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Cross-border banking and foreign branch regulation in Europe

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Abstract

Purpose – This paper aims to examine the relevance of cross-border activity in the European banking sector, evaluating the role of differences in regulation to explain the level of interest in entering foreign markets.

Design/methodology/approach – The sample considers all banks in the European Union (EU 28) existing at year-end 2017, and information about the ultimate owners' nationality to classify local and foreign banks is collected. The analysis provides a mapping of regulatory restrictions for foreign banks and evaluates how they impact the role of foreign players in the deposit and lending markets.

Findings – Results show that the lower are the capital adequacy requirements, the higher are the amounts of loans and deposits offered by non-European Economic Area banks and, additionally, the higher the probability of having a foreign bank operating in the country.

Originality/value – This paper provides new evidence on regulatory arbitrage opportunities in the EU and outlines differences among EU countries not previously studied.

Keywords Loans, Foreign banks, Deposits, Regulatory arbitrage, Capital requirements

Paper type Research paper

1. Introduction

Any entity can engage in the business of a credit institution through a stand-alone company or a subsidiary of a company by undergoing an authorization procedure, whereas banks that want to expand abroad with a physical presence to develop new relationships (Rajan, 1998) can establish themselves through foreign branches (Goldberg and Saunders, 1981). A bank branch is a not an independent entity sharing liabilities with the home bank because the relevant processes use internal inputs even though the branch is located in a different country (Calzolari, 2001). Bank branching affects financial intermediation in local markets (Hannan and Prager, 2004) and it fosters growth, although results are influenced by existing conditions (Huang, 2008). Going

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abroad through establishing foreign branches can be motivated by the need to satisfy specific requirements of customers involved in international trade (Grosse and Goldberg, 1991) or by a strategic decision to diversify abroad (Howcroft *et al.*, 2011). Such an organizational structure is associated with the opportunity for regulatory arbitrage because home authorities are generally responsible for supervision of foreign branches of domestic banking groups (Fiechter *et al.*, 2011). Moreover, regulation affects the decision to offer cross-border banking services through a branch, together with corporate taxation in the host country, degree of penetration of the host market and level of economic and political risk in the host country (Cerutti *et al.*, 2007). In light of the heterogeneity of bank types internationally (Niepmann, 2015), empirical evidence demonstrates that it is not only macro-economic factors that affect the choice to establish a foreign branch, but also previous experience in the local financial system and, more generally, the supply of international banking services (Ball and Tschoegl, 1982) and the size and productivity of the bank (Buch *et al.*, 2011). Foreign banks operating in developed economies normally do not perform better with respect to local financial intermediaries (Chang *et al.*, 1998); thus, exploitation of economies of scale or scope remains weak. As a consequence, the main benefit from foreign direct investment by banks is normally ascribed to tax or regulatory differences among countries, which could create an incentive to transfer assets, profits and losses to foreign affiliates to minimize taxes and regulatory costs (Berger *et al.*, 2000).

Since the Global Financial Crisis (GFC), there has been some general tightening of regulation of branches of foreign banks. In particular, concurrently with local banks, foreign branches are subject to financial and governance requirements, but application of capital ratios is affected by equivalence between the regimes in the host and home countries (OECD, 2017). In Europe, convergence of the regulatory treatment of foreign branches stems from the passport concept, giving European Economic Area (EEA) banks the right to provide financial services throughout the European Union (EU) based on a harmonized set of prudential requirements, whereas the equivalence concept continues to apply to third-country bank branches at national-level markets (Margerit *et al.*, 2017).

Given empirical studies on the effect of changes in regulation on bank branching in the US market (Kroszner and Strahan, 2014) that demonstrate their importance for financial integration (Gilje *et al.*, 2016), the empirical evidence for the European market is more limited, notwithstanding the strong integration experienced over the last decade by the banking sector (Gual, 2004). Moreover, notwithstanding analysis of home-country regulation changes on the activity of foreign branches among foreign affiliates (Buch and Goldberg, 2017), little is known on the impact of stand-alone application of regulatory instruments to branches in the host country to avoid prudential leakage (Aiyar *et al.*, 2014). Such analysis is particularly important in light of the expectation of transformation of subsidiaries into branches (Fáykiss *et al.*, 2013). Inside the European market, the focus of analysis on the banking sector is motivated by exclusion of the implementation of the EU equivalence regime for other financial intermediaries, leading to continued non-harmonization of the regulatory framework in accessing national European markets by third-country banks (Deslandes *et al.*, 2018). In light of the importance of capital requirements for foreign investment in banks (Hasan *et al.*, 2015) and based on the use of bank-level data that overcomes limitations stemming from consolidated data, the present analysis considers ownership of banks operating in the EU 28 area and focuses on non-EEA-owned banks to test whether national-level applications of capital entry requirements and capital adequacy requirements are significant. Results show that the lower is the capital adequacy requirements, the higher is the amount of loans and deposits offered by banks with a non-EEA ultimate owner, and the higher the probability of having a foreign bank operating in the country, in the form of either a subsidiary or a branch.

