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Current State of Cross-Border Banking

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1. Introduction

Recent years have witnessed increased merger and acquisition activity in banking. At the same time, deregulation has enabled banks to increase the scale and scope of their business. In the US, the Riegle-Neal Act of 1994 removed barriers interstate banking and the Gramm-Leach-Bliley Act of 1999 removed barriers between banks, securities- and insurance companies (Barth *et al*, 2000). At the regional level, the North American Free Trade Agreement (NAFTA) was created to promote economic integration in North-America (the US, Canada and Mexico). In Europe, the Single Market Programme Act created an environment in the early 1990s allowing banks in any member country of the European Union (EU) to open branches anywhere else in the EU (Dermine, 2006). The introduction of the euro in 1999 further strengthened the linkages between financial markets. The Asian-Pacific region, however, follows without significant regional economic ties. Following their economic expansion, China and, to a lesser extent, India are actively trying to improve their banking sector and remove trade barriers, while Japan and its banks have only just recovered from a deep recession in the 1990s.

Consolidation in the banking sector is happening at different speeds across the globe, often reflecting the ups and downs of the business cycle. Consolidation is mainly a domestic affair and involves the merger or acquisition of small and medium-sized banks. In the US, for example, the number of banks was reduced from 12,392 in 1990 to 7,491 in 2006 (FDIC). In the EU-15, the number of banks came down from 11,937 in 1990 to 7,045 in 2006 (ECB). At the same time, some of the larger banks have been involved in domestic as well as cross-border expansion.

The goal of this paper is to explore the current state of cross-border banking. In the literature, internationalization is often measured by examining in how many countries banks provide one or more of their services (e.g. Berger *et al*, 2003). In this paper, we take a different approach based on earlier work (Schoenmaker and Oosterloo, 2005). The level of cross-border penetration is measured using the Transnationality Index (TNI) developed by Sullivan (1994). The TNI is an unweighted average of three indicators (assets, revenues and employees) and measures foreign activity of a bank as a percentage of total activity of that bank. The TNI provides a relatively full and stable measure of cross-border activity.

We will contrast the level and trend of cross-border banking in the three main economic regions: the Americas, Asia-Pacific and Europe. Examining the sixty largest banks, we find that banks head-quartered in the Americas and Asia-Pacific have a domestic orientation (defined as more than 50% of business in the home country). Citibank is the only bank in these regions with truly international aspirations.[1] The picture in Europe is different. Distinguishing between regional expansion (i.e. within Europe) and global expansion, we find that 11 banks operate on a European scale and a further 3 banks on a global scale. Our figures indicate that the long expected cross-border merger wave in Europe has started. European banking is finally arriving. Only a few years back, Walter (2003) noted that M&A activity in Europe (as well as in the other regions) was primarily domestic.

[1] Citibank's domestic business amounts to 53%. Citibank aims to increase its foreign share from the current 47% to over 50%.

The observed cross-border banking patterns seem to follow non-financial trade patterns. The influence of regional trade pacts is strong. The EU's Single Market has been successful in promoting cross-border trade including banking. The regional component in European banking amounts to 23% in 2005. NAFTA is far less wide-ranging than the EU's Single Market. This is also the case for banking. The regional banking component in the Americas is 9%. Turning to the Asian-Pacific region, there are no real trade pacts (except for the southern sub-region of Trans-Tasmania). The regional component for Asian-Pacific banks is only 5%. The global banking component follows the same pattern: 25% for European banks, 13% for American banks and 9% for Asian-Pacific banks.

After the empirical part, we will discuss the public policy issues resulting from cross-border banking. In response to international banking, regulations are also increasingly based on a global (Basle) or regional (EU) footing to ensure their effectiveness as well as an international level playing field. However, supervisory authorities, who enforce these regulations, are still nationally rooted with some elements of international or regional coordination. The national base of supervisors is related to political sovereignty (Herring and Litan, 1994). In a more practical sense, it also related to the issue of jurisdiction. One needs a jurisdiction for enforcement of regulations, liquidation and winding-up procedures and taxation.

We examine the appropriate supervisory response to cross-border banking. Do informal coordination arrangements between national supervisors suffice to deal with cross-border banks? An example of such an arrangement is a supervisory college consisting of the main supervisors of an international bank. Or do we need to create more binding trans-national arrangements to internalize the externalities of cross-border banking? An example would be the establishment of a European system of financial supervisors to deal with the emerging pan-European banks. That would reflect the experience of the US, where federal systems of supervision (e.g. the Federal Reserve System and the OCC) emerged alongside state-supervisors.

2. Measuring Cross-Border Banking

Literature

The literature on the internationalization of financial services is extensive (see Moshirian, 2006, for an overview). A first line of research examines the patterns of foreign direct investment (FDI) in banking. How large are the flows into banks in (emerging) economies and what is the impact on the banking system of these economies? Soussa (2004) reports that most of the FDI in banking in emerging economies was directed to Latin America and Eastern Europe over the 1990-2003 period. The focus of this research is on the recipient countries. A second line of research looks at the cross-border expansion of individual banks. Internationalization can be measured by examining a specific aspect of international banking. Berger *et al* (2003), for example, investigate the geographic reach of banks' cash management services. How many countries do banks cover? Internationalization is then measured by the amount of countries in which a bank is active.

A separate approach would be to look at the full set of activities of banks. In the literature on multinationals, Sullivan (1994) reviews 17 studies estimating the degree of internalization based on a single item indicator. Using just a single indicator increases the possibility for errors, as the indicator could, for example, be more susceptible to external shocks. Sullivan develops the Transnationality Index, which is based on three indicators (see below). The Transnationality Index provides a full and stable measure of internationalization.[2] Slager (2004) and Schoenmaker and Oosterloo (2005) have applied this Index to banking. Extending earlier work, we follow this approach in this paper.

Finally, there is a body of research focusing on the determinants of cross-border banking (e.g. Buch and DeLong, 2004; Focarelli and Pozzolo, 2001) and the performance of cross-border banks (e.g. Berger *et al*, 2000). We do not discuss this research. The purpose of our paper is to examine the patterns in internationalization and not the strategy behind internationalization or the outcome.

Transnationality Index

We use the Transnationality Index to investigate the degree of cross-border banking. This Index is calculated as an unweighted average of (i) foreign assets to total assets, (ii) foreign income to total income, and (iii) foreign employment to total employment.

The indicators are constructed as follows:

- *Assets* This indicator is composed of loans to banks, loans to corporate and retail customers and securities. If the group is involved in insurance activities, insurance investments and other insurance assets are included. It should be noted that off-balance sheet items are not included in this indicator.
- *Revenue* This indicator is based either on gross or net income, depending on which standard is used in the geographical analysis of the annual report. Gross income includes interest income and similar revenues, dividend income, commission income, income on financial transactions and other operating income. If the group is also involved in insurance activities, general insurance premium income and income from long-term assurance business is included. Net income is obtained by deducting all relevant costs. However, a major drawback of net income is that this indicator may be biased, as foreign operations can, in particular in the starting phase, be less profitable than domestic operations. Moreover, net income is more volatile than gross income.
- *Employees* This indicator measures the (average) number of employees. Due to technological developments like the Internet, the allocation of employees does not necessarily give a correct view of the cross-border activities of a bank. However, the Internet is often used as a complementary channel to the branch network, which is by definition local.

We use all the information we have available for individual banks. For some banks we have information on all three indicators, for others we have information on two indicators and for a couple we only have information on one of the indicators. If data on one (or two) indicator(s) is available, only this indicator is used. While our earlier study focused on Europe (Schoenmaker and Oosterloo, 2005),

[2] The Index is multidimensional. It concentrates on the demand side (captured by income) as well as the supply side (captured by assets and employees) (Ietto-Gillies, 1998).

this paper examines the degree of internationalization of banks in the three main economic regions: the Americas, Asia-Pacific and Europe. It is interesting to distinguish between regional expansion (e.g. within the Americas) and global expansion of banks. The data on the Transnationality Index is therefore broken down into activities in the home market (*h*), the rest of the region (*r*), and the rest of the world (*w*).

Classifying banks

Following the geographical breakdown of activities, banks are classified as domestic, regional or global banks in this paper. Domestic banks are defined as follows:

1) *more than 50 per cent of their business is conducted in the home market (* $h > 0.5$ *).*

This first criterion makes a distinction between domestic and international banks. Banks that conduct the majority of their business in their home country are regarded as domestic banks. International banks are divided into regional and global banks. Regional banks are defined as:

1) *50 per cent or more of their business is conducted abroad (* $h \leq 0.5$ *).*
2) *25 per cent or more of their business is conducted within the region (* $r \geq 0.25$ *).*

The second criterion identifies regional banks among the international ones. International banks that have a sizeable part of their business in the rest of the region (e.g. Europe) are regarded as regional banks ("European banks"). The total business of a bank in the region is a sum of the home activities and the activities in the rest of the region ($h + r$).

Global banks are then defined as:

1) *50 per cent or more of their business is conducted abroad (* $h \leq 0.5$ *).*
2) *less than 25 per cent of their business is conducted within the region (* $r < 0.25$ *).*

The remaining group of banks is of a global nature. These banks have no gravity of business at home nor in the rest of the region. They operate on a truly global scale. Our classification only distinguishes between domestic, regional and global banks. A further distinction could be made by counting the number of countries in which international banks are operating (Sullivan, 1994). As the focus of this paper is on domestic versus international banking, we do not include this further breakdown.

