related to the dependent variable, if sufficiently large[23] part the cumulative distribution function (CDF) of its coefficient estimates compiled from a large number of models with varying functional forms lies on the same side of zero.

III. Results and analysis

Table 5 presents our key findings from a parsimonious model, including only a subset of explanatory variables. Variables in this model were selected through EBA and reflect the need to deal with missing data, correlations among variables, and to keep the variance of our correlated-random-effects quantile regression estimator low, in order to uncover causal relationships. For the purpose of economic interpretation we will focus on quantifying the effects of explanatory variables at the 99.9th conditional percentile of the distribution of natural logarithm of the cross-border fees earned at a city level, however where appropriate we will also refer to the variation of this effect across conditional quantiles. We will discuss results, analyse and subject them to robustness tests in the order of factors introduced in table 1.

[23] We selected 90% of CDF as the cut off point for robustness tests of coefficient estimates and therefore if 90% or more of the CDF of coefficient estimates is on the correct side of zero, we treat such variable as being robustly related to the dependent variable provided that it is statistically significant at conventional levels.

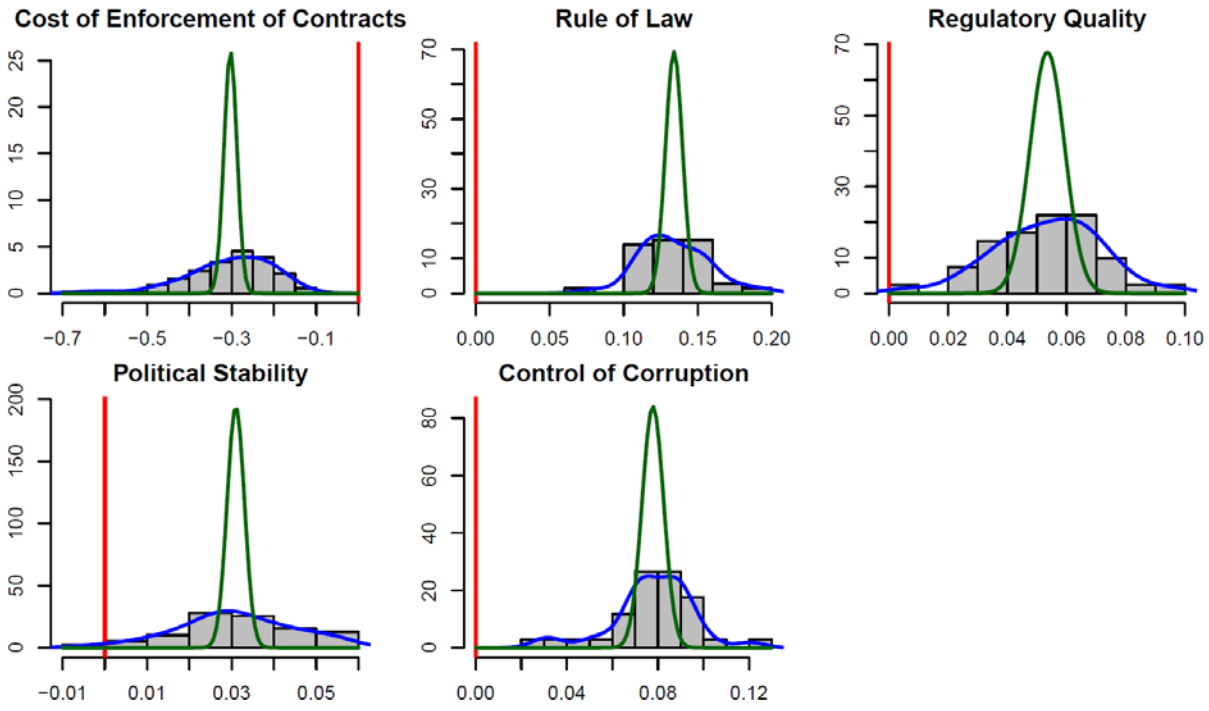
TABLE 5–RESULTS FROM CORRELATED-RANDOM-EFFECTS QUANTILE REGRESSION

	Dependent variable - LN.Xborder.Fees					
	τ = 0.999		τ = 0.99		τ = 0.95	
	Coeff. est.	t-stat	Coeff. est.	t-stat	Coeff. est.	t-stat
City level explanatory variables						
Advisor.HF.City	4.2536 ***	(2.6401)	3.8346 *	(1.9358)	5.8910 **	(2.5477)
Advisor.HF.City.SQ	-3.9621 ***	(-2.6219)	-3.8467	(-1.5457)	-8.0180 **	(-2.5252)
Stock.Exchange	1.7860 ***	(4.0938)	1.6523 **	(2.2131)	1.3453	(1.2018)
Top.Dom.Fin.Centre	1.2208 ***	(3.5661)	1.5557 **	(2.4788)	2.3431 ***	(2.6990)
LN.Population.City	5.6619 ***	(3.0612)	4.3514	(1.5873)	4.1708	(1.1756)
Country level explanatory variables						
Cost.Enfr.Contract.Pct.Claim.L1	-0.2647 ***	(-3.7642)	-0.2749 **	(-2.3856)	-0.1728	(-0.9286)
Rule.of.Law.L1	0.0882 ***	(6.2776)	0.0915 ***	(3.3722)	0.1289 **	(2.0732)
EU.Member	1.9272 **	(2.0719)	2.1416 *	(1.7977)	0.5297	(0.3548)
Foreign.Sales.Pct	0.0335 *	(1.7520)	0.0192	(0.8275)	0.0494 *	(1.7211)
Real.Int.Rate	-0.0942 ***	(-4.4065)	-0.1120 ***	(-3.8818)	-0.0842	(-1.5435)
Inflation.Avg.Prices	-0.0836 **	(-2.5277)	-0.0694	(-1.0776)	-0.0063	(-0.0591)
Redundancy.Costs.Weeks	-0.1355 ***	(-8.1939)	-0.1473 ***	(-6.4377)	-0.1708 ***	(-4.3420)
Top.500.Uni.Country	0.0402 ***	(2.7046)	0.0500 *	(1.9483)	0.0226	(0.5868)
Correlated random effects terms						
(M) Advisor.HF.City	4.9046 ***	(3.9130)	5.0579 ***	(3.1379)	8.1754 ***	(2.9502)
(M) LN.Population.City	-4.5646 **	(-2.5689)	-3.3165	(-1.2261)	-2.8929	(-0.8287)
(M) Cost.Enfr.Contract.Pct.Claim.L1	0.2642 ***	(3.7753)	0.2774 **	(2.3633)	0.1703	(0.9064)
(M) Rule.of.Law.L1	-0.0635 ***	(-3.3225)	-0.0709 **	(-2.3772)	-0.1139 **	(-2.0071)
(M) EU.Member	-1.7146	(-1.6078)	-2.1193	(-1.2864)	-0.2775	(-0.1326)
(M) Foreign.Sales.Pct	-0.0385	(-1.3639)	-0.0204	(-0.5906)	0.0010	(0.0222)
(M) Real.Int.Rate	0.0709 ***	(3.7238)	0.0856 ***	(2.9394)	0.0924	(1.0482)
Time period dummy variables	yes		yes		yes	
Cross-sections (time periods)	150	(15)	150	(15)	150	(15)