This paper contributes to increasing the understanding of cross-border debt exposure (Cerutti *et al.*, 2017) by focusing on the 28 countries of the European Union (EU 28) and ranking bank-level credit exposure by country. In light of the flight-home effect in financial crises affecting credit markets (Giannetti and Laeven, 2012), this paper provides evidence supporting establishment of intermediate EU parent undertakings introduced with EU capital requirements for credit institution and investment firm revised rules (Official Journal of the European Union, 2019), and for financial activities carried out through branches exclusively (European Central Bank, 2017) and through secondary branches in other European countries under non-harmonized rules (European Banking Authority, 2018). From this perspective, this paper contributes to the debate on setting capital requirements under double limited liability among banks and subsidiaries versus shared limited liability between banks and branches (Luciano and Wihlborg, 2018). Finally, in light of the Brexit process, which may cause loss of passporting rights for all UK banks, this paper offers insights on the potential determinants of relocation of foreign bank branches in the UK and, vice versa, on UK bank relocation of branches in Europe (Henry *et al.*, 2018).

2. Literature review

Foreign bank entry restrictions reduce competition, increase average costs for all banks in a country and elevate the risk of a banking crisis due to lower efficiency. Empirical analysis finds no differences in the advantages and risks related to adoption of any type of foreign bank restriction under either weak or strong supervision rules (Barth *et al.*, 2002).

The impact of regulation on foreign bank activity is strongly debated in the literature because it is difficult to measure objectively due to the complexity of describing differences in regulation in terms of business implications for regulated entities and because of data availability on cross-border regulatory differences (Houston *et al.*, 2012). The literature suggests several proxies for analyzing this issue that consider both qualitative and quantitative approaches.

One approach to evaluating existing regulation applied to foreign branches and subsidiaries is to assign a grade on a qualitative scale concerning the constraints applied to foreign banks operating in a country. This approach has led to mixed evidence on the basis of the type of qualitative ranking used, and thus it is impossible to clearly state that regulation matters in the selection of a foreign country for a multinational bank (Goldberg and Johnson, 1990).

More sophisticated approaches apply statistical procedures (i.e. principal component analysis) to extract the main differences in regulation applied to domestic and foreign banks and use these items to create a composite index on bank protectionism. This index considers several differences in regulation applied to banks on the basis of their nationality. However, the empirical evidence shows only a limited contribution in explaining multinational banking market selection (Sagari, 1986).

In light of the divergence among regulatory conditions affecting entry of foreign banks (Claessens *et al.*, 2001), the main focus of analysis of regulatory challenges for international banks includes minimum capital requirements, because they may differ for local and foreign banks and they can affect the choice of operating mode, i.e. through a foreign branch or subsidiary (Calzolari and Loranth, 2011). Empirical evidence on developed economies shows that this type of regulatory arbitrage may matter if the multinational bank is able to raise capital at a similar cost of capital with respect to the foreign country, generating a net profit margin from lending activity in the new market (McCauley and Seth, 1992). As a consequence, adoption of capital adequacy requirements under the Basel Accords modifies the attractiveness of investing in some countries for foreign lenders because the advantages related to exploiting new business opportunities have to be at least equal or higher than the costs related to capital requirements (OECD, 2017). Therefore, international banks prefer to

invest in countries in which there are expectations of lower capital requirements related to lending activity (Hasan *et al.*, 2015). Such preference is reinforced with no difference in culture, currency, business practices and law enforcement, especially when cross-border activity develops near to the country's border (Fidrmuc and Hainz, 2013).