3. Data on Cross-Border Banking

Most of the empirical studies on cross-border banking find a positive relationship between the size of banks and the degree of internationalization (e.g. Focarelli and Pozzolo, 2001). We therefore focus our empirical study of cross-border banking on the large banks. The 60 largest banks are selected on the basis of Tier 1 Capital (The Banker, July, 2005). As the European banks compromise about 50% of assets of The Banker's Top 1000 world banks, the dataset also consists of more European than American or Asian-Pacific banks. The dataset is divided into three samples: top 15 American banks, top 15 Asian banks and top 30 European banks.

Looking at the names of the banks in tables 1 to 3, it is clear that The Banker's Top 1000 is a ranking of the world's commercial banks, which have a significant retail base.[3] Retail business is often combined with investment banking (e.g. Citigroup, HSBC, JP Morgan Chase & Co, Barclays). Fully fledged investment banks, like Merrill Lynch, Goldman Sachs and Morgan Stanley, are not included in The Banker's Top 1000. These investment banks would be classified as global banks, as investment banking is a global business.

To calculate the Transnationality Index, data are gathered from the consolidated income statements and balance sheets of the 60 largest commercial banks (see the Appendix for a description of the data analysis). The results are reported in tables 1 to 3. At the bottom of the tables, the weighted average of the Transnationality Index for each region is calculated. To test whether there is a statistically significant trend (downwards or upwards) in the data, a statistical test proposed by Lehmann (1975) will be applied.[4] However, we should be careful with interpreting trends as we have only data for a six year period.

Insert table 1. Index for the Cross-Border Business of Top 15 American Banking Groups

American commercial banks have a strong domestic orientation with a domestic component of about 77% in table 1. The regional component is rather small (around 8%), while the global component is slightly larger (13 to 16%). While there is no clear up- or downward trend in the regional component, there is a statistically significant downtrend trend in the global component at the 10% level (p = 0.0514) over the 2000-2006 period.

Insert table 2. Index for the Cross-Border Business of Top 15 Asian-Pacific Banking Groups

Asian-Pacific banks also have a strong domestic orientation within the range from 80 to 87% in table 2. Regional business is very minor (around 5%) and global business somewhat larger (10 to 15%). The trend has a particular shape. International business decreased up to 2003 and has been slowly increasing since 2004. One explanation is that international business is squeezed in the aftermath of the severe recession in the nineties in Japan (the infamous decade of lost growth). When banks face difficulties and make losses, they tend to reduce foreign business first (even when investment opportunities abroad are more favourable than at home).[5] Now that the Japanese economy is growing, banks are slowly expanding their foreign business. Over the full 2000-2005 period, the overall

[3] Under the catchy title 'Bring me your consumers, your unbanked mass', The Banker (June, 2006) talks of a retail banking revolution whereby large parts of the world's population, previously unbanked, are entering a new world of available financial services. The Banker considers retail as the next frontier of cross-border expansion, both in developed and in emerging markets. Retail banking offers sustainable revenues at a low risk. In contrast, wholesale banking generates more volatile revenues.

[4] This test statistic is $D = \sum_{i=1}^{n} (T_i - i)^2$, where i indicates the year and T_i is the rank of the score of year i.

[5] Internationalization can thus be explained by the capital strength of a bank. When profits are accumulating and capital is increasing through retained earnings, banks use the extra capital to expand internationally. When the capital base is eroding through losses, banks first cut their foreign business. This is a free interpretation of the capital crunch. See Peek and Rosengren (1995) on the general working of the capital crunch.

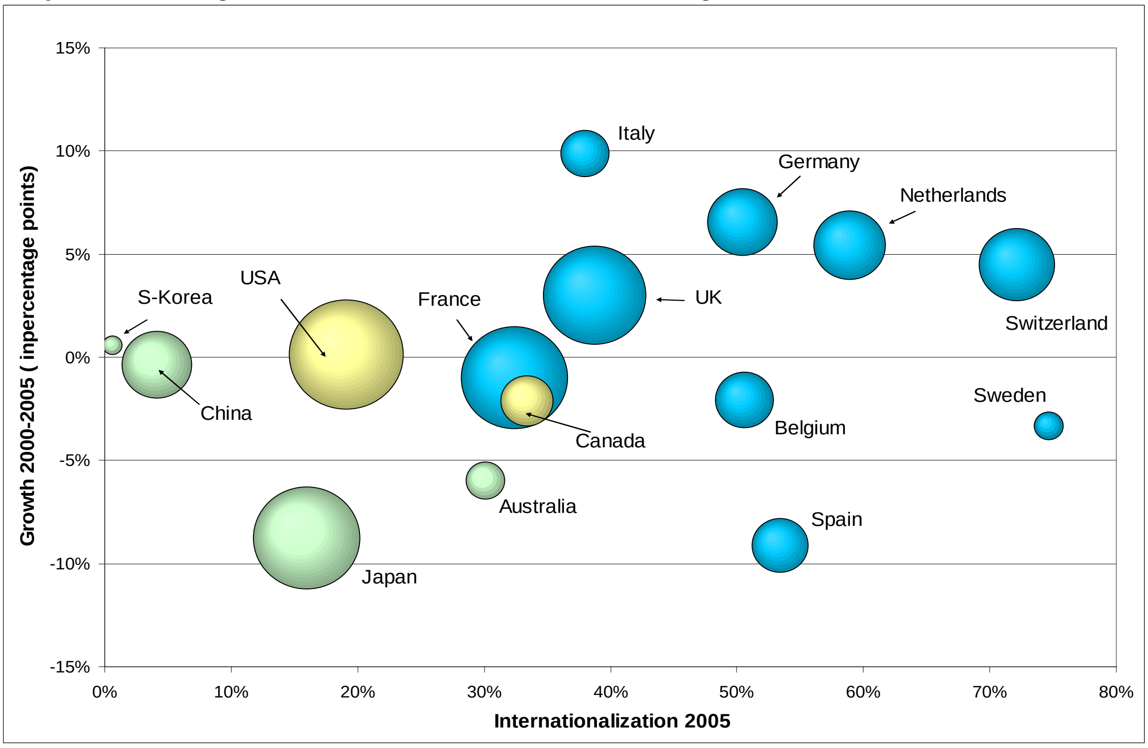
downward trend of international (regional and global) business is statistically significant at the 5% level ($p = 0.0292$).

Insert table 3. Index for the Cross-Border Business of Top 30 European Banking Groups

European banks have a far smaller domestic orientation with a domestic component of about 54% in table 3. Both regional business (20 to 23%) and global business (about 25%) is rather large. While there is no clear up- or downtrend in the domestic component, there is a clear increase in regional business at the expense of global business. The increase of regional business in Europe from 20% in 2000 to 23% in 2005 is statistically significant at the 1% level ($p = 0.0014$). The decrease of global business is statistically significant at the 10% level ($p = 0.0875$). It is remarkable that regional business has been growing over the last 6 years, while most European countries have experienced a recession during this period (with the exception of Spain and the UK which have had a major economic expansion during this period).

Aggregating the data on bank level (Tables 1, 2 and 3) to their home countries provides us with an interesting view of the global financial landscape. Graph 1 illustrates the international component (both regional and global) in 2005 and the change of the international component over 6 years (from 2000 to 2005) of the countries individually. The size of the circles represents the total bank assets of the top banks in that country. Note that only the top 60 world wide banks are included in our sample.

Graph 1. The degree and trend of cross-border banking of 15 countries over 2000-2005.



Source: Tables 1,2, 3 and own calculations.
Notes: The circles, degree of internationalization (x-axis) and growth-trend (y-axis) represent the sixty banks aggregated on country level. The aggregates are weighted-averages to total assets of the banks. The degree of internationalization represents the international business (both regional and global) of banks head-quartered in the respective countries in 2005. The growth trend represents the growth in internationalization from 2000 to 2005.

Graph 1 indicates that the European countries have a more international orientation than any of the countries from the Americas or Asia-Pacific. The large banks head-quartered in Sweden and Switzerland even conduct most of their business abroad, but hardly become more or less international over these six years. Italy and Spain on the other hand, are less international but show a substantial in- and decrease, 10% and 9% respectively, in their degree of cross-border banking. All European countries except France show a shift in their level of internationalization. This is not the case in the Americas, where the US remain domestic over the period observed. The internationalization of the Asian-Pacific countries differs quite a lot. China and South-Korea are almost completely domestic, while Japan and especially Australia conduct some business abroad. Japan, however, shows a large cross-border divestment over 2000-2005.

In the next section, we discuss the results in more depth and contrast the degree of cross-border banking across the three economic regions.

International banks

Table 4 reports the international banks in the top 60 banks. Using our classification for the different types of banks, we find that all banks in the Americas and Asia-Pacific are domestic. This reflects the overall domestic orientation of the banks in the two regions. In Europe the number of domestic banks decreased from 18 in 2000 to 15 in 2006. So, half of the banks can currently be classified as international. The number of regional banks (i.e. “European” banks) increased from 7 to 11, even at the expense of the number of global banks coming down from 5 to 3. Using the Lehmann test, the upward trend of “European” banks and the downward trend of global banks are significant at the 1% level (p = 0.0028 and p = 0.0097).