Notes: Table 5 presents the coefficient estimates and their t-statistics in parentheses obtained using a correlated-random-effects quantile regression (CREQR) estimator proposed by Bache et al. (2013) and available in the R package rqpd. These estimates were derived from a sample of the top 150 cities by average employment in financial and business services over the period 2000 - 2014 sampled from a set of 770 cities available in the Oxford Economics database. The dependent variable for all models presented here is LN.Fees.Xborder, which is a natural logarithm of gross fees from cross-border deals earned by financial advisors located in each city. Cross-border fees have been estimated using data from Dealogic ECM, DCM, Loans and M&As databases and are presented in more detail in the data section of this paper. Foreign.Sales.Pct is a percentage of foreign sales to total sales averaged across non-financial publicly listed companies in the given country. Real.Int.Rate is a real interest rate and has been sourced from World Development Indicators (WDI) database. Inflation.Avg.Prices is an inflation rate measured at country level and has been calculated based on average annual prices. It has been sourced from the International Monetary Fund (IMF). EU.Member is a binary indicator for whether given country is a member of the European Union or not. Top.Dom.Fin.Centre is a binary indicator, which = 1 if the given city was the leading financial centre in its country as measured by the gross fees earned from domestic deals and = 0 otherwise. Top.500.Uni.Country is a count variable measuring the number of universities in each country, which have ranked in the top 500 universities worldwide in the 2014 Times Higher Education guide. Redundancy.Costs.Weeks is the statutory number of weeks of salary that employers in the given country are required to pay out to an employee in the event of involuntary redundancy and has been sourced from the 2014-2015 World Economic Forum (WEF) Global Competitivness Report. Stock.Exchange is a binary indicator variable, which = 1 if the given city has a stock exchange and = 0 otherwise. Cost.Enfr.Contract.Pct.Claim.L1 is a lagged value (by 1 year) of the cost of enforcement of contracts as a percentage of claim variable and has been sourced from the Doing Business Database (World Bank). Rule.of.Law.L1 is a lagged value of country's percentile ranking in terms of rule of law and has been sourced from the World Development Indicators (WDI) database (World Bank). LN.Population.City is a natural logarithm of city's population and has been sourced from the Oxford Economics - Global Cities database. Advisor.HF.City is the herfindahl index calculated based on the market shares of financial advisors (in terms of gross underwriting revenue) at city level. For cities with fewer then 5 advisors the calculated value has been replaced by zero in order to avoid spuriously high concentration levels being calculated, when insufficient number of advisors has been allocated to the given city. Advisor.HF.City.SQ is a squared value of the previous variable and has been included to allow for a non-linear (quadratic) effect. Variables in the bottom section of the table starting with (M) represent the correlated random effects (CRE) terms, which have been constructed as the averages of the concerned variables for each cross-section following the methodology proposed by Bache et al. (2013). Tau (τ) at the top of each column represents the conditional quantile being estimated (e.g. 0.99 = 99th percentile). Standard errors of the coefficient estimates have been calculated using the generalized bootstap procedure of Bose and Chatterjee (2003) with unit exponential weights and repeated sampling of cross-sections (cities) rather than individual observations to account for the dependence between observations given by the longitudinal structure of this dataset. Statistical significance levels are displayed by stars as follows: *** (1% level), ** (5% level), *(10% level).

A. *Political and legal institutions*

Political and legal institutions are commonly thought of as preconditions for financial development, but their role in IFC development has never been tested. Which of the many institutional variables, if any, are significant? To address multicollinearity concerns for five of these variables (figure 2), we have conducted an EBA to compare their performance (figure 4; details in appendix II). The cost of contract enforcement was included in all models estimated and has been found to be robustly linked to cross-border fees, regardless of whether rule of law, regulatory quality, control of corruption or political stability are included or not. Histograms in figure 4 indicate that the estimates on all four of the proxies for institutional quality are overwhelmingly positive across the models, however more detailed results in appendix II indicate that only rule of law is consistently statistically significant in all of the models estimated and all of its coefficient estimates are positive as expected. Hence, rule of law is included in the parsimonious model alongside contract enforcement. We should stress however, that although the impact of political stability, control of corruption and regulatory quality are difficult to isolate, it does not mean they have no positive influence on IFC development.



Notes: The histograms displayed above represent the empirical distributions of coefficient estimates of cost of enforcement of contracts, rule of law, regulatory quality, political stability and control of corruption. The blue line represents kernel density curve and the green line represents a normal distribution with the same mean and variance as that of our coefficient estimates for comparison. Horizontal axis represents the values of coefficient estimates and the vertical axis represents the corresponding probability density. Comprehensive EBA report is available in appendix II.

FIGURE 4. EBA RESULTS FOR SELECTED INSTITUTIONAL VARIABLES

What is the economic significance of contract enforcement and rule of law? An estimated 30.3% increase in the 99.9th percentile of cross-border fees can be achieved by a mere 1% reduction in the cost of contract enforcement measured as a percentage of claim. As shown in figure 5 this effect is most pronounced in the right tail of the conditional distribution and lacks statistical significance at the lower conditional quantiles of cross-border fees. In contrast, rule of law remains positive and statistically significant across all of the conditional quantiles examined here (75th percentile – 99.9th percentile), with causal effect estimated at 9.22% increase in 99.9th conditional percentile of cross-

border fees for every percentile increase in ranking by rule of law[24] (table 5). The speed of adjustment in the case of both rule of law and cost of enforcement of contracts has been estimated as 1 year, given that contemporary terms become insignificant in the presence of lagged values[25]. In other words, institutional changes need to take root before they can attract international financial activity.

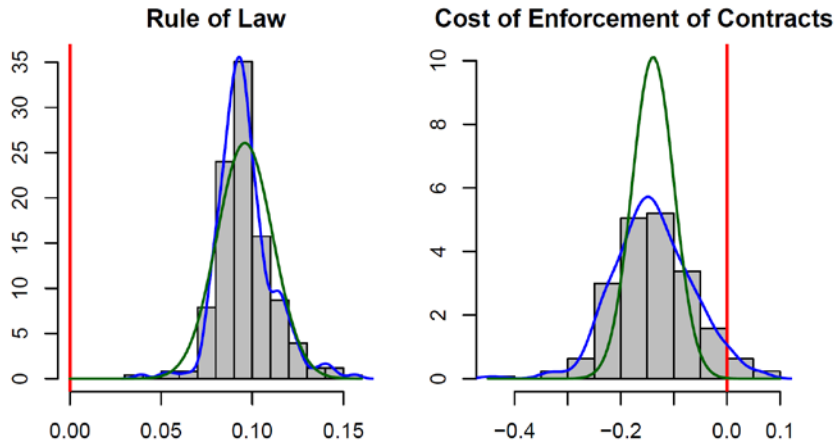
Notes: The horizontal axis represents conditional quantiles at which the coefficients were estimated. Vertical axis represents the magnitude of the coefficient estimates. The grey polygon with red borders. represents the 95 per cent confidence interval for the coefficient estimates. The black horizontal line represents zero and can be used to construct tests of statistical significance by examining whether the 95% confidence interval of coefficient estimates crosses this line. If the confidence interval crosses the black horizontal line going through zero, the given coefficint estimate is not statistically singnificantly different from zero at 5% level. Both plots are based on the model detailed in table 5.

FIGURE 2. EFFECTS OF LEGAL VARIABLES ACROSS CONDITIONAL QUANTILES

Figure 6 and appendix III present evidence from an EBA testing the sensitivity of coefficient estimates on the rule of law and the cost of contract enforcement to the inclusion of additional variables on top of those included in the parsimonious model presented in table 5. Both of them are robustly related to cross-border fees and the kernel density of the coefficient estimates suggests that these coefficient estimates may not be necessarily distributed normally across the 254 models estimated. Without making any assumptions about the distribution of the coefficient estimates across the estimated models, we can observe that the majority of the cumulative density function (CDF) of coefficient estimates on cost of enforcement of contracts (94.54% of CDF) and rule of law rank (99.98% of CDF) is on the expected side of the zero, implying that these estimated effects are robust to a wide range of specifications of the functional form of our model, assuming that the key control variables are included.

[24] As a methodological note, in order to derive unbiased estimates of causal effects of rule of law and the cost of contract enforcement, it has been necessary to break the link between these regressors and the time constant unobserved heterogeneity, which in this case would have biased both coefficient estimates in the opposite direction to their causal effects and subsequently would have led to a substantial understatement of their economic significance.

[25] Higher order lagged values were considered, but a first lag has been found to be sufficient to capture the dynamics of both variables.



Notes: The histograms displayed above represent the empirical distributions of coefficient estimates on cost of enforcement of contracts and rule of law, which were obtained from and extreme bounds analysis implemented in R package ExtremeBounds. The blue line represents the kernel density curve and the green line represents a normal distribution with the same mean and variance as that of our coefficient estimates for comparison. Horizontal axis represents the values of coefficient estimates and the vertical axis represents the corresponding probability density. The full report of EBA is available in appendix III.

FIGURE 6 – RULE OF LAW AND COST OF ENFORCEMENT EBA

Contrary to expectations, we have not found any statistically significant impact of the protection of property, creditor or shareholder rights on cross-border fees. As was the case with political stability, control of corruption and quality of regulation, this does not necessarily imply they are entirely irrelevant to IFC development. Rather, they lose in the contest for significance with other institutional variables. Results presented in appendix III demonstrate that when we control for rule of law in every model that has been estimated as part of the EBA routine, the link between English.Common.Law and cross-border fees observed in appendix II, where rule of law was controlled for only in one quarter of the estimated models, breaks down. In other words, the variation in cross-border fees among countries of different legal traditions can been explained by the current state of rule of law in these countries. The legal tradition on its own does not seem to matter to IFC development. Finally, the results indicate that the status of the political capital of a country provides no significant advantage to IFCs.