The operating mode selected by an international bank to establish itself abroad is considered critical for the stability of the banking system, because branch risk-taking increases in bad times and produces spillover effects (Harr and Rønde, 2004) due to cross-border balance sheet linkage (Cetorelli and Goldberg, 2012). Following the GFC, regulators reacted to the new market conditions and some supervisory authorities adopted stricter regulation to avoid the risk of a new crisis in the banking sector. Because bank branching deregulation is affected by interest group factors (Kroszner and Strahan, 1999), stricter regulatory approaches imply higher entry barriers for foreign banks, so the local banking market will focus more on local instead of international players (Temesvary, 2014). Although banks have an incentive to prefer countries in which regulatory requirements are lower (Focarelli and Pozzolo, 2000), choices regarding international activity can be executed only by healthy firms that are able to sustain the costs and risks related to exploiting a new market (Temesvary, 2015).

Despite the vast literature on differences in prudential regulation between home and host countries and the spillover effects on banking across countries, the literature does not provide evidence on the impact of specific regulatory instruments that affect only foreign entities on the entry choices of international banks by operating mode.

3. Empirical analysis

3.1 Sample

Our sample considers all banks in the EU 28 existing at the end of 2017 and having a full balance sheet available on the Orbis–Bureau Van Dijk database. Following Claessens *et al.* (2001), we collect information on the nationality of the ultimate owners to distinguish between local and foreign banks in the EU 28 and we assess the importance of foreign banks' presence by their number (Table 1) and by assets and liabilities (Table 2).

In accordance with Cerutti *et al.* (2017), who stress the importance of foreign banking in emerging and newly developing countries, markets that are more characterized by foreign banks are the Eastern European countries Slovakia, Lithuania, Hungary, Croatia, Czech Republic and Bulgaria. Additionally, Luxembourg historically has had the highest presence of foreign banks in Europe (Claessens and Van Horen, 2012). Nonetheless, comparison of the role of EU and non-EU foreign ownership shows that the markets that have more non-EU foreign banks compared to EU foreign banks are Germany, Denmark, France, Great Britain, Ireland, Latvia, Malta, The Netherlands and Portugal. As a consequence, country legal origin affecting investor protections (La Porta *et al.*, 1998) does not appear to affect the attraction of non-EU international bank investors (Table 1).

The main way to increase the levels of cross-border banking activity has been by enabling or facilitating establishment of financial institutions within EU borders compared with other legal structures (De la Mata Munoz, 2010). This type of foreign banking has shown resilience in the aftermath of the GFC (Emter *et al.*, 2018) because of limited restructuring thanks to the fluid internal capital market (Fillat *et al.*, 2018). To assess the importance of foreign banking to the EU banking sector, following Cerutti *et al.* (2017), we measure cross-border banking through individual accounting data. Analysis of the type of activity developed by banks on the basis of the domicile of the ultimate owner shows that foreign banks behave differently with respect to local financial intermediaries; there are also

Country	No. banks	% banks owned locally	% banks owned by foreign EU banks	% banks owned by foreign not EU banks
AT	540	95.19	3.52	1.30
BE	463	92.87	4.54	2.59
BG	20	40.00	40.00	20.00
CY	34	73.53	14.71	11.76
CZ	25	36.00	56.00	8.00
DE	1368	97.51	1.02	1.46
DK	69	97.10	1.45	1.45
EE	22	86.36	13.64	0.00
ES	177	85.88	7.91	6.21
FI	53	98.11	1.89	0.00
FR	294	89.80	2.38	7.82
GB	1223	81.19	5.72	13.08
GR	8	87.50	12.50	0.00
HR	31	54.84	35.48	9.68
HU	29	55.17	34.48	10.34
IE	433	78.98	10.16	10.85
IT	399	96.49	3.26	0.25
LT	5	40.00	40.00	20.00
LU	76	26.32	46.05	27.63
LV	38	65.79	10.53	23.68
MT	18	50.00	22.22	27.78
NL	112	83.04	7.14	9.82
PL	141	87.94	10.64	1.42
PT	112	89.29	5.36	5.36
RO	30	50.00	40.00	10.00
SE	93	96.77	2.15	1.08
SI	18	66.67	16.67	16.67
SK	10	0.00	100.00	0.00

Notes: AT = Austria, BE = Belgium, BG = Bulgaria, CY = Cyprus, CZ = Czech Republic, DE = Germany, DK = Denmark, EE = Estonia, ES = Spain, FI = Finland, FR = France, GB = Great Britain, GR = Greece, HR = Croatia, HU = Hungary, IE = Ireland, IT = Italy, LT = Lithuania, LU = Luxembourg, LV = Latvia, MT = Malta, NL = Netherlands, PL = Poland, PT = Portugal, RO = Romania, SE = Sweden, SI = Slovenia, SK = Slovakia
Source: Orbis data processed by the authors

Table 1.
Sample

differences in the borrowing and lending policies adopted by EU and non-EU banks (Table 2).