Insert table 4. Categories of international banks

Sensitivity analysis

Although the criteria for classifying international banking groups are intuitive, they are somewhat arbitrary as well. We therefore also conducted a sensitivity analysis. To see whether more banks can be classified as international, the first criterion is lowered by 10 per cent. An “international” bank is then defined as a bank that conducts more than 45 per cent of its business abroad ($h \leq 0.55$). A regional bank remains an international bank that conducts 25% or more of its business in the rest of the region ($r \geq 0.25$) and a global bank remains an international banks that conducts less than 25% of its business in the region ($r < 0.25$).

Insert table 5. Sensitivity analysis

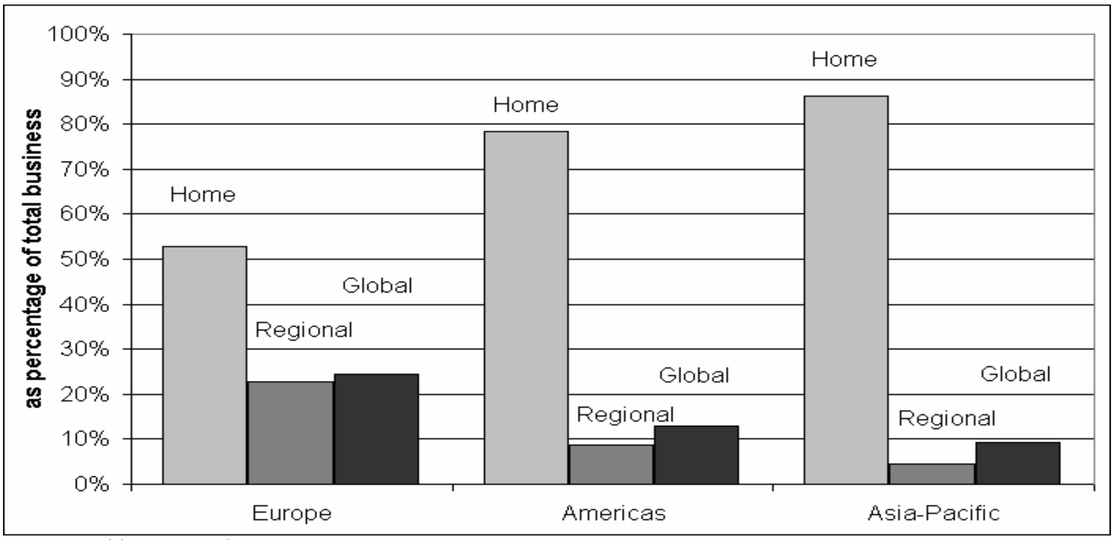
Table 5 shows the result of this sensitivity analysis. It reproduces the number of banks that would be regarded as international under the relaxation of the criterion and pinpoints the banks that would have been added. In the Americas, Citigroup is added as a global bank from 2004. Foreign business is 46% and 47% in 2004 and 2005. Citigroup is the only American bank with truly international aspirations.

Earlier this year, Citigroup's CEO stated that he would like to shift the mix of business from about 60% in the US and 40% abroad to around 50-50 over the next few years.[6] Our sensitivity analysis shows that Citigroup's is on its way to becoming a global bank. In the Asian-Pacific region, National Australia Bank is added as a global bank up to 2001. Again the picture in Europe is different. 1 to 2 regional banks are added when relaxing the criteria. The new sequence ranges from 8 European banks in 2000 to 12 in 2005. Based on the Lehmann-test, we find that the new sequence of European banks under the 10% relaxation remains significant at the 1% level (p = 0.0028). The results of the relaxation of the criteria suggest that our results are not overly sensitive to the choice of the criteria.

4. Comparing Cross-Border Banking across the Continents

The intensity of cross-border banking is very different on the three continents. Graph 2 illustrates the geographic segmentation of banks in Europe, the Americas and the Asia-Pacific for the year 2005. The graph ranges from the most international to the least international region. European banks are far more international than their American and Asian counterparts. Both the regional and the global component of business are large in Europe (over 20%). The influence of regional trade pacts seems to be strong. The large regional component in Europe (23%) can by explained by the existence of the Single Market of the European Union. The North American Free Trade Agreement (NAFTA) of 1994 is far less wide-ranging than the EU's Single Market. This seems to be also the case for banking. The regional component in the Americas is only 9%.

Graph 2. Geographical segmentation of banks in 2005



Source: Tables 1, 2 and 3.

Turning to Asia, there are no real trade pacts. The Association of Southeast Asian Nations (ASEAN), for example, aims to promote regional cooperation but has no common market. Moreover, the large countries in the Asian-Pacific region, such as China, Japan and Australia,[7] are not part of ASEAN. The regional component for Asian-Pacific banks is 5%. It is noteworthy that regional component (5%)

[6] "Prince dreams of global realm", Financial Times, April 17, 2006.

[7] In the southern sub-region, Trans-Tasmania forms an exception to the lack of trade pacts in the Asian-Pacific region. The Australia New Zealand Closer Economic Relations Trade Agreement (CER) of 1983 provides for free trade in services, including financial services.

is substantially lower than the global component (9%) for these banks. This contrasts with the picture for European and American banks, where regional and global business are more balanced.

While the picture of the three continents is very different, there is one common finding. The largest bank on each continent is also the most international bank of that continent. In the Americas, the largest bank is Citigroup with 47% of its business abroad, both regional and global. The largest Asian-Pacific bank is Mitsubishi Tokyo Financial Group with 31% of its business abroad. Finally, HSBC is the largest European group with 75% of its business abroad. The global component of these banks outstrips the respective regional component, so one can truly speak of large international players.

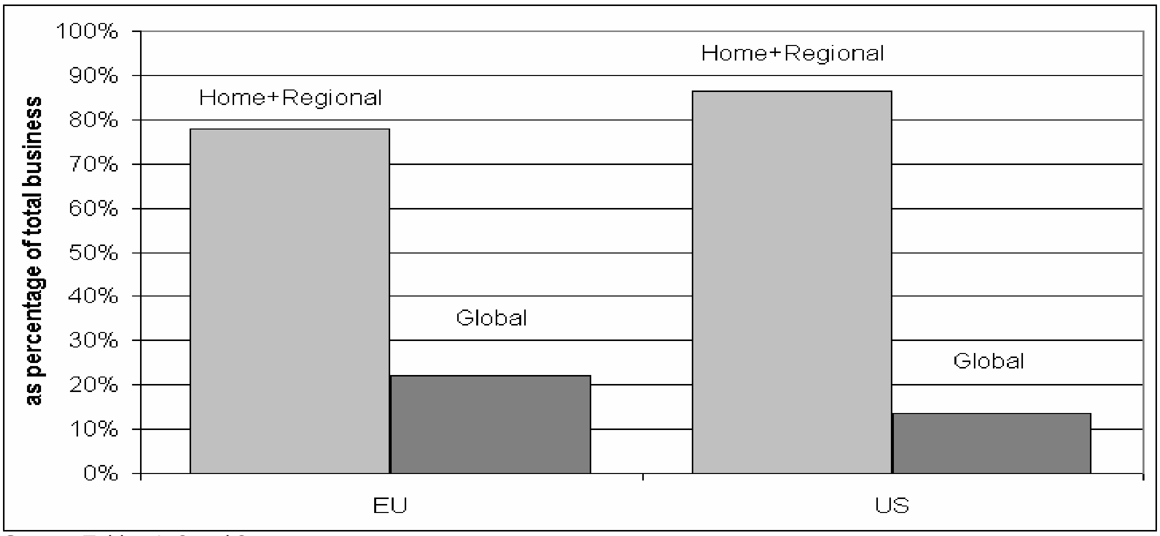
When comparing the regions, it is clear that there are no regional banks in the Americas and Asia-Pacific. After relaxing the criteria with 10% in our sensitivity analysis, only global banks emerge. This finding is very different from Europe. The European banking scene is populated by 11 regional banks and 3 global banks. Intra-European business is thus an important feature of banking in Europe.

Our findings are different from Buch and DeLong (2004). Looking at cross-border M&A activity in banking from 1985 to 2001, they report no significant increase following the EU's Single Market and a small increase following NAFTA. Our study differs from the work of Buch and DeLong in two ways. First, Buch and DeLong look at the 1985-2001 period, while we look at the 2000-2005 period. Second, they investigate the cross-border component of M&A activity (a flow measure), while we examine the cross-border component of the business itself (a stock measure). We think that the broad composition of the Transnationality Index is helpful to get a full picture of cross-border activity.

US versus Europe

A different perspective would be to examine whether Europe is just catching up with the US. Following the lifting of restrictions on interstate branching in 1994, the US has experienced nationwide consolidation in banking (Kroszner, 2006). Europe has only just started with consolidation on an EU-wide scale. To make a full comparison, we would need to compare the geographical breakdown of US banks with that of EU banks. While we could take the US respectively EU banks out of the broader Americas and Europe samples, we cannot calculate the regional component of EU banks (the data make no distinction between intra-EU business and business in non-EU European countries, such as Switzerland and Turkey). We have therefore only compared the global business of US and EU banks. Graph 3 shows that the global reach, beyond the region, is still larger in the case of EU banks (22%) than US banks (14%). While the EU may follow the U.S. in regional consolidation across 'state' borders, EU banks have a stronger international orientation. However, the differences are less stark when intra-EU business is taken out.