B. *Labour market*

The association of IFCs with political capitals may result from the fact that most political capitals are also the largest cities of their countries, with largest markets, and it is the latter rather than political capital institutions themselves that facilitate IFC activity. If true, this could help explain why we find no significance for the political capital status. Results seem to support this proposition. The size of a city's population has proven to be an important determinant of IFC activity, with an estimated 5.80% increase in the 99.9^{th} conditional percentile of cross-border fees for every 1% increase in the population of a city. This effect is obviously conditional on other regressors, and so only large cities in countries with the right conditions, including low cost of contract enforcement and strong rule of law, are likely to benefit from population size.

While population may be used as a proxy for the size of the labour market, the presence of top universities may indicate the quality of labour supply available to financial firms. We have found that countries with a larger base of highly ranked universities host larger IFCs. There is an estimated 4.10% increase in the 99.9^{th} percentile of cross-border fees earned for every university ranked in the top 500 worldwide. In contrast, we found no evidence that the presence of top universities matters at the city level, which seems consistent with the observation that IFCs draw graduates from top universities across countries. It is difficult to speak of the causal impact of top universities, however, as this

estimate is based on cross-sectional rather than temporal variation in the size of the top university base across countries.

With respect to labour market flexibility, we have estimated a significant reduction of -12.68% at 99.9th conditional percentile of cross-border fees for every additional week of statutory redundancy pay. EU membership has an estimated effect of 587% on cross-border fees, indicating very large gains for IFCs operating within an integrated market for labour and financial services.

Given the large overlap between the incidence of the English language and the English common law, these variables had to be treated separately as presented in appendix III. Results show that English as the official language in a country does not relate significantly to cross-border fees when we control for rule of law, but does when we do not control for it in the majority of estimated models as shown in appendix II. The use of English in international finance is a fact, and so it appears that location in a country without English as the official language does not really constrain the supply of English speakers to IFCs.[26]

C. *Infrastructure and non-financial sector development*

Infrastructure measured with LN.Secure.Net.Servers and LN.Metro.Stations are not robustly related to cross-border fees and do not offer any additional explanatory power when added to the parsimonious model. Either our variables do not adequately capture the quality of infrastructure or it is indeed largely irrelevant. Of course, it must matter for IFC development that Singapore has a better infrastructure than Jakarta. However, once we control for political and legal institutions, which conspire against Jakarta, the significance of infrastructure may fade away.

Presence of large non-financial companies (HQ.10bn.Count.City), both public and private, has yielded an overwhelmingly positive coefficient estimate, implying 0.8% increase in cross-border fees for every large non-financial company located in the given city, and with 87.5% of statistically significant coefficient estimates at conventional levels (appendix II). At the same time, presence of large non-financial companies at national level (HQ.10bn.Count.Country) has yielded a negative mean coefficient (appendix II). While the result at city-level is consistent with our hypothesis, that at country scale contradicts it. After all a large pool of domestic companies should increase the likelihood that foreign companies will hire advisors in that country to advise on M&As. Perhaps one can interpret this result as a sign that a large domestic customer base may focus advisers on domestic at the expense of cross-border business.

Internationalization of companies from a given country (Foreign.Sales.Pct) has been estimated to increase the conditional 99.9th percentile of cross-border fees by 3.41% for every percentage point increase. Once we control for this impact, economic openness (Exp.Imp.Pct.GDP) does not offer any additional value (appendix II).

Average coefficient estimate of -0.0960, implying -0.91% reduction in cross-border fees for 10% increase in seaport traffic, suggests that the link between world maritime transport and international finance is indeed a matter of history of little relevance in the 21st century.

D. *Financial sector development*

The hypothesis that IFCs develop in cities that lead the domestic financial sector in their countries finds strong support. The top domestic financial centres[27] have 496% higher level of gross fees at the 99.9th conditional percentile than other cities. It also implies that the leading financial

[26] In hundreds of interviews, we have never seen a financial executive mention the difficulty of finding English speakers.
[27] The leading domestic financial centre is identified simply as the city with the highest level of gross fees earned from domestic deals (deals for which the nationality of operations of the financial advisor and the client is the same).

centre will also benefit proportionately more from improvements in other determinants of cross-border fees such as rule of law contract enforcement than other cities in the same country.

In contrast to our prediction that the association between IFCs and stock exchanges may little more than a historical artefact, the co-location stock exchanges and IFCs holds very well. There is a 496% difference in the 99.9^{th} conditional percentile of cross-border fees between cities that have a stock exchange and those that do not. Causality cannot be established here, since our stock exchaneg variable is time-constant, but it cannot be ruled out either. It is possible that stock exchanges still serve as 'showrooms' and symbols of their financial centres, enhancing their reputation and attracting international financial advisors.

Stock market development, measured by total value of publicly listed companies as a percentage of GDP (Stocks.Tot.Val.Pct.GDP) has not been found to provide any explanatory power in (appendix IV). The same applies to stock market returns. It is possible that the potentially positive impact of high valuations attracting equity offerings, and the negative impact if high valuations deterring foreign corporate acquirers, may cancel each other out.

Does the presence of large domestic or local asset managers stimulate the IFC activity? Given that the data available only includes a part of the time period considered in this study[28], we have estimated a separate set of models for these variables. We find evidence of co-location of asset managers and financial advisors at city level (appendix V), however, the link between time-constant unobserved heterogeneity at city level and assets under management is not controlled for, and thus the significant partial correlation does not necessarily represent a causal relationship. Once the CRE term for assets under management at city level has been included in the equation to control for this potential source of endogeneity, the relationship breaks down as indicated in appendix VI. This implies that although financial advisors and asset managers co-locate in the same cities, increasing the amount of assets managed in a particular city would not cause an increase in the cross-border fees earned by financial advisors. Instead it seems that asset managers are drawn to the same characteristics that make cities attractive to financial advisors.

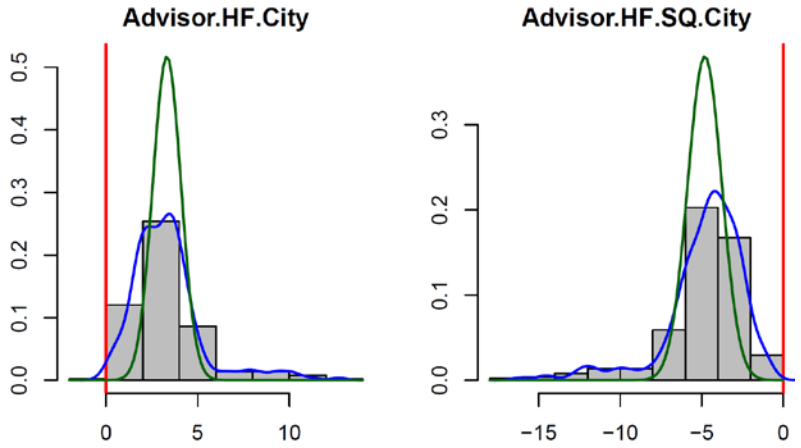
Concentration in the financial advisory market at city level measured by Herfindahl index based on market shares of financial advisors in the city, has been found to have an effect that varies across the distribution of the variable and approximates an inverse U shape (figure 7). Cross-border fees tend to grow with increasing concentration of advisors up to their peak at the level of Herfindahl index of 0.54 (representing a duopolistic market structure), but fall when concentration grows beyond this point. More specifically, increase in the Herfindahl index from 0.1 to 0.54 is associated with a 112.95% increase in cross-border fees, while increase from 0.54 to 0.8 (a nearly monopolistic market structure) would lead to an estimated fall of cross-border fees by 24.00%. Thus, instead of seeing straightforward benefits from competition, we see the tradeoff between economies of scale realized from higher levels of concetration and the damage to the competitive environment caused by a local monopoly or near-monopoly. Increasing returns to scale are strong in producer services (Jones and Kierzkowski, 2005), particularly in investment banking, and their wholesale business (Morrison and Wilhelm, 2008).

[28] TW data on top 500 asset managers is limited to 2006, 2007, 2009, 2010, 2011 and 2012 time periods.

Notes: The horizontal axis represents the full range of possible values of advisor Herfindahl index at a city level. The vertical axis represents the effect of concentration in the financial advisory cross-border market (at city level) on the natural logarithm of cross-border fees. The maximum of this quadratic function is at Herfindahl index of 0.5368. Coefficient estimates used for plotting this quadratic function were drawn from table 5.

FIGURE 7 – RELATIONSHIP BETWEEN MARKET CONCENTRATION AND CROSS-BORDER FEES

Figure 8 below shows histograms from an EBA summarizing the coefficient estimates from 254 CREQR models on Advisor Herfindahl index and its squared value. This confirms the qualitative result inferred from table 5 and emphasizes the robustness of the link between concentration in the financial advisory market and cross-border fees.