Domestically owned firms are more active in the funding and lending markets because all their business must be developed inside their home-country borders. This indicates that integration of the banking sector remains incomplete (Niepmann, 2015) and that cross-border lending is not excessive in host countries, leading to an overall beneficial effect (Beck *et al.*, 2016). In accordance with the strong retrenchment of cross-border banking by EU banks after the GFC (Hale and Obstfeld, 2016), banks owned by non-EU ultimate owners, on average, collect more money as deposits and offer more loans to customers. Thus, they contribute most to development of the local financial system but, at the same time, to its potential instability in transmitting external shocks (Peek and Rosengren, 2000), as cross-border banking groups manage liquidity globally to react to local monetary policies (Cetorelli and Goldberg, 2012). Nonetheless, data show that on average, deposits collected by

	2011	2012	2013	2014	2015	2016	2017
Overall							
Deposits							
Overall (bn €)	27.83	28.79	37.31	33.61	31.29	30.06	34.84
Banks' average (m €)	4.76	4.58	6.13	5.91	5.71	9.33	11.51
Loans							
Overall (bn €)	22.22	22.61	29.44	26.72	25.22	24.17	27.92
Banks' average (m €)	3.80	3.60	4.84	4.70	4.60	7.50	9.22
Net Deposits							
Overall (bn €)	5.61	6.18	7.88	6.89	6.07	5.88	6.93
Banks' average (m €)	0.96	0.98	1.29	1.21	1.11	1.83	2.29
Local							
Deposits							
Overall (bn €)	23.90	24.81	32.32	29.15	27.16	26.08	30.20
Banks' average (m €)	4.66	4.52	6.10	5.91	5.71	9.29	11.40
Loans							
Overall (bn €)	19.83	20.15	26.20	23.75	22.45	21.53	24.85
Banks' average (m €)	3.87	3.67	4.95	4.82	4.72	7.67	9.38
Net Deposits							
Overall (bn €)	4.07	4.66	6.12	5.40	4.71	4.54	5.35
Banks' average (m €)	0.79	0.85	1.15	1.10	0.99	1.62	2.02
Other EU							
Deposits							
Overall (bn €)	1.41	1.59	2.60	2.62	3.36	2.97	2.74
Banks' average (m €)	0.38	0.41	0.68	0.73	0.98	1.59	1.54
Loans							
Overall (bn €)	0.45	0.53	2.17	2.20	2.77	2.52	2.34
Banks' average (m €)	0.12	0.14	0.57	0.62	0.81	1.35	1.31
Net Deposits							
Overall (bn €)	0.96	1.06	0.44	0.42	0.59	0.46	0.40
Banks' average (m €)	0.26	0.27	0.11	0.12	0.17	0.24	0.22
Outside EU							
Deposits							
Overall (bn €)	1.33	1.36	1.63	1.49	1.39	1.41	1.59
Banks' average (m €)	3.68	3.38	4.14	3.95	3.97	7.58	9.82
Loans							
Overall (bn €)	0.22	0.26	0.46	0.46	0.43	0.45	0.53
Banks' average (m €)	0.61	0.63	1.17	1.22	1.23	2.42	3.27
Net Deposits							
Overall (bn €)	1.10	1.11	1.17	1.03	0.96	0.96	1.06
Banks' average (m €)	3.07	2.75	2.97	2.73	2.74	5.16	6.55

Source: Orbis data processed by the authors

Table 2. Banks' funding and lending classified on the basis of the domicile of the ultimate owner in EU 28

banks owned by non-EU owners far exceed loans extended in foreign countries; therefore, the refinancing of such exposure appears not to be dependent on non-EU parent entities.

In light of its importance among the drivers of the GFC (Cerutti *et al.*, 2017), we perform an analysis of cross-border banking linkages that allows us to assess borrower-country reliance on foreign bank credit and, for each EU country, we disclose the most important country banking systems (Table 3).