Graph 3. Geographical segmentation of EU and US banks in 2005



Source: Tables 1, 2 and 3.

Individual regions

Turning to the individual regions, table 1 illustrates that the US banks are very domestic (80 to 90%) with Citibank being the exception. The lifting of limits on interstate banking by the Riegle-Neal Act in 1994 has spurred a domestic consolidation drive (Stiroh and Strahan, 2003). Banking consolidation took place among small and medium-sized banks as well as large banks. An example of the latter is Bank of America, which is the result of a merger between BankAmerica and NationsBank in 1998 and further mergers with Fleet Boston in 2004 and MBNA in 2006. Bank of America has truly national coverage in the US and is close to holding 10% of national deposits. Federal law prevents any bank from gaining more than 10% of national deposits through acquisition. In contrast, Citigroup provides an example of both domestic and cross-border consolidation. Within the US, Citigroup grew out of a merger between Citibank and Travelers (insurance) in 1998. Citigroup has, however, divested most of its insurance underwriting business over the last few years. Before the merger, Travelers acquired Salomon Brothers (investment banking) in 1997. A major foreign acquisition of Citigroup is Banamex, the second largest bank in Mexico (see below), in 2001.

Canadian banks have less domestic business (60 to 70%), while regional business is sizeable (20 to 30%). This can of course be explained by the fact that Canada is a smaller country. Finally, Mexico provides an interesting example of a banking system that is dominated by foreign banks. After the banking crisis of 1995, foreign banks were allowed to enter in order to recapitalize Mexican banks (Ortiz, 2006). Table 6 illustrates that 5 out of the 7 largest Mexican banks are owned by foreign banks. This amounts to about 75% of Mexican banking assets. It is noteworthy that not only banks from the region (Citi and Scotia) but also European banks (BBVA, Santander and HSBC) are active players in Mexico.

Table 6. Foreign ownership of the Mexican banking system

Mexican banks	Assets (%)	International Bank	Foreign (%)
Bancomer	23.0	BBVA (Spain)	23.0
Banamex	20.5	Citibank (US)	20.5
Serfin	16.1	Santander (Spain)	16.1
Bital	11.3	HSBC (UK)	11.3
Mercantil del Norte	8.2	-	
Inverlat	5.2	Scotiabank (Canada)	5.2
Inbursa	3.7	-	
Other banks	12.0	-	
Total	**100.0**		**76.1**

Source: Boletin Estadistico, Banca Múltiple, Comisión Nacional Bancaria y de Valores, March 2006.
Notes: 5 out of the 7 largest Mexican banks are foreign owned. The column international banks contains the names of the foreign owners.

In the Asian-Pacific region, cross-border banking within the region is very limited. Japanese banks are domestically oriented (70 to 90%) with a very tiny regional component (less than 5%). Consolidation has been a domestic affair. The merger of two of the top five banks, Mitsubishi Tokyo Financial Group (nr. 1) and UFJ Holdings (nr. 4), into Mitsubishi UFJ Financial Group in 2005 was the last one in a series of large domestic mergers in Japan. Cross-border business of Japanese banks is primarily directed towards the US and Europe (London). In line with the spectacular growth of the economy, Chinese banks have been rising in the ranks of The Banker's Top 1000 over the last few years. The major, (formerly) state-owned, banks were recently privatized or are in the process of privatization. The Chinese banks are still operating on an almost fully domestic scale (95 to 100%). Only the Australian banks have a meaningful regional component (10 to 30%). The Australian banks dominate the banking system of New Zealand. Table 7 illustrates that the large New Zealand banks are all owned by Australian banks. The Australian banks own more than 90% of New Zealand banking assets.

Table 7. Foreign ownership of the New Zealand banking system

New Zealand banks	Assets (%)	International Bank	Foreign (%)
ANZ National Bank	29.0	ANZ Banking Group (Australia)	29.0
Westpac	16.2	Westpac (Australia)	16.2
Bank of New Zealand	15.5	National Australia Bank (Australia)	15.5
Commonwealth Bank of Australia	14.9	Commonwealth Bank Group (Australia)	14.9
ASB Bank	13.9	Commonwealth Bank Group (Australia)	13.9
Other banks	8.8	Several international banks	8.8
Kiwibank	0.9		-
TSB Bank Limited	0.8	-	-
Total	**100.0**		**98.3**

Source: Reserve Bank of New Zealand, Banking System Statistics, December 2005.
Notes: The large New Zealand banks are Australian owned. The column international banks contains the names of the foreign owners.

In Europe, cross-border banking is very intensive. Almost half of the European top 30 banks are international banks. In 2005, we find 11 regional banks and 3 global banks in Europe. As reported earlier, the increase from 7 European banks in 2000 to 11 in 2005 is statistically significant at the 1% level. Only a few years back, Walter (2003) still concluded that the number (and value) of cross-border M&A deals in banking was very limited in Europe as well as on other continents. We can now conclude that the long-expected cross-border merger wave in Europe has finally started. Large cross-border deals include the take-over of Abbey National (UK) by Santander (Spain) in 2004, the take-overs of HypoVereinsbank (Germany) by Unicredit (Italy) and of Banca Antonveneta (Italy) by ABN AMRO (the Netherlands) in 2005 and the take-over of Banca Nazionale del Lavoro (Italy) by BNP Paribas (France) in 2006 (the last one is not yet incorporated in our data-set). It is interesting to note that consolidation in Italy has really started. In addition to the three large cross-border deals, Banca Intesa (nr. 2) and Sanpaolo IMI (nr. 3) have announced their plans for a domestic merger in August 2006.

It should however be noted that not all the 'European' banking groups in table 4 are the same. There are some European banks that focus on a specific region within Europe and can be regarded as 'regionally active' European banks. Fortis, for example, primarily operates in Belgium and the Netherlands. Similarly, the Nordea Group primarily operates in the Nordic countries. Nordea holds 40 per cent of banking assets in Finland, 25 per cent in Denmark, 20 per cent in Sweden and 15 per cent in Norway and has also large stakes in the Baltics. Other European banks operate Europe-wide and can be labeled as 'pan-European' banks. Examples are ABN AMRO and Deutsche Bank, both of which have spread their activities throughout Europe.

The group of global banks in Europe consists of HSBC (UK), BBVA (Spain) and Barclays (UK). Santander, the other large global Spanish bank, turned into a "European" bank after the take-over of Abbey National. Although we classify the Swiss banks, Credit Suisse and UBS, as regional in most years (see table 4), they are borderline cases. One would generally regard these banks as global players. Global banks are a heterogeneous group. On the one hand, one can distinguish global banks like HSBC and Citigroup which are present in most countries across the three continents. On the other hand, there are global banks with a more limited reach such as BBVA and Santander which cover part of Europe and Latin America.

Finally, the ten New Member States of the EU are dominated by foreign banks. After the fall of the wall in Berlin in 1989, these economies were opened to foreign investors. As part of the modernization of the economy, the formerly state-owned banks were privatized. Foreign investors were allowed to participate in the privatization scheme. The result is that foreign banks own on average 70% of the banks in the New Member States (table 8). The largest supply of foreign direct investment in banking to Eastern European countries is from West-European banks (Moshirian, 2006).

Table 8. Foreign ownership in the New Member States (NMS)

Country	Foreign (%)	Country	Foreign (%)
Cyprus	12.3	Malta	67.6
Czech Republic	96.0	Poland	67.8
Estonia	97.5	Slovakia	96.3
Hungary	82.3	Slovenia	36.0
Latvia	46.3		
Lithuania	95.6	**Average NMS**	**70.0**

Source: European Commission, Financial Integration Monitor, 2005.
Notes: Foreign ownership is defined as the share of bank assets held by of foreign-owned banks.

Overall picture of cross-border banking

The picture emerging is that cross-border banking is diverse. First, the number of truly global players in the commercial banking field is very limited. The main players are HSBC and BBVA from Europe and Citigroup from the US. Furthermore, some large European banks, such as the Dutch banks (ABN AMRO and ING) and Swiss banks (Credit Suisse and UBS), have a significant global reach. Although the number of global players is limited, these banks are super-size banks. HSBC and Citigroup, for example, have each total assets of $1.5 trillion at the end of 2005. Second, cross-border banking at the regional level is very uneven across the continents. In Europe, cross-border banking is clearly present and still growing. The current level of regional business is close to 25% within Europe. Regional banking is far less important in the Americas and Asia-Pacific (both less than 10%). Third, the global component, outside the region, is also larger for European banks than American and Asian-Pacific banks.[8] Fourth, the banking systems of some smaller countries, such as Mexico, New Zealand and the New Member States in the EU, are dominated by foreign banks. In some cases, the stake of foreign banks is up to 80 or 90%.

5. Public Policy Issues

The focus of this paper is on commercial banking. Commercial banking is more relevant for policy purposes than investment banking. Prudential supervision to protect retail depositors is aimed at commercial banks (retail) and less so at investment banks (wholesale). Moreover, commercial banks play a key role in the financial system (lending, payments). Problems with large parts of the commercial banking system could threaten financial stability. Major problems in the commercial banking system could also have an impact on the wider economy, as the lending capacity to small and medium-sized business would be disrupted (Goodhart, 1987). Of course, investment banks (and also some commercial banks) are dominant players on financial markets, both cash and derivatives, and therefore important for the well-functioning of financial markets.