Notes: The histograms displayed above represent the empirical distributions of coefficient estimates on cost of enforcement of contracts and rule of law, which were obtained from and extreme bounds analysis implemented in R package ExtremeBounds. The blue line represents the kernel density curve and the green line represents a normal distribution with the same mean and variance as that of our coefficient estimates. Horizontal axis represents the values of coefficient estimates and the vertical axis represents the corresponding probability density. The full report of EBA is available in appendix III.

FIGURE 8 – EBA FOR ADVISORS' HERFINDAHL INDEX

Level of government debt as a percentage of GDP has not displayed a statistically significant relationship with cross-border fees (appendix III). Thus, it cannot be considered a significant deterrent to IFC activity.

E. *Taxation, macroeconomic and other factors*

Taxes have been hotly debated in the wake of the crisis, with large international banks often threatening that they will leave a financial centre should the taxes burden rise. The evidence is mixed. The top margin of personal income tax and social security contributions (Pers.Inc.Tax.Soc.Sec) has been found to be negatively related to cross-border fees with an estimated reduction of -4.11% in cross-border fees for every percentage point increase (see appendix III for details). On the other hand, low corporate profit tax (Corp.Tax), interest tax (Interest.Tax) or dividends tax (Dividends.Tax) seem to provide no competitive advantage to IFCs. This supports our observation that corporate and financial transaction taxes may be more readily avoidable through the use of offshore jurisdictions that personal taxes or social security contributions.

Real interest rates and inflation appear to harm IFCs, as expected, specifically by reducing cross-border fees by -8.99% and -8.02% per one percentage point rate increase respectively. Contrary to much literature, proximity to the GMT time zone does not appear to provide any systematic advantage once all other factors are controlled for.

Quality of life in a city measured by the Spatially Adjusted Liveability Index (Spat.Adj.Live.Top.25) has been identified as a factor with substantial economic significance, given its mean coefficient estimate of 1.294 (appendix III), implying that cities that ranked in the top 25 worldwide have an estimated 265% higher cross-border fees that those lower down the list. We are not able to establish the direction of causality between quality of life and IFC development because Spat.Adj.Live.Top.25 is a time-constant variable.

IV. Conclusions

This study examines the determinants of IFC development. Our unique dataset on fees from capital market transactions is the first we are aware of to measure the actual revenues earned by IFCs, uncovering a whole new map of international finance. Based on literature on financial development, financial history, economic geography, case studies, and interviews, we create a new classification of key factors that can be expected to affect IFC development at city or country level. Next, we apply a method of correlated-random-effects quantile regression combined with extreme bounds analysis to find out which of these factors are statistically and economically significant.

Political and legal institutions, with enforcement of contracts and rule of law in the lead, are crucial for IFCs. Once these are in place, it seems not to matter which legal family of origin they belong to. Whether an IFC is the political capital of the country does not seem to matter either. IFCs need highly-skilled employees from a large, flexible, and open labour market, but whether English is their official language appears of no consequence to the supply of labour. IFCs tend to develop in leading domestic financial centres that are not dominated by a single large bank. Large fragmentation of the market for investment banking services, however, is a feature of cities less successful as IFCs, which may reflect strong economies of scale in investment banking as the realm of large international firms. The presence of large internationally active non-financial firms also helps IFCs. On the other hand, the relative size of the stock market, the level of stock market prices, and corporate and finance-specific taxation (in contrast to personal income taxes) seem unimportant. Finally, while real interest rates and inflation tend to harm IFC prospects, quality of life in a city enhances them.

Considering the insignificance of stock market size, valuation and finance-specific taxation in relation to the saliance of city size, non-financial sector development, and political and legal institutions, our findings paint the picture of IFC development rooted more in the non-financial economy than often assumed. This implies no support for the fears that tax changes may be decisive for competition among IFCs where transactions are conducted rather than just booked. The results also indicate that factors important for the emergence of IFCs in the past, may have lost power over time. For example, it does not appear to matter any more to London’s advantage that it is the capital of an English

speaking country, with English common law and a seaport in the GMT zone. In addition, our analysis highlights the significance of scale. The same factor may have a different effect on IFC development depending on whether it is measured at the level of cities or countries. For example, presence of highly-ranked universities is important at the country but not necessairly city level. In contrast, presence of large non-financial firms is positive at city, but may be negative at country level. Further analysis is needed to introduce more time-varying variables and improve inferences on causality. Nevertheless we hope that this paper brings us closer to understanding IFC development and competition, as an important phenomenon in the world economy.

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Appendix I

Variable definitions and data sources

	Definition	Source
Fees and employment		
LN.Fees.Xborder	Natural logarithm of the sum of cross-border fees earned by financial advisors across ECM, DCM, syndicated loans and M&A services in the given metropolitan statistical area (MSA) / year.	Author's calculations based on Dealogic ECM, DCM, Loans and M&As databases
Employ.FABS.City.Mean	Average employment for 2000 – 2014 in the financial and business services sector (as defined by Oxford Economics – Global Cities) at city level.	Oxford Economics – Global Cities (OE Glob. Cities)
Political and legal institutions		
Political.Stabl.Rank	Percentile ranking index based on political stability, absence of violence and terrorism of countries.	World Development Indicators (WDI) database – World Bank
Ctrl.Corruption.Rank	Percentile ranking index based on control of corruption of countries.	WDI database
Property.Rights	Survey based measure; Q: In your country, how strong is the protection of property rights, including financial assets? [1 = extremely weak; 7 = extremely strong] | 2013–14 weighted average	World Economic Forum – Global Competitiveness Report 2014 – 2015 (WEF)
Rule.of.Law	Percentile ranking index of countries by rule of law	WDI database
Regul.Qual.Rank	Percentile ranking index based on regulatory quality of countries.	WDI database
Cost.Enfr.Contract.Pct.Claim	Cost of enforcement of contracts measured as a percentage of claim.	Doing Business (DB) database – World Bank
Creditor.Rights.Djankov2007	Creditor rights index	Djankov et al. (2007)
Investor.Prot.Index	Investor Protection Index	DB database
English.Common.Law	Binary indicator variable; = 1 if the legal system of the given country is of English Common Law origin and = 0 otherwise.	The World Factbook (CIA)
French.Civil.Law	Binary indicator variable; = 1 if the legal system of the given country is of French Civil Law origin and = 0 otherwise.	CIA
Political.Capital	Binary indicator variable; = 1 if the given MSA includes the political capital of the given country and = 0 otherwise.	CIA
Labour market characteristics		
LN.Population.City	Natural logarithm of population of MSA in the given year	OE Glob. Cities
Top.100.Uni.City	Count variable; Number of top 100 universities based on the Times Higher Education Guide 2014 located in the given city.	Times Higher Education Guide 2014 (THEG 2014)
Top.100.Uni.Country	Count variable; Number of top 100 universities based on the Times Higher Education Guide 2014 located in the given country.	THEG 2014
Top.500.Uni.City	Count variable; Number of top 500 universities based on the Times Higher Education Guide 2014 located in the given city.	THEG 2014
Top.500.Uni.Country	Count variable; Number of top 500 universities based on the Times Higher Education Guide 2014 located in the given country.	THEG 2014
Redundancy.Costs.Weeks	Number of weeks of salary required by companies to pay out to their employees as a statutory redundancy payment.	WEF
English.Language	Binary indicator variable; = 1 if the official language of a country is the English language and = 0 otherwise	CIA
EU.Member	Binary indicator variable; = 1 if the given country was a member of the European Union in the given year and = 0 otherwise.	http://europa.eu/about-eu/countries/index_en.htm