Country by country analysis shows that banks with EU ultimate owners lead foreign banking activity in most EU countries and that in some European countries, banks with

	Foreign Countries by n° banks			Foreign Countries by loans			Foreign Countries by deposit		
	Top 1	Top 2	Top 3	Top 1	Top 2	Top 3	Top 1	Top 2	Top 3
AT	IT	ES	RU	IT	ES	RU	IT	ES	RU
BE	FR	NL	DE	FR	NL	JP	FR	NL	JP
BG	LI	GR	HU	IT	HU	GR	IT	HU	GR
CY	GB	LB	RU	IE	LU	GR	IE	LU	GR
CZ	AT	FR	BE	BE	AT	FR	AT	BE	FR
DE	AT	FR	US	IT	NL	ES	IT	NL	ES
DK	SE	NO	CN	FI	n.a.	n.a.	FI	n.a.	n.a.
EE	SE	DK	NO	SE	n.a.	n.a.	SE	n.a.	n.a.
ES	FR	US	GB	VE	DE	FR	VE	DE	PT
FI	SE	DK	CH	DK	n.a.	n.a.	DK	n.a.	n.a.
FR	US	CH	LB	BE	GB	US	BE	GB	JP
GB	ES	US	DK	ES	US	NL	US	ES	JP
GR	CH	CY	US	CY	n.a.	n.a.	CY	n.a.	n.a.
HR	AT	IT	HU	IT	AT	HU	IT	AT	HU
HU	AT	DE	FR	IT	AT	BE	IT	AT	BE
IE	US	GB	NL	GB	US	BE	US	GB	BE
IT	FR	US	DE	FR	BE	DE	FR	DE	BE
LT	SE	LV	LT	SE	NO	DK	SE	NO	RU
LU	DE	FR	CH	FR	DE	CN	DE	FR	CN
LV	NO	RU	SE	SE	NO	RU	SE	NO	RU
MT	AT	CY	GB	GB	QA	TR	GB	AT	QA
NL	SE	US	FR	JP	IE	RU	RU	TR	JP
PL	FR	DE	GB	DE	ES	NL	DE	ES	NL
PT	FR	ES	BM	BM	ES	FR	BM	ES	FR
RO	AT	CY	FR	AT	FR	IT	AT	FR	IT
SE	FR	GB	DK	FI	ES	CW	FI	CW	ES
SI	AT	IT	CH	IT	KY	FR	IT	KY	FR
SK	AT	CZ	IT	AT	IT	BE	AT	IT	BE

Table 3.
Number of banks, funding and lending policy by country of origin of the ultimate owner (average exposure 2011–2017)

Notes: AT = Austria, BE = Belgium, BG = Bulgaria, BM = Bermuda, CH = Switzerland, CY = Cyprus, CN = China, CW = Curaçao, CZ = Czech Republic, DE = Germany, DK = Denmark, EE = Estonia, ES = Spain, FI = Finland, FR = France, GB = Great Britain, GR = Greece, HR = Croatia, HU = Hungary, IE = Ireland, IT = Italy, KY= Cayman Islands, LB= Libano, LI= Lichtestein, LT = Lithuania, LU = Luxembourg, LV = Latvia, MT = Malta, NL = The Netherlands, NO = Norway, PL = Poland, PT = Portugal, QA = Qatar, RO = Romania, RU = Russia, SE = Sweden, SI = Slovenia, SK = Slovakia, TR = Turkey, US = USA VE = Venezuela
Source: Orbis data processed by the authors

non-EU ultimate owners do not rank among top performers. At an individual level, some countries are top performers in multiple host markets; therefore, empirical evidence supports the need for coordination among national supervision authorities given the potential establishment of many foreign-owned branches in the EU (European Banking Authority, 2018). Regarding the country of domicile of the ultimate owner, our analysis confirms that, in the EU, the behavior of foreign banks differs as there are countries that allow more (less) loans with respect to the deposits they collect abroad (Terrell, 1993).

In light of the persistence of the importance of distance on foreign holdings of financial institutions despite technological innovation (Buch, 2005), foreign banks are prevalently based in other European countries (e.g. France, Austria, Denmark, Great Britain, Switzerland), but there is also a presence from banks from large global economies (USA and China). Loans are offered prevalently by foreign banks from European countries (e.g. France, Italy, Belgium, Spain, Austria) and the role of non-EU banking groups (e.g. USA,

Japan, Bermuda, China, Antilles) is limited to select European countries. Collection of deposits from foreign banks is prevalently from European countries (e.g. Italy, France, Austria, Belgium, Spain), but many non-EU banks are actively collecting deposits from European countries (e.g. Japan, Russia, USA, Bermuda, China). Additionally, taking a cross-country perspective, some countries dominate the rankings, specifically France, Italy and Austria, because they represent the