[8] It is no surprise that that the Basle Committee of Banking Supervision was established after the failure of a European bank in 1973. Herstatt was a small international bank in Germany involved in forex business. Problems emerged when Herstatt had received moneys on the DM-leg of its US-DM transactions during European business hours, but could not pay on the $-leg during American business hours.

For policy purposes, it would be useful to differentiate between cross-border branches and subsidiaries. The latter are separately licensed and supervised by the host country. It would also be useful to differentiate between interbank loans and retail and corporate loans to separate financial and non-financial business. Unfortunately, our data on cross-border banking does not allow to make these breakdowns.

Financial supervision

The challenge for the effective supervision of an international bank is to get an overall view of the financial soundness of the bank (consolidated supervision), which is also based on a good knowledge of local conditions in the different markets in which the bank operates (host country perspective). Cooperation between the consolidated home supervisor and the host supervisors is therefore crucial. Given the limited number of global banks, supervisors have opted for informal arrangements. Supervisory colleges have been established to bring together the most important supervisors for the large international banks. A case in point is the cooperation between the Swiss EBK, the FSA and the New York Fed on Credit Suisse and UBS (McCarthy, 2006). The three supervisors meet half yearly to share concerns and to form a view on the overall risk profile of these banks. A wide network of bilateral and multilateral Memoranda of Understanding (MoUs) exists to support information exchange and coordination between national supervisors. It should be noted that these MoUs are not legally binding (Mayes, 2006).

Our assessment is that these arrangements for global banks suffice as only a handful of banks are involved (though this small group of global banks comprise the world's largest banks such as Citigroup and HSBC). Moreover, there is no international jurisdiction available to go further. Supervision is related to political sovereignty (Herring and Litan, 1994). The assessment for Europe is different. First, a jurisdiction to establish formal, binding, arrangements can be made available with the EU. Second, our figures indicate that there are already 11 banks with significant cross-border business within Europe and this number is still growing.

The current European structure of supervision consists of a fairly harmonized regulatory framework based on EU Directives and coordination between supervisors. In the so-called Lamfalussy approach, regulatory and supervisory committees are established to speed up the regulatory process and to foster supervisory convergence. The main aim of the supervisory committees is to coordinate policies by developing common guidelines. At the sub-regional level, supervisors have established institution specific MoUs (e.g. for Nordea and Fortis) to arrange for cooperation in the day-to-day supervision of cross-border banks. As noted before, these MoUs may put a moral obligation on supervisors to cooperate (in terms of game theory, there is a setting of repeated play), but does not pose a formal obligation on supervisors (Mayes, 2006).

The newly emerging European financial landscape confronts the home and host authorities with complex coordination issues. In the face of these challenges, it is questionable whether the current level of cooperation between different national authorities (with a patchwork of bilateral and multilateral

MoUs) will be an adequate arrangement in an integrating market. Different proposals have been put forward to enhance the supervisory structure in Europe. A key proposal for bringing home and host supervisors together is to establish some form of a European System of Financial Supervisors (e.g. Vives, 2001, and Schoenmaker and Oosterloo, 2006). A new central agency would be created to work in tandem with the national supervisors.[9] The role of the central agency is to foster cooperation and consistency among members of the System, but leaves the day-to-day supervision of cross-border financial groups with the consolidating or lead supervisor. This is a decentralized version of a European System of Financial Supervisors.

The lead supervisor is the single point of contact for all reporting schemes (no reporting to the host authorities), validate and authorise internal models, approve capital and liquidity allocation, approve cross-border set-up of specific functions and decide about on-site inspections. With respect to the latter, the lead supervisor can ask host authorities to perform on-site inspections on its behalf. The lead supervisor is compelled to inform host authorities about its activities and host authorities should have access to all reporting schemes (i.e. a common database of the System). In case a host authority feels the lead supervisor does not take account of its interests and no mutual concessions can be reached, it can present its concerns to the central agency. If necessary, the central agency can overrule the lead supervisor. Key supervisory decisions (for example, the assessment of potential cross-border mergers and acquisitions or crisis management decisions) as well as the design of policy are done at the center by a council consisting of the chairman of the central agency as well as the chairmen of the national supervisors. In this way, host country authorities are fully involved and the interests of their depositors are fully taken into account (i.e. potential cross-border externalities are incorporated).

Breuer (2000) has argued for a more centralized version in which the central agency directly supervises the large banks that operate throughout Europe. We believe that prudential supervision should be executed at the local level where the financial institutions are based (Schoenmaker and Oosterloo, 2006). The use of field inspections is an important tool of prudential supervision. By being close to the coal face, supervisors would get a feeling for what is going on at an institution and would also be more familiar with local market conditions in which an institution is operating. For pan-European financial institutions, the ‘lead supervisor’ should thus remain located near the head office of the financial institution.

An instructive example of decentralization is presented by the organizational structure of the Federal Reserve. The Fed (in cooperation with the State Banking Departments) supervises state chartered member banks. The Federal Reserve System consists of the Board of Governors in Washington DC and twelve regional Federal Reserve Banks (Board of Governors of the Federal Reserve System, 2005). The Fed has i) centralized policy, ii) information pooling via a shared information system; and iii) decentralized execution of supervision. The ultimate responsibility for the supervision of large member banks rests with the lead supervisor at the respective regional Federal Reserve Bank, though

[9] An example of such a structure is the European System of Central banks with the ECB in the center.

the Board in Washington DC will usually be consulted on the course of action. Since the liberalization of interstate banking in 1994, one can notice some centralization in supervision reflecting the consolidation in banking. The resulting super-regional banks are mainly head-quartered in the New York district with a few in the Richmond District (e.g. Bank of America in Charlotte). There is increasing cooperation between the New York Fed (and Richmond Fed) and the Board in Washington DC.

Notwithstanding the possible creation of new legal structures in Europe, it is important that European supervisory agencies keep on cooperating with supervisors outside Europe, notably those in the US. Graph 2 illustrates that EU banks have a strong global component in their business.

Financial Stability

The second challenge for public policy is related to financial stability. How can national authorities foster the stability of their financial system when the players in the system are operating cross-border? There are two sides to this problem: home and host. Home country authorities have currently neither an incentive nor a legally binding obligation to incorporate cross-border externalities. When a bank is in difficulties, the home authorities will focus on the impact on the home financial system and ignore the potential impact in foreign countries. This raises the issue who should bear the burden of any proposed recapitalization should failures occur in large cross-border banks. A recapitalization is efficient if the social benefits (preserving systemic stability) exceed the cost of recapitalization. If not, the bank should be closed.

Using a multi-country model, Freixas (2003) shows that *ex post* negotiations on burden sharing lead to an underprovision of recapitalizations. Countries have an incentive to understate their share of the problem in order to have a smaller share in the costs. This leaves the largest country, almost always the home country, with the decision whether to shoulder the costs on its own or to let the bank close, and possibly be liquidated. Freixas (2003) labels this mechanism, which reflects the current arrangements in Europe, as improvised cooperation. Schoenmaker and Oosterloo (2005) provide an empirical assessment of the intensity of cross-border externalities in Europe. This issue is not confined to Europe, but to any cross-border banking setting.

Host country authorities do not have the tools to manage financial stability when foreign banks dominate their financial system. Foreign banks are in some countries allowed to enter in order to recapitalize national banks after a banking crisis (e.g. Mexico, see table 6) or to privatize national banks after opening the economy (e.g. the Eastern European countries, see table 8). The entry of foreign banks can have a positive impact on the efficiency of the financial system (see Ortiz, 2006, and De Haas and Van Lelyveld, 2006). But foreign entry comes at the expense of financial stability management. Host country authorities have no effective mechanism to influence the parent banks - and the respective home country authorities - in case of a crisis. Host authorities are dependent on the action, or lack of it, by the home authorities. A case in point is the Argentine banking crisis in the early 2000s. At the height of the crisis, some of the nine foreign banks abandoned their branches and

subsidiaries in Argentina and were allowed (or encouraged?) by the respective home supervisors to do so.[10]

The effectiveness of crisis management depends on the degree of (binding) cooperation between home and host authorities (see Evanoff and Kaufman, 2005, for an overview). The underlying challenge in crisis management is the readiness of home and host authorities to share the burden if needed (that is the social benefits exceed the costs of intervention). We define crisis management here in a broad sense: lender of last support, deposit insurance and recapitalization. Goodhart and Schoenmaker (2006) explore different *ex ante* burden sharing mechanisms. The first is a general scheme financed from the seigniorage of participating central banks. This is a form of generic burden sharing, where a country's share in the burden could be related to that country's share in total GDP. The second relates the burden to the location of the assets of the bank to be recapitalized. In this specific burden sharing scheme, only the countries involved pay proportional to the share of the bank's assets in that country. As a country's benefits and that country's contribution to the costs are better aligned in the specific scheme, the latter is better able to overcome the coordination failure. Goodhart and Schoenmaker (2006) note that if burden sharing, to allow for cross-border recapitalization, is to be made possible, it would have to be on the basis of agreed *ex ante* rules.