	Definition	Source
Infrastructure		
LN.Secure.Net.Servers	Natural logarithm of the number of secure internet servers per 1 million people	WDI database
LN.Metro.Stations	Natural logarithm of the number of metro stations in the given MSA.	Metro Bits website – http://mic-ro.com/metro/table.html?feat=CICOOPLGSTLSDP&orderby=CI&sort=ASC&unit=&status=
Non-financial sector development		
HQ.10bn.Count.City	Number of companies (both privately or publicly held) with assets of USD 10 billion with operational headquarters in the given MSA.	Authors' calculations based on Orbis data
HQ.10bn.Count.Country	Number of companies (both privately or publicly held) with assets of USD 10 billion with operational headquarters in the given country.	Authors' calculations based on Orbis data
Foreign.Sales.Pct	(%) foreign sales to total sales of publicly listed companies in the given country / year	Author's calculations based on data Worldscope data
Exp.Imp.Pct.GDP	Exports + Imports as a percentage of GDP	WDI database
LN.Seaport.TEU	Natural logarithm of thousands of twenty-foot equivalent units (TEU) transported through the seaport location in the given MSA. If there is no seaport in the given MSA, then = 0.	The Lloyd's List of the World's Busiest Container Ports 2013
Financial sector development		
Top.Dom.Fin.Centre	Binary indicator; = 1 if the given MSA was the leading financial centre in the given country by gross fees from domestic deals and = 0 otherwise.	Author's calculations based on Dealogic data
Stock.Exchange	Binary indicator; = 1 if the given MSA had at least one stock exchange and = 0 otherwise	World Federation of Exchanges website and websites of individual stock exchanges
Stocks.Tot.Val.Pct.GDP	Market capitalisation of listed companies in the given country's stock market as a percentage of GDP	WDI database
Stock.Market.Return	% annual return of the leading national stock market index	Author's calculations based on Datastream data.
LN.Assets.U.Mng.City	Natural logarithm of assets under management held by asset managers in the given city / year. Inflation adjusted to 2012 USD.	Author's calculations based on Towers Watson (TW) data.
LN.Assets.U.Mng.Country	Natural logarithm of assets under management held by asset managers in the given country / year. Inflation adjusted to 2012 US dollars.	Author's calculations based on TW data.
Advisor.HF.City	Herfindahl index constructed based on market shares in terms of gross fees of financial advisors at a city / year level. It equals the sum of squared market shares of financial advisors and has been calculated for every city / year combination.	Author's calculations based of Dealogic data.
Gov.Gross.Debt.Pct.GDP	Government gross debt as a percentage of GDP	International Monetary Fund (IMF)
Taxation		
Dividends.Tax	Dividends tax rate	KPMG website
Interest.Tax	Interest income tax rate	KPMG website

	Definition	Source
Corp.Tax.Rate	Corporate tax rate	KPMG website https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online.html
Pers.Inc.Tax.Soc.Sec	Sum of the highest bounds of personal income tax rate and social security contributions.	KPMG website
Macroeconomic conditions		
Real.Int.Rate	Real interest rate	World Development Indicators (WDI) database – World Bank
Inflation.Avg.Prices	% change in CPI (average prices in each annual time period)	International Monetary Fund (IMF)
Other conditions		
GMT	Binary indicator variable; = 1 if the given city is located within GMT +/- 1 hour time zone and = 0 otherwise.	Google maps
Spat.Adj.Live.Top.25	Binary indicator variable; = 1 if the city has been ranked in the top 25 by the spatially adjusted liveability index	Economist Intelligence Unit – Best Cities Ranking and Report

Appendix II

Institutional Variables - Extreme Bounds Analysis

	Type	Coef (Mean)	SE (Mean)	Pct(sig & beta < 0)	Pct(sig & beta > 0)	G: CDF(beta <= 0)	G: CDF(beta > 0)
Political and legal institutions							
Political.Stabl.Rank.L1	focus	0.0310	0.0100	0.0000	78.3780	4.829	95.171
Ctrl.Corruption.Rank.L1	focus	0.0710	0.0260	0.0000	79.4870	2.91	97.09
Rule.of.Law.Rank.L1	focus	0.1380	0.0210	0.0000	100.0000	0.002	99.998
Regul.Qual.Rank.L1	focus	0.0470	0.0330	0.0000	35.0000	13.659	86.341
Cost.Enfr.Contract.Pct.Claim.L1	free	-0.2930	0.0740	88.0000	0.0000	98.9700	1.0300
Property.Rights	focus	-0.5390	0.3250	40.0000	2.2220	79.416	20.584
Investor.Prot.Index	focus	0.1590	0.0930	2.0000	52.0000	15.416	84.584
Creditor.Rights.Djankov2007	focus	-0.6100	0.1340	89.0910	0.0000	92.516	7.484
English.Common.Law	focus	2.2190	0.4560	0.0000	100.0000	0.187	99.813
French.Civil.Law	focus	-0.8580	0.4530	42.8570	0.0000	83.283	16.717
Political.Capital	focus	0.5580	0.2040	0.0000	80.0000	1.065	98.935
Labour market							
LN.Population.City	free	6.6840	1.7490	0.0000	86.0000	1.6490	98.3510
Top.100.Uni.City	focus	0.1440	0.0870	0.0000	30.0000	10.358	89.642
Top.100.Uni.Country	focus	-0.0320	0.0110	100.0000	0.0000	99.219	0.781
Top.500.Uni.City	focus	0.0520	0.0390	0.0000	40.0000	15.313	84.687
Top.500.Uni.Country	focus	0.0400	0.0150	0.0000	25.0000	4.299	95.701
EU.Member	free	1.4530	0.3440	1.3330	84.0000	7.5960	92.4040
Redundancy.Costs.Weeks	free	-0.0910	0.0220	89.3330	0.0000	99.1440	0.8560
English.Language	focus	2.3670	0.5080	0.0000	100.0000	0.28	99.72
Infrastructure							
LN.Secure.Net.Servers	focus	-0.1360	0.2590	12.5000	0.0000	60.805	39.195
LN.Metro.Stations	focus	-0.0710	0.0550	33.3330	0.0000	80.664	19.336
Non-financial sector development							
HQ.10bn.Count.City	focus	0.0080	0.0020	0.0000	87.5000	1.027	98.973
HQ.10bn.Count.Country	focus	-0.0090	0.0020	100.0000	0.0000	99.71	0.29
Foreign.Sales.Pct	free	0.0280	0.0230	0.0000	38.0000	18.6260	81.3740
Exp.Imp.Pct.GDP	focus	0.0000	0.0020	0.0000	40.0000	40.492	59.508
LN.Seaport.TEU	focus	-0.2090	0.0190	100.0000	0.0000	100	0
Financial sector development							
Top.Dom.Fin.Centre	free	1.7390	0.2280	0.0000	100.0000	0.0110	99.9890
Stock.Exchange	free	0.8720	0.2350	5.3330	66.6670	18.1540	81.8460
Stock.Market.Return	focus	-0.8770	0.3230	66.6670	0.0000	91.444	8.556
Advisor.HF.City	free	2.0560	1.2690	0.6670	36.6670	22.6500	77.3500
Advisor.HF.SQ.City	free	-3.1820	1.7430	48.0000	0.6670	82.4460	17.5540
Gov.Gross.Debt.Pct.GDP	focus	-0.0200	0.0040	75.0000	0.0000	97.287	2.713
Taxation							
Corp.Tax.Rate	focus	0.0820	0.0260	0.0000	85.7140	0.726	99.274
Dividends.Tax.Pct	focus	-0.0280	0.0120	50.0000	0.0000	96.35	3.65
Interest.Tax.Pct	focus	-0.0230	0.0320	20.0000	0.0000	65.302	34.698
Pers.Inc.Tax.Soc.Sec	focus	-0.0040	0.0130	50.0000	0.0000	58.232	41.768
Macroeconomic conditions							
Real.Int.Rate	free	-0.0330	0.0220	38.6670	0.6670	85.3130	14.6870
Inflation.Avg.Prices	free	-0.1600	0.0640	60.6670	0.0000	95.5120	4.4880
Other conditions							
Spat.Adj.Live.Top.25	focus	1.3440	0.2250	0.0000	100.0000	0	100
GMT	focus	2.5910	0.9090	0.0000	75.0000	3.05	96.95
Correlated random effects terms							
(M) Foreign.Sales.Pct	free	-0.0280	0.0290	24.0000	0.6670	76.7190	23.2810
(M) Inflation.Avg.Prices	free	0.3590	0.0980	0.0000	83.3330	1.5990	98.4010
(M) Advisor.HF.City	free	7.3180	0.7850	0.0000	100.0000	0.0120	99.9880
(M) Cost.Enfr.Contract.Pct.Claim.L1	free	0.2840	0.0750	0.0000	89.3330	1.1720	98.8280
(M) Political.Stabl.Rank.L1	free	0.0460	0.0120	0.0000	77.3330	6.3530	93.6470
(M) Regul.Qual.Rank.L1	free	-0.0310	0.0380	32.6670	14.6670	63.0160	36.9840
(M) Ctrl.Corruption.Rank.L1	free	-0.0210	0.0470	27.3330	16.0000	57.7590	42.2410
(M) Rule.of.Law.Rank.L1	free	0.0040	0.0230	22.6670	33.3330	42.4770	57.5230
(M) LN.Population.City	free	-5.0110	1.7420	71.3330	0.0000	95.3300	4.6700

Notes: Free variables have been included in every model estimated as part of the EBA routine. Focus variables have been included in groups of three in each model. In every model there has been exactly one institutional variable (rule of law / political stability / regulatory quality / control of corruption) included in addition to cost of enforcement of contracts, which has been always included. Random sample of 150 models has been drawn and estimated. Variables starting with (M) are CRE terms (average of those variables for each cross-section) constructed to control for the correlation between these regressors and the error term, due to their relationship with the time constant unobserved heterogeneity. This approach for dealing with unobserved heterogeneity has been introduced by Bache et al. (2013). Time period dummy variables (Y2002-Y2014) have been included in every model in addition to a common intercept.

Appendix III

Extreme Bounds Analysis - Rule of Law

	Type	Coef (Mean)	SE (Mean)	Pct(signif & beta < 0)	Pct(signif & beta > 0)	G: CDF(beta <= 0)	G: CDF(beta > 0)
Political and legal institutions							
Cost.Enfr.Contract.Pct.Claim.L1	free	-0.1390	0.0390	78.3460	0.0000	94.5420	5.4580
Rule.of.Law.Rank.L1	free	0.0960	0.0150	0.0000	100.0000	0.0210	99.9790
Political.Capital	focus	0.1570	0.1700	8.6960	17.3910	43.9520	56.0480
English.Common.Law	focus	0.5340	0.1440	5.0000	75.0000	8.5130	91.4870
French.Civil.Law	focus	0.2270	0.2120	10.0000	30.0000	28.5060	71.4940
Creditor.Rights.Djankov2007	focus	-0.1320	0.0740	57.1430	9.5240	84.2540	15.7460
Investor.Prot.Index	focus	-0.1980	0.0540	76.1900	0.0000	96.6200	3.3800
Property.Rights	focus	-0.3060	0.1140	76.1900	4.7620	87.0370	12.9630
Labour market							
EU.Member	free	0.2110	0.2130	13.7800	41.7320	32.6500	67.3500
Redundancy.Costs.Weeks	free	-0.1320	0.0080	100.0000	0.0000	99.9930	0.0070
LN.Population.City	free	8.2450	0.8730	0.0000	99.6060	0.0210	99.9790
Top.100.Uni.City	focus	0.1570	0.0380	0.0000	100.0000	0.2320	99.7680
Top.100.Uni.Country	focus	-0.0340	0.0080	90.0000	0.0000	99.1120	0.8880
Top.500.Uni.City	focus	0.0800	0.0380	0.0000	35.0000	8.5510	91.4490
Top.500.Uni.Country	focus	0.0320	0.0050	0.0000	100.0000	0.0080	99.9920
English.Language	focus	0.7820	0.2290	5.0000	85.0000	6.2790	93.7210
Infrastructure							
LN.Metro.Stations	focus	-0.0080	0.0220	21.7390	21.7390	48.2610	51.7390
Non-financial sector development							
Foreign.Sales.Pct	free	0.0300	0.0110	0.0000	77.1650	3.1310	96.8690
HQ.10bn.Count.City	focus	0.0010	0.0020	13.6360	18.1820	49.4800	50.5200
HQ.10bn.Count.Cntry	focus	-0.0050	0.0010	90.9090	0.0000	96.2590	3.7410
LN.Seaport.TEU	focus	-0.0960	0.0110	100.0000	0.0000	100.0000	0.0000
Financial sector development							
Advisor.HF.City	free	3.3220	0.7710	0.0000	85.8270	2.2690	97.7310
Advisor.HF.SQ.City	free	-4.8120	1.0480	90.5510	0.0000	98.9400	1.0600
Top.Dom.Fin.Centre	free	0.8660	0.1420	0.0000	98.8190	0.3700	99.6300
Stock.Exchange	free	1.8480	0.1340	1.1810	95.2760	2.9890	97.0110
Stock.Market.Return	focus	0.3390	0.2710	0.0000	30.4350	17.0040	82.9960
Gov.Gross.Debt.Pct.GDP	focus	-0.0010	0.0020	21.7390	39.1300	31.9730	68.0270
Taxes							
Dividends.Tax	focus	-0.0150	0.0080	60.0000	5.0000	79.3830	20.6170
Interest.Tax	focus	-0.0070	0.0100	25.0000	5.0000	64.1860	35.8140
Corp.Tax.Rate	focus	0.0270	0.0200	5.0000	35.0000	23.2830	76.7170
Pers.Inc.Tax.Soc.Sec	focus	-0.0420	0.0070	100.0000	0.0000	99.9280	0.0720
Macroeconomic conditions							
Inflation.Avg.Prices	free	-0.0250	0.0230	38.1890	7.0870	71.7930	28.2070
Real.Int.Rate	free	-0.0030	0.0060	20.0790	21.6540	47.9920	52.0080
Other conditions							
Spat.Adj.Live.Top.25	focus	1.2940	0.2090	0.0000	91.3040	0.4510	99.5490
GMT	focus	2.0880	0.6690	0.0000	78.2610	1.5050	98.4950
Correlated random effects terms							
(M) Foreign.Sales.Pct	free	-0.0020	0.0140	19.6850	17.7170	45.6100	54.3900
(M) Advisor.HF.City	free	6.8010	0.4880	0.0000	100.0000	0.0010	99.9990
(M) Cost.Enfr.Contract.Pct.Claim.L1	free	0.1260	0.0400	0.3940	72.0470	7.3340	92.6660
(M) Rule.of.Law.Rank.L1	free	-0.0710	0.0160	92.1260	0.0000	98.6450	1.3550
(M) LN.Population.City	free	-6.7610	0.8700	99.6060	0.0000	99.8110	0.1890

Notes: Free variables have been included in every model estimated as part of the EBA routine. Focus variables have been included in groups of two in each model. Exhaustive set of 254 combinations of CREQR models has been estimated. Variables starting with (M) are CRE terms (average of those variables for each cross-section) constructed to control for the correlation between some of the regressors and the error term, due to their relationship with the time constant unobserved heterogeneity. Time period dummy variables (Y2002-Y2014) have been included in every model in addition to a common intercept.

Appendix IV

Stock Market Development

	Dependent variable - LN.Xborder.Fees					
	τ = 0.999		τ = 0.99		τ = 0.95	
	Coeff. est.	t-stat	Coeff. est.	t-stat	Coeff. est.	t-stat
City level explanatory variables						
Advisor.HF.City	4.5759 **	(2.4172)	4.4544 *	(1.9480)	6.1563 **	(2.3470)
Advisor.HF.City.SQ	-4.5928 ***	(-2.8046)	-4.6093 *	(-1.8163)	-8.3074 **	(-2.3319)
Stock.Exchange	1.9555 ***	(4.3703)	2.1191 ***	(2.8481)	1.7968	(1.3724)
Top.Dom.Fin.Centre	1.1489 **	(2.4900)	1.1380 *	(1.7220)	1.9341 *	(1.9314)
LN.Population.City	4.8868 **	(2.0577)	5.7133	(1.5401)	4.0491	(0.7047)
Country level explanatory variables						
Stocks.Tot.Val.Pct.GDP	0.2074	(0.9726)	0.2154	(0.5255)	-0.0412	(-0.0793)
Cost.Enfr.Contract.Pct.Claim.L1	-0.3063 ***	(-3.0905)	-0.3274 **	(-2.1350)	-0.1832	(-0.7228)
Rule.of.Law.L1	0.1002 ***	(5.8052)	0.1032 ***	(3.2072)	0.1337 **	(2.1826)
EU.Member	0.9522	(0.6715)	1.1631	(0.6588)	-0.5810	(-0.3048)
Foreign.Sales.Pct	0.0397 **	(2.2887)	0.0308	(1.1650)	0.0334	(0.9062)
Real.Int.Rate	-0.0909 ***	(-3.8896)	-0.0965 ***	(-2.5826)	-0.0664	(-1.1071)
Inflation.Avg.Prices	-0.0605	(-1.4891)	-0.0615	(-0.7865)	0.0044	(0.0348)
Redundancy.Costs.Weeks	-0.1391 ***	(-8.4834)	-0.1436 ***	(-5.1093)	-0.1631 ***	(-3.2277)
Top.500.Uni.Country	0.0406 **	(2.1754)	0.0396	(1.5044)	0.0293	(0.7174)
Correlated random effects terms						
(M) Advisor.HF.City	4.5406 ***	(3.4011)	4.4816 ***	(2.5831)	8.4076 ***	(2.9304)
(M) LN.Population.City	-3.6796	(-1.6315)	-4.4413	(-1.2230)	-2.6350	(-0.4674)
(M) Cost.Enfr.Contract.Pct.Claim.L1	0.3080 ***	(3.1212)	0.3308 **	(2.1340)	0.1842	(0.7228)
(M) Rule.of.Law.L1	-0.0790 ***	(-3.3127)	-0.0854 **	(-2.0408)	-0.1162	(-1.6343)
(M) Stocks.Tot.Val.Pct.GDP	-0.0100	(-0.0307)	0.0278	(0.0487)	0.1578	(0.2206)
(M) Foreign.Sales.Pct	-0.0264	(-0.9840)	-0.0123	(-0.3528)	0.0210	(0.3794)
(M) EU.Member	-0.7441	(-0.5078)	-0.9818	(-0.4745)	0.5340	(0.2293)
(M) Real.Int.Rate	0.0747 ***	(3.7943)	0.0835 **	(2.2895)	0.0547	(0.5283)
Time period dummy variables	yes		yes		yes	
Cross-sections (time periods)	150	(13)	150	(13)	150	(13)

Notes: Data used for estimation of this model is limited to 2000 – 2012 time periods due to availability of data on the Stocks.Tot.Val.Pct.GDP variable. In all other respects this model mimics that presented in table 5 with the sole addition of Stocks.Tot.Val.Pct.GDP and the corresponding CRE term.