The European banking scene would provide a fertile ground for such an *ex ante* burden sharing mechanism. Cross-border banking in Europe is mainly confined to European banks. As noted, the foreign banks in Eastern Europe are mostly West European banks. Moreover, the intensity of cross-border banking is strong: the regional component of the large European banks within Europe is 25%. So, solidarity is easier to organize within Europe. Finally, legally binding arrangements can be established within the EU, though it should be noted that the political appetite for new European arrangements is not very large at the moment. In the previous section, we discussed the search for an appropriate division of labor between home and host supervisors in the EU. Goodhart and Schoenmaker (2006) note that the fiscal competence to deal with banking crises and the banking supervisory function are inter-related. It is not possible to move on one of these without the other.

Outside Europe, the picture is different. At the global level, we find a very limited number of truly international banks spanning the different regions. So, there is no particular need for extensive arrangements at the global level. In addition, we have seen that regional business is limited (less than 10%) both in the Americas and Asia-Pacific. However, we have identified a few banking systems that are dominated by foreign players. The large foreign banks in Mexico are from the Americas (Citi (U.S.) and Scotia (Canada)) and Europe (HSBC (UK) and BBVA and Santander (Spain)). Effective cooperation for crisis management (and financial supervision) with foreign authorities from 4 countries and 2 regions is very challenging. Moreover, there is no possibility for Mexico to create a single jurisdiction with these countries.

[10] Scotiabank from Canada, Crédit Agricole from France and Banca Intesa from Italy abandoned their activities in Argentina.

Building on European and Trans-Tasman experience, the governor of the Banco de México (Ortiz, 2006) proposes to conduct crisis simulation exercises with American and European authorities. So far, the main mechanism has been to require a separate, locally incorporated subsidiary in case the Mexican activities of foreign banks are significant. Although the subsidiary structure has drawbacks (parent banks may influence local management; parent banks may shift assets around; subsidiaries are dependent on the parent for risk models, etc), host authorities have a handle on a subsidiary as they are responsible for licensing, supervising and, if needed, closing a subsidiary.

Another example of banking system dominated by foreign banks is New Zealand. Cooperation should be easier than in the Mexican case as all major foreign banks are from Australia. But Kane (2006) provides a lively exposition of the incompatible differences in the regulatory culture of the two countries based on differences in preferences by politicians and tax-payers. The most relevant difference is that New Zealand relies on self-reporting by bank directors to uncover problems at a bank, while Australia relies on inspections by the government appointed supervisor. Moreover, Australian law gives a preference to Australian depositors over foreign depositors. New Zealand therefore requires the establishment of a locally incorporated subsidiary when a foreign bank conducts systemically important (retail) banking activities in New Zealand. A recent, promising, development in Trans-Tasman cooperation is proposed new legislation that requires the Australian home authorities to consider the implications of its actions for financial system stability in New Zealand and consult the Reserve Bank of New Zealand where practicable on this matter.[11]

When effective cooperation for financial supervision and crisis management is difficult to achieve, the main alternative for host authorities appears to be imposing a subsidiary structure. Such structures foster the prospect of uncoordinated and improvised solutions during a crisis, likely to result in an undersupply of recapitalizations (see Freixas, 2003). The risk of national solutions (including ring fencing of assets) could even worsen the problems. Moreover, a subsidiary structure will partly reverse the process of international financial integration. Internationally operating banks face additional burdens (e.g. host country requirements and reporting) and may not be allowed to fully realise synergies from integrated operations (e.g. risk management, asset management, back-office operations).

6. Conclusions

This paper uses a new index to measure cross-border banking. The so-called Transnationality Index is based on different indicators and provides a stable measure of cross-border activity. The degree of internalization of the sixty largest banks in the three main economic regions, the Americas, Asia-Pacific and Europe, is measured. A distinction is made between regional expansion (e.g. within the Americas) and global expansion of banks.

[11] Financial Sector Legislation Amendment (Trans-Tasman Banking Supervision) Bill 2006, The Senate, The Parliament of the Commonwealth of Australia.

Cross-border banking appears to be uneven across the regions. Business within the region is large for European banks (about 25% of their total business). For American and Asian-Pacific banks the regional component is not very important (less than 10%). Similarly, global expansion of European banks (also close to 25%) appears to be larger than their American and Asian-Pacific counterparts (less than 15%). The result is that American and Asian-Pacific banks can be characterized as domestic banks with more than 50% of their business in the home country. The only exception is Citigroup which has truly international aspirations. We conclude that the consolidation process in banking has been primarily a domestic event in the Americas and Asia-Pacific.

The picture is different in Europe. Our findings indicate that 11 banks currently operate on a European scale and a further 3 banks on a global scale. It is remarkable that the number of banks operating on a European scale increased from 7 in 2000 to 11 in 2005, while most European countries witnessed a recession during this period. This increase is statistically significant. We conclude that the long expected cross-border merger wave in Europe has started. European banking is finally arriving.

What are the implications for public policy? Public policy issues focus on home-host cooperation for financial supervision and crisis management. The limited number of global banks (1 from the US and 3 from Europe) suggest that there is no need for global solutions. Informal supervisory colleges consisting of the main supervisors are sufficient for this handful of banks, though this small group of global banks embrace the world's largest banks like Citigroup and HSBC. The strong cross-border penetration within Europe suggests that a formal supervisory structure may be beneficial to enhance legally binding cooperation between home and host authorities. We explore the idea of a European System of Financial Supervisors, where national supervisors work in tandem with a central agency. The fairly harmonized regulatory framework in the EU is a good starting point for such a System. Cooperation in good times (supervision) also requires cooperation in bad times (crisis management). The latter raises the thorny issue of burden sharing between countries when a systemically large cross-border bank fails.

The picture on cross-border banking and banking supervisory policy mirrors the more general picture on trade and exchange rate policy. The US have relatively low export (7% of GDP (OECD)), so US policy-makers do not see much need for coordinating exchange rates. Put more strongly, exchange rates are considered as a useful mechanism for adjustment. European countries have relatively high export (28% of GDP for EU-25; 9% of GDP when intra EU-25 trade is excluded (OECD and Eurostat)), so European policy-makers do see the need for having a coordinated exchange rate policy. As known, the latter resulted in a single currency for Europe.

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Appendix: Data on Cross-Border Banking

General data-description

The figures on the cross-border Index reported in tables 1 to 3 of the main text are based on the geographical segmentation of assets, revenue and employees. The data on these indicators have been gathered from the annual reports over the years 2000 to 2005 of the largest banking groups in the Americas (15), the Asia-Pacific (15) and Europe (30). The 60 largest banking groups are selected on their capital strength as of year-end 2004 (The Banker, July 2005). When mergers or acquisitions occur, consolidated data after the merger or acquisition of the acquiring-bank is presented. In the JP Morgan Chase and Bank One merger, for example, data for JP Morgan Chase is used for the years 2000-2003, and Bank One data is included in the consolidated data for JP Morgan Chase in 2004 and 2005.

Assets

The indicator 'assets' is composed of loans to banks, loans to customers and securities. If the group is involved in insurance activities, insurance investments and other insurance assets are included. Home country assets (denoted by *h*), assets in the rest of the region (denoted by *r*) and assets in the rest of the world (denoted by *w*) are measured as a percentage of total assets of the banking group.

Revenue

The indicator 'revenue' is based either on gross or net income, depending on which standard is used in the geographical analysis of the annual report. Gross income includes interest income and similar revenues, dividend income, commission income, income on financial transactions and other operating income. If the group is also involved in insurance activities, general insurance premium income and income from long-term assurance business is included. Net income is obtained by deducting all relevant costs. Home country revenue (denoted by *h*), revenue in the rest of the region (denoted by *r*) and revenue in the rest of the world (denoted by *w*) are measured as a percentage of total revenue of the banking group.

Employees

The segmentation of 'employees' is based on the distribution of the (average) number of employees. Employees in the home country (denoted by *h*), in the rest of region (denoted by *r*) and in the rest of the world (denoted by *w*) are measured as a percentage of total employees of the banking group.

Calculation

The figures reported in tables 1 to 3 are the arithmetic average of the distribution of assets, revenue and employees (the data for each indicator are available from the authors upon request). We use all the information we have available for individual banks. For some banks we have information on all three indicators, for others we have information on only two indicators and for a couple we only have information on one of the indicators. If data on one (or two) indicator(s) is available, only this indicator is used. An indicator can only be utilized if the available data can be divided into a 'home' country component and a 'rest of the region' component. However, in several cases (in particular that of employees) the available data can only be divided into a 'home' and a 'non-domestic' component. This problem has been solved by dividing the 'non-domestic' component into two equal parts: 'rest of the region' and 'rest of world'. These data have only been used when no proper data on other indicators of the banking organization is available.

Sample assumptions

We have used assumptions to generate the geographic distribution of assets, revenues and employees from the annual reports in a systemic way.

Americas

Canadian annual reports mark year ended at October 31st, US annual reports mark December 31st as year ended. The year 2000 in the dataset represents Canadian annual reports from 2000 and US annual reports from 2000.

Geographical segmentation: home = country of origin; regional = rest of America, including Canada, U.S., Mexico, Caribbean, Latin America; world = remainder.