Appendix V

Asset Managers

	Dependent variable - LN.Xborder.Fees					
	τ = 0.999		τ = 0.99		τ = 0.95	
	Coeff. est.	t-stat	Coeff. est.	t-stat	Coeff. est.	t-stat
City level explanatory variables						
LN.Assets.U.Mng.City	0.0824 ***	(3.4089)	0.0824 **	(2.5154)	0.1063	(1.2082)
Advisor.HF.City	10.0057 ***	(3.3935)	10.0057 **	(2.2403)	13.1003 **	(2.3457)
Advisor.HF.City.SQ	-14.0606 ***	(-3.3982)	-14.0606 **	(-2.2773)	-18.6864 **	(-2.1999)
Stock.Exchange	1.7399 *	(1.9433)	1.7399 *	(1.7482)	0.6864	(0.4974)
Top.Dom.Fin.Centre	1.1579 **	(1.9746)	1.1579	(1.4993)	1.9351	(1.5546)
LN.Population.City	1.1622	(0.2947)	1.1622	(0.1905)	2.7641	(0.2991)
Country level explanatory variables						
LN.Assets.U.Mng.Country	0.0053	(0.1638)	0.0053	(0.1058)	-0.0547	(-0.5035)
Cost.Enfr.Contract.Pct.Claim.L1	-0.0533	(-0.3357)	-0.0533	(-0.2830)	-0.1842	(-0.7129)
Rule.of.Law.L1	0.3089 ***	(5.1777)	0.3089 ***	(3.2967)	0.3319 **	(2.3888)
EU.Member	3.4099 **	(2.0204)	3.4497 **	(2.1974)	3.8554	(1.1976)
Foreign.Sales.Pct	0.0962 ***	(2.8105)	0.0962 **	(2.3861)	0.0839 *	(1.8502)
Real.Int.Rate	-0.1386 ***	(-3.5184)	-0.1386 **	(-2.3651)	-0.1760 **	(-1.9775)
Inflation.Avg.Prices	0.1996	(1.6314)	0.1996	(1.3139)	0.1904	(0.8450)
Redundancy.Costs.Weeks	-0.0771 **	(-2.0461)	-0.0771	(-1.3330)	-0.1411	(-1.6072)
Top.500.Uni.Country	-0.0156	(-0.5381)	-0.0156	(-0.3604)	-0.0207	(-0.3037)
Correlated random effects terms						
(M) Advisor.HF.City	0.9889	(0.4322)	0.9889	(0.3334)	2.2804	(0.6055)
(M) LN.Population.City	0.0123	(0.0033)	0.0123	(0.0020)	-1.4267	(-0.1545)
(M) Cost.Enfr.Contract.Pct.Claim.L1	0.0484	(0.3013)	0.0484	(0.2531)	0.1781	(0.6767)
(M) Rule.of.Law.L1	-0.2905 ***	(-4.9039)	-0.2905 ***	(-3.2218)	-0.3260 **	(-2.3522)
(M) EU.Member	-3.3833 **	(-2.1215)	-3.4230 *	(-1.8833)	-3.2137	(-0.8313)
(M) Foreign.Sales.Pct	-0.0377	(-0.7225)	-0.0377	(-0.6358)	-0.0118	(-0.1460)
(M) Real.Int.Rate	0.0600 *	(1.6945)	0.0600	(0.9269)	0.1104	(0.9089)
Time period dummy variables	yes		yes		yes	
Cross-sections (time periods)	150	(6)	150	(6)	150	(6)

Notes: The regression output presented here is based on a subsample of data for years 2006, 2007, 2009, 2010, 2011 and 2012 due to data availability constraints on LN.Assets.U.Mng.City and LN.Assets.U.Mng.Country, both of which are based on propriatory data obtained from Towers Watson, covering top 500 asset managers worldwide over the respective time periods.

Appendix VI

Asset Managers - CRE correction

	Dependent variable - LN.Xborder.Fees					
	τ = 0.999		τ = 0.99		τ = 0.95	
	Coeff. est.	t-stat	Coeff. est.	t-stat	Coeff. est.	t-stat
City level explanatory variables						
LN.Assets.U.Mng.City	0.0431	(0.3531)	0.0431	(0.3719)	0.0345	(0.1701)
Advisor.HF.City	9.7842 ***	(3.1404)	9.7842 **	(2.2018)	12.2819 **	(2.2943)
Advisor.HF.City.SQ	-13.7613 ***	(-3.1494)	-13.7613 **	(-2.2303)	-17.4470 **	(-2.2530)
Stock.Exchange	1.8510 **	(2.0083)	1.8510 *	(1.7740)	0.7233	(0.5001)
Top.Dom.Fin.Centre	1.2844 **	(2.2066)	1.2844 *	(1.7801)	2.0342 *	(1.7506)
LN.Population.City	0.7140	(0.1773)	0.7140	(0.1224)	2.9356	(0.3368)
Country level explanatory variables						
LN.Assets.U.Mng.Country	0.0088	(0.2597)	0.0088	(0.1616)	-0.0754	(-0.6640)
Cost.Enfr.Contract.Pct.Claim.L1	-0.0783	(-0.4529)	-0.0783	(-0.4130)	-0.2622	(-1.0168)
Rule.of.Law.L1	0.3121 ***	(5.0875)	0.3121 ***	(3.1654)	0.2994 **	(2.2672)
Foreign.Sales.Pct	0.0949 ***	(2.7417)	0.0949 **	(2.3285)	0.0669	(1.4522)
EU.Member	3.7035 **	(2.3449)	3.7491 **	(2.3899)	3.9082 *	(1.7721)
Real.Int.Rate	-0.1488 ***	(-3.4220)	-0.1488 ***	(-2.5930)	-0.2021 **	(-2.2135)
Inflation.Avg.Prices	0.2179 *	(1.7353)	0.2179	(1.3738)	0.1789	(0.7276)
Redundancy.Costs.Weeks	-0.0718 *	(-1.8960)	-0.0718	(-1.2203)	-0.1567 *	(-1.8136)
Top.500.Uni.Country	-0.0106	(-0.3514)	-0.0106	(-0.2413)	0.0004	(0.0056)
Correlated random effects terms						
(M) LN.Assets.U.Mng.City	0.0378	(0.3186)	0.0378	(0.3194)	0.0750	(0.2835)
(M) Advisor.HF.City	1.1767	(0.4626)	1.1767	(0.3756)	2.0501	(0.6017)
(M) LN.Population.City	0.3453	(0.0896)	0.3453	(0.0592)	-1.6867	(-0.1918)
(M) Cost.Enfr.Contract.Pct.Claim.L1	0.0750	(0.4281)	0.0750	(0.3916)	0.2613	(0.9900)
(M) Rule.of.Law.L1	-0.2907 ***	(-4.7568)	-0.2907 ***	(-3.0558)	-0.2919 **	(-2.1929)
(M) EU.Member	-3.6641 **	(-2.5153)	-3.7098 **	(-2.0359)	-3.7364	(-1.2129)
(M) Foreign.Sales.Pct	-0.0457	(-0.8331)	-0.0457	(-0.7103)	-0.0003	(-0.0033)
(M) Real.Int.Rate	0.0659	(1.6101)	0.0659	(1.0192)	0.1406	(1.1137)
Time period dummy variables	yes		yes		yes	
Cross-sections (time periods)	150	(6)	150	(6)	150	(6)

The regression output presented here is based on a subsample of data for years 2006, 2007, 2009, 2010, 2011 and 2012 due to data availability constraints on LN.Assets.U.Mng.City and LN.Assets.U.Mng.Country, both of which are based on propriatory data obtained from Towers Watson, covering top 500 asset managers worldwide over the respective time periods. (M) LN.Assets.U.Mng.City is a correlated random effects (CRE) term constructed by averaging LN.Assets.U.Mng.City for each cross-section in order to correct for potential bias linked to time constant unobserved heterogeneity.

Appendix VII

Sample of 150 MSAs ranked by cross-border fees for 2000 – 2014 (sum)

Rank	Metropolitan Statistical Area	Country	Cross-border Fees [2012 USD]
1	London - Metro	United Kingdom	130,942,946,463
2	New York-Northern New Jersey-Long Island, NY-NJ-PA	United States	125,241,610,422
3	Zurich - Metro	Switzerland	100,429,698,141
4	Frankfurt - Metro	Germany	53,276,785,155
5	Paris - Metro	France	40,482,116,166
6	Toronto	Canada	32,966,735,891
7	Tokyo	Japan	22,522,235,702
8	Amsterdam - Metro	Netherlands	17,947,751,857
9	Hong Kong	China	9,995,531,209
10	Sydney	Australia	5,126,230,620
11	Stockholm - Metro	Sweden	4,437,011,370
12	Milan - Metro	Italy	3,016,934,391
13	Brussels - Metro	Belgium	2,904,972,026
14	Singapore	Singapore	2,757,918,635
15	Munich - Metro	Germany	2,513,490,126
16	Melbourne	Australia	1,937,406,612
17	Charlotte-Gastonia-Rock Hill, NC-SC	United States	1,927,647,613
18	Düsseldorf - Metro	Germany	1,664,919,107
19	Copenhagen - Metro	Denmark	1,480,256,037
20	San Francisco-Oakland-Fremont, CA	United States	1,431,873,835
21	Chicago-Joliet-Naperville, IL-IN-WI	United States	1,043,284,519
22	Montréal	Canada	955,490,084
23	Vienna - Metro	Austria	916,244,763
24	Los Angeles-Long Beach-Santa Ana, CA	United States	885,013,935
25	Beijing	China	834,998,470
26	Chongqing	China	665,994,240
27	Johannesburg	South Africa	648,832,920
28	Dublin - Metro	Ireland	620,696,605
29	Boston-Cambridge-Quincy, MA-NH	United States	608,751,474
30	Turin - Metro	Italy	587,602,790
31	Houston-Sugar Land-Baytown, TX	United States	451,261,283
32	Moscow - Metro	Russia	438,330,602
33	Kuala Lumpur	Malaysia	431,312,023
34	Madrid - Metro	Spain	421,623,834
35	Lisbon - Metro	Portugal	373,294,084
36	Taipei	Taiwan	370,119,929
37	Hamburg - Metro	Germany	369,594,345
38	Stuttgart - Metro	Germany	352,544,943
39	São Paulo	Brazil	352,456,542
40	Mumbai	India	306,229,014
41	Baltimore-Towson, MD	United States	292,686,282
42	Minneapolis-St. Paul-Bloomington, MN-WI	United States	278,678,812
43	Seoul	Korea, Republic of	252,302,288
44	Bangkok	Thailand	249,955,499

Rank	Metropolitan Statistical Area	Country	Cross-border Fees [2012 USD]
45	Detroit-Warren-Livonia, MI	United States	241,647,166
46	Barcelona - Metro	Spain	177,693,225
47	Vancouver	Canada	176,083,305
48	Lagos	Nigeria	161,412,475
49	Milwaukee-Waukesha-West Allis, WI	United States	151,573,443
50	Tampa-St. Petersburg-Clearwater, FL	United States	145,834,521
51	Washington-Arlington-Alexandria, DC-VA-MD-WV	United States	143,757,586
52	Birmingham - Metro	United Kingdom	143,397,751
53	Shanghai	China	128,454,265
54	Osaka	Japan	121,174,362
55	St. Louis, MO-IL	United States	120,339,753
56	Rio De Janeiro	Brazil	111,982,373
57	Portland-Vancouver-Hillsboro, OR-WA	United States	92,436,213
58	Santiago	Chile	81,024,418
59	Athens - Metro	Greece	76,285,051
60	Dallas-Fort Worth-Arlington, TX	United States	75,620,989
61	Atlanta-Sandy Springs-Marietta, GA	United States	66,342,142
62	Denver-Aurora-Broomfield, CO	United States	61,542,965
63	Rome - Metro	Italy	61,455,340
64	Mexico City	Mexico	52,763,181
65	Seattle-Tacoma-Bellevue, WA	United States	48,442,610
66	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	United States	48,190,930
67	Indianapolis-Carmel, IN	United States	47,178,673
68	Istanbul - Metro	Turkey	46,456,328
69	Columbus, OH	United States	42,630,163
70	Miami-Fort Lauderdale-Pompano Beach, FL	United States	41,542,105
71	Brisbane	Australia	35,034,195
72	Cleveland-Elyria-Mentor, OH	United States	31,368,795
73	Bangalore	India	30,848,193
74	Prague - Metro	Czech Republic	30,717,038
75	Cincinnati-Middletown, OH-KY-IN	United States	29,233,979
76	Pittsburgh, PA	United States	29,179,395
77	Warsaw - Metro	Poland	24,663,544
78	Bogotá	Colombia	24,219,343
79	Brasília	Brazil	22,148,492
80	Buenos Aires	Argentina	20,042,214
81	Shenzhen	China	19,606,407
82	St Petersburg - Metro	Russia	17,915,680
83	Kiev - Metro	Ukraine	12,514,076
84	San Jose-Sunnyvale-Santa Clara, CA	United States	11,216,221
85	Delhi	India	10,853,111
86	Ho Chi Minh City	Viet Nam	8,971,967
87	San Diego-Carlsbad-San Marcos, CA	United States	8,846,308
88	Manila	Philippines	8,422,372
89	Medellín	Colombia	7,872,929
90	Cologne - Metro	Germany	7,722,561
91	Phoenix-Mesa-Glendale, AZ	United States	4,842,609

Rank	Metropolitan Statistical Area	Country	Cross-border Fees [2012 USD]
92	Lima	Peru	4,807,761
93	Glasgow - Metro	United Kingdom	4,758,436
94	Budapest - Metro	Hungary	4,414,503
95	Berlin - Metro	Germany	3,590,626
96	Liverpool - Metro	United Kingdom	3,393,084
97	Nagoya	Japan	3,388,695
98	Manchester - Metro	United Kingdom	2,915,350
99	Jakarta	Indonesia	2,183,999
100	Chennai	India	1,918,479
101	Orlando-Kissimmee-Sanford, FL	United States	1,751,455
102	Lyon - Metro	France	1,718,591
103	Nashville-Davidson--Murfreesboro--Franklin, TN	United States	770,470
104	Guangzhou, Guangdong	China	138,139
105	Monterrey	Mexico	117,529
106	Sofia - Metro	Bulgaria	48,766
107	Leeds-Bradford - Metro	United Kingdom	2,215
108	Tianjin	China	-
109	Tehran	Iran, Islamic Republic of	-
110	Kolkata	India	-
111	Cairo	Egypt	-
112	Hangzhou, Zhejiang	China	-
113	Belo Horizonte	Brazil	-
114	Dar Es Salaam	United Republic of Tanzania	-
115	Fukuoka-Kitakyushu	Japan	-
116	Pôrto Alegre	Brazil	-
117	Salvador	Brazil	-
118	Chengdu, Sichuan	China	-
119	Dalian, Liaoning	China	-
120	Kansas City, MO-KS	United States	-
121	Curitiba	Brazil	-
122	Ningbo, Zhejiang	China	-
123	Wuhan, Hubei	China	-
124	Shenyang, Liaoning	China	-
125	Cape Town	South Africa	-
126	Khartoum	Sudan	-
127	Tel Aviv	Israel	-
128	Fortaleza	Brazil	-
129	Recife	Brazil	-
130	Rotterdam - Metro	Netherlands	-
131	Naples - Metro	Italy	-
132	Busan	Korea, Republic of	-
133	Lille - Metro	France	-
134	Harbin, Heilongjiang	China	-
135	Nanjing, Jiangsu	China	-
136	Foshan, Guangdong	China	-
137	Riverside-San Bernardino-Ontario, CA	United States	-
138	San Antonio, TX	United States	-

Rank	Metropolitan Statistical Area	Country	Cross-border Fees [2012 USD]
139	Luanda	Angola	-
140	Pretoria	South Africa	-
141	Xian, Shaanxi	China	-
142	Guayaquil	Ecuador	-
143	Sacramento--Arden-Arcade--Roseville, CA	United States	-
144	Guadalajara	Mexico	-
145	Suzhou, Jiangsu	China	-
146	Wenzhou, Zhejiang	China	-
147	Jinan, Shandong	China	-
148	Incheon	Korea, Republic of	-
149	Pune	India	-
150	Austin-Round Rock, TX	United States	-