4. Wells Fargo & Co
No geographical segmentation data available. Data on location of stores in Canada and the Caribbean used to assign portion of total to 'regional' in dataset (for assets and revenues). Data on foreign stores only available for 2000 and 2004, years in between are extrapolated on the basis of 2000-04 figures.

5. Wachovia
Due to lack of data, we have used the only consistent figure on foreign activity: foreign loans. Amount divided equally over 'regional' and 'world'.

6. Metlife
Only aggregate worldwide data are available. Amount divided equally between regional and world.

7. Washington Mutual
No significant foreign activity according to annual report. Presented as fully domestic in dataset.

8. U.S. Bancorp
Foreign operations are not significant for the company. The bank is thus assumed to have a strong domestic focus and presented as such in the dataset: 95% at home, 2.5% regional and 2.5% world.

10. MBNA Corp
No distinction between Canada and 'other foreign countries' in the annual report 2000. Proportions from 2001 used to calculate share of Canada for 2000.

11. Royal Bank of Canada
Only 'international' as geographical segment available next to Canada and U.S.. 'International' put under 'world' in dataset.

12. Bank of Montreal
Only 'international' as geographical segment available next to Canada and U.S.. 'International' includes only Caribbean as regional factor. 'International' put under 'world' in dataset.

13. Toronto-Dominion Bank
Only 'international' as geographical segment available next to Canada and U.S.. Data indicates no significant presence in Latin America. 'International' put under 'world' in dataset.

14. Countrywide Financial Corporation
Only 'global' as business segment available, amount equally divided between regional and world.

15. Canadian Imperial Bank of Commerce
Only 'world' given as geographical segment next to Canada, U.S. and West Indies. This implies that Latin America is incorporated under 'world' in dataset.

Asia-Pacific
Japanese annual reports mark March 31st as year ended. Chinese annual reports mark December 31st as year ended. Australian banks mark September 31st as year ended. Commonwealth Banking Group marks June 31st as year ended. The year 2000 in the dataset represents Japanese annual reports from 2001, Chinese annual reports from 2000, Australian annual reports from 2000 and also Commonwealth Banking Group annual reports from 2000.
Geographical segmentation: home = country of origin; regional = rest of Asia & Pacific; world = remainder.

3. Bank of China
Only distinction between 'domestic' and 'overseas'. Hong Kong is incorporated in the 'domestic' numbers. Data for year 2001 is not available. 'Overseas' amount divided equally between regional and world.

5. China Construction Bank
Only fragmented data available on loans overseas (which includes Hong Kong). Assumed to have a strong domestic focus and presented as such in the dataset: 95% at home, 2.5% regional and 2.5% world.

7. Industrial and Commercial Bank of China
Annual reports only mention that overseas activities amount to less than 10% of total activities. Assumed to have a strong domestic focus and presented as such in the dataset: 95% at home, 2.5% regional and 2.5% world.

9. Agricultural Bank of China
Only fragmented data available on foreign activity. Insignificant amount, assumed to be fully domestic, and presented as such in the dataset.

10. National Australia Bank
Because no data on revenues is available, operating profits have been used. Significant items that affected the data in 2001 include net write-downs of mortgage servicing rights and goodwill to HomeSide Lending, Inc, totaling $3,617 million, which result in a loss for the 'world' region. This creates an anomaly in the dataset, and the revenue-indicator for 2001 for this bank will be excluded from the dataset.

11. Resona Holdings
Annual reports only mention that the Japan segment of income, employees and assets constitute more than 90% of all other segments combined. 'Home' given 90%, 'regional' given 5% and 'world' given 5% for all years 2000-2005 in the dataset.

13. Commonwealth Banking Group
Only distinction between Australia, New Zealand and Overseas. Because of apparent global activity, overseas amount divided equally between regional and world.

14. Sumitomo Trust & Banking
Only off-shore accounts for domestic loans. Assumed to assumed to be fully domestic, and presented as such in the dataset, 100% at "home".

15. Kookmin Bank
Fragmented data on foreign activity: data over 2000 and 2001 not available.

Europe
All European annual reports mark year ended at December 31st.
Geographical segmentation: home = country of origin; regional = rest of Europe; world = remainder.

13. Groupe Caisse d'Epargne
Data for the years 2000 and 2001 are not available.

15. Credit Mutuél
No significant international activity. Considered to be fully domestic, and presented as such in the dataset.

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Table 1. Index for the Cross-Border Business of Top 15 American Banking Groups

Banking Groups	2000 *h*	2000 *r*	2000 *w*	2001 *h*	2001 *r*	2001 *w*	2002 *h*	2002 *r*	2002 *w*	2003 *h*	2003 *r*	2003 *w*	2004 *h*	2004 *r*	2004 *w*	2005 *h*	2005 *r*	2005 *w*	Capital strength ($bn)
1 Citigroup	61	7	32	59	8	33	57	9	34	59	14	28	54	15	31	53	16	31	74,4
2 JP Morgan Chase & Co	65	3	32	68	2	30	74	2	24	72	3	25	77	2	22	79	2	20	68,6
3 Bank of America Corp	92	1	7	92	1	7	93	1	6	94	0	6	94	2	4	93	2	5	64,3
4 Wells Fargo & Co	97	3	0	97	3	0	97	3	0	97	3	0	97	3	0	97	3	0	29,1
5 Wachovia Corporation	98	1	1	98	1	1	98	1	1	98	1	1	98	1	1	98	1	1	28,6
6 Metlife	97	1	1	97	1	1	95	2	2	95	3	3	95	3	3	94	3	3	21,0
7 Washington Mutual	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	16,4
8 U.S. Bancorp	95	3	3	95	3	3	95	3	3	95	3	3	95	3	3	95	3	3	14,7
9 Scotiabank	61	27	13	55	32	13	56	32	12	60	29	12	62	26	11	63	25	12	14,1
10 MBNA Corp	87	2	11	85	2	13	80	2	17	78	3	19	75	3	22	73	3	25	14,0
11 Royal Bank of Canada	76	10	14	68	17	15	62	24	14	59	24	17	60	23	17	62	22	16	13,3
12 Bank of Montreal	63	30	8	61	32	8	63	32	5	65	30	5	67	27	6	69	26	6	11,0
13 Toronto-Dominion Bank	62	24	14	65	19	17	66	18	17	68	18	15	70	16	14	67	21	12	10,4
14 Countrywide Financial Corporation	100	0	0	99	0	0	97	2	2	97	1	1	96	2	2	97	1	1	10,3
15 Canadian Imperial Bank of Commerce	59	33	8	61	30	9	68	24	8	74	21	5	74	20	6	75	20	5	10,0
Weighted average (to total assets)	77	8	15	76	8	16	77	8	15	78	9	13	78	9	13	78	9	13	
Number of domestic banking groups		15			15			15			15			15			15		
Number of American banking groups		0			0			0			0			0			0		
Number of global banking groups		0			0			0			0			0			0		

Sources: Annual reports over 2000-2005 and own calculations for the Index (see the Annex for underlying data); *The Banker* (July, 2005) for capital strength.

Notes: 'Home' is defined as a bank's business in its home country (denoted by h); 'Rest of the region' is defined as a bank's business in other countries in the region (denoted by r); 'Rest of world' is defined as a bank's business in countries outside the region (denoted by w). The three categories add up to 100%. Banks are ranked according to 'capital strength' (Tier 1 capital as of year-end 2004) as reported by *the Banker.* The abbreviation *'n.a.'* means *'not available'.* '-' means this has been acquired by another bank.

Table 2. Index for the Cross-Border Business of Top 15 Asian-Pacific Banking Groups

	2000			2001			2002			2003			2004			2005			Capital strength
Banking Groups	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	($bn)
1 Mitsubishi Tokyo Financial Group	59	7	34	62	7	32	64	5	30	68	4	28	69	5	26	69	5	26	39,9
2 Mizuho Financial Group	75	5	20	75	5	20	79	3	17	85	2	13	83	3	14	85	3	12	38,9
3 Bank of China	93	3	3	92	4	4	94	3	3	94	3	3	94	3	3	95	3	2	34,9
4 Sumitomo Mitsui Financial Group	82	6	12	80	5	14	87	3	10	90	3	7	90	3	7	90	3	7	30,4
5 China Construction Bank	95	3	3	95	3	3	95	3	3	95	3	3	95	3	3	95	3	3	23,5
6 UFJ Holdings	76	7	17	82	6	12	87	4	10	90	3	8	89	2	9	87	4	9	21,6
7 Industrial and Commercial Bank of China	95	3	3	95	3	3	95	3	3	95	3	3	95	3	3	95	3	3	20,2
8 Norinchukin Bank	76	8	16	79	7	14	80	8	12	82	7	11	83	6	12	84	7	9	18,5
9 Agricultural Bank of China	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	16,7
10 National Australia Bank	51	10	38	53	12	35	56	12	32	58	12	30	61	12	26	65	12	24	15,0
11 Resona Holdings	95	3	3	95	3	3	95	3	3	95	3	3	95	3	3	95	3	3	11,1
12 ANZ Banking Group	65	23	12	71	20	9	73	20	7	75	19	6	66	30	4	66	31	4	9,7
13 Commonwealth Banking Group	85	12	3	84	12	4	81	14	4	82	14	3	81	15	4	81	16	3	8,7
14 Sumitomo Trust & Banking	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	8,0
15 Kookmin Bank	100	0	0	99	0	1	100	0	0	100	0	0	99	0	1	99	0	1	7,8
Weighted average (to total assets)	80	6	15	81	5	14	84	4	12	87	3	10	86	4	10	86	5	9	
Number of domestic banking groups		15			15			15			15			15			15		
Number of Asian-Pacific banking groups		0			0			0			0			0			0		
Number of global banking groups		0			0			0			0			0			0		

Sources: Annual reports over 2000-2005 and own calculations for the Index (see the Annex for underlying data); *The Banker* (July, 2005) for capital strength.

Notes: 'Home' is defined as a bank's business in its home country (denoted by h); 'Rest of the region' is defined as a bank's business in other countries in the region (denoted by r); 'Rest of world' is defined as a bank's business in countries outside the region (denoted by w). The three categories add up to 100%. Banks are ranked according to 'capital strength' (Tier 1 capital as of year-end 2004) as reported by the Banker. The abbreviation 'n.a.' means 'not available'. '-' means this has been acquired by another bank.

Table 3. Index for the Cross-Border Business of Top 30 European Banking Groups

		2000			2001			2002			2003			2004			2005			Capital strength
	Banking Groups	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	($bn)
1	HSBC	33	6	61	36	7	57	31	5	64	24	6	70	26	9	65	25	9	65	67,3
2	Crédit Agricole Groupe	61	19	20	59	20	21	60	18	22	61	19	20	74	11	15	83	9	8	63,4
3	Royal Bank of Scotland	76	7	17	74	6	20	74	6	20	77	5	18	72	7	21	77	7	16	43,8
4	HBOS	94	3	3	93	4	3	92	4	4	91	5	4	87	6	6	90	5	5	36,6
5	BNP Paribas	48	21	31	46	24	30	45	25	30	47	25	28	49	24	27	55	21	24	35,7
6	Santander Central Hispano	28	10	62	34	10	56	38	14	48	45	16	39	41	25	34	40	26	34	33,3
7	Barclays	76	7	17	78	6	16	79	7	14	80	8	12	78	7	15	50	16	34	32,2
8	Rabobank	80	7	13	76	8	16	76	9	15	75	9	16	72	17	11	73	14	13	30,8
9	ING Group	36	19	45	27	23	50	26	23	51	29	24	47	24	30	46	23	29	48	28,8
10	UBS	35	30	35	32	19	49	32	21	47	31	21	48	28	25	47	25	28	47	27,4
11	ABN AMRO	34	33	33	33	34	33	31	35	34	28	36	36	37	25	38	34	30	36	27,0
12	Deutsche Bank	41	29	30	39	30	31	35	33	31	31	37	32	30	36	34	28	36	36	25,5
13	Groupe Caisse d'Epargne	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	70	26	4	50	38	12	44	42	13	40	47	13	25,1
14	Société Générale	68	11	21	64	13	23	60	18	22	56	21	23	56	23	21	57	21	21	25,0
15	Crédit Mutuel	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100	0	0	24,8
16	Lloyds TSB	84	8	8	87	6	7	88	6	6	94	3	3	94	3	3	95	3	3	22,6
17	Credit Suisse Group	29	32	39	28	32	40	30	34	36	32	37	31	30	27	43	32	34	34	21,7
18	HypoVereinsbank	62	34	3	48	43	8	49	47	4	51	46	3	48	50	2	-	-	-	21,4
19	Banca Intesa	66	19	15	67	14	19	73	13	14	78	10	12	77	15	8	76	15	9	21,2
20	Banco Bilbao Vizcaya Argentaria	31	2	67	35	5	60	39	3	58	44	3	53	45	3	52	40	3	57	20,0
21	Fortis Group	45	27	28	41	43	16	42	28	30	44	28	28	51	44	5	48	47	6	19,5
22	Groupe Banques Populaires	98	1	1	97	1	2	93	4	3	92	4	4	92	5	4	92	4	3	18,3
23	UniCredit	74	8	18	74	8	18	70	8	22	71	13	16	71	20	9	24	72	4	16,8
24	Dexia	52	48	0	56	40	4	53	40	7	54	37	9	55	36	8	51	37	12	15,0

Table 3. Continued

Banking Groups	2000			2001			2002			2003			2004			2005			Capital strength ($bn)
	h	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	*h*	*r*	*w*	
25 SanPaolo IMI	82	12	6	79	17	5	85	12	3	89	8	3	92	6	1	92	7	2	14,8
26 Nordea Group	22	76	2	18	79	3	23	74	3	28	71	1	28	72	0	25	75	0	14,4
27 Commerzbank	77	13	10	72	21	7	74	16	10	75	15	10	70	24	6	71	25	5	14,3
28 KBC Group	45	36	19	45	36	19	40	38	22	40	40	20	46	32	22	50	29	21	13,4
29 Bayerische Landesbank	63	18	19	65	19	16	71	17	12	76	15	9	77	16	7	78	14	7	12,8
30 Caja de Ahorros y Pen. de Barcalona	98	2	0	98	2	0	98	2	0	98	2	0	98	2	0	98	2	0	11,5
Weighted average (to total assets)	55	20	25	53	21	26	54	21	25	55	21	24	54	22	24	53	23	25	
Number of domestic banking groups		18			17			17			17			17			15		
Number of European banking groups		7			7			8			8			10			11		
Number of global banking groups		5			6			5			5			3			3		

Sources: Annual reports over 2000-2005 and own calculations for the Index (see the Annex for underlying data); *The Banker* (July, 2005) for capital strength.

Notes: 'Home' is defined as a bank's business in its home country (denoted by h); 'Rest of the region' is defined as a bank's business in other countries in the region (denoted by r); 'Rest of world' is defined as a bank's business in countries outside the region (denoted by w). The three categories add up to 100%. Banks are ranked according to 'capital strength' (Tier 1 capital as of year-end 2004) as reported by the Banker. The abbreviation 'n.a.' means 'not available'. '-' means this has been acquired by another bank.

Table 4. Categories of international banks

Continent	International banks	2000	2001	2002	2003	2004	2005
Americas	American banks	-	-	-	-	-	-
	Global banks	-	-	-	-	-	-
Asia-Pacific	Asian-Pacific banks	-	-	-	-	-	-
	Global banks	-	-	-	-	-	-
Europe	European banks	10 UBS 11 ABN AMRO 12 Deutsche Bank 17 Credit Suisse 21 Fortis 26 Nordea 28 KBC	11 ABN AMRO 12 Deutsche Bank 17 Credit Suisse 18 HypoVereinsbank 21 Fortis 26 Nordea 28 KBC	5 BNP Paribas 11 ABN AMRO 12 Deutsche Bank 17 Credit Suisse 18 HypoVereinsbank 21 Fortis 26 Nordea 28 KBC	5 BNP Paribas 11 ABN AMRO 12 Deutsche Bank 13 Groupe Caisse 17 Credit Suisse 21 Fortis 26 Nordea 28 KBC	6 Santander 9 ING 10 UBS 11 ABN AMRO 12 Deutsche Bank 13 Groupe Caisse 17 Credit Suisse 18 HypoVereinsbank 26 Nordea 28 KBC	6 Santander 9 ING 10 UBS 11 ABN AMRO 12 Deutsche Bank 13 Groupe Caisse 17 Credit Suisse 21 Fortis 23 Unicredit 26 Nordea 28 KBC
	Global banks	1 HSBC 5 BNP Paribas 6 Santander 9 ING 20 BBVA	1 HSBC 5 BNP Paribas 6 Santander 9 ING 10 UBS 20 BBVA	1 HSBC 6 Santander 9 ING 10 UBS 20 BBVA	1 HSBC 6 Santander 9 ING 10 UBS 20 BBVA	1 HSBC 5 BNP Paribas 20 BBVA	1 HSBC 7 Barclays 20 BBVA

Sources: Tables 1 to 3.

Notes: International banks (less than 50% of business at home) are divided into regional banks (25% of more of business in the region) and global banks (less than 25% of business in the region).

Table 5. Sensitivity analysis

Continent	International banks	2000	2001	2002	2003	2004	2005
Americas	Becoming American banks	-	-	-	-	-	-
	Becoming global banks	-	-	-	-	1 Citigroup	1 Citigroup
	After relaxation						
	Number of American banks	0	0	0	0	0	0
	Number of global banks	0	0	0	0	1	1
Asia-Pacific	Becoming Asian banks	-	-	-	-	-	-
	Becoming global banks	10 National Australia	10 National Australia	-	-	-	-
	After relaxation						
	Number of American banks	0	0	0	0	0	0
	Number of global banks	1	1	0	0	0	0
Europe	Becoming European banks	24 Dexia	-	24 Dexia	18 HypoVereinsbank 24 Dexia	21 Fortis 24 Dexia	24 Dexia
	Becoming global banks	-	-	-	-	-	5 BNP Paribas
	After relaxation						
	Number of European banks	8	7	9	10	12	12
	Number of global banks	5	6	5	5	3	4

Sources: Tables 1 to 3.

Notes: The criterion for international banks (less than 50% of business at home) is relaxed by 10% (less than 55% of business at home). The criterion for regional banks (25% of more of business in the region) and global banks (less than 25% of business in the region) remains the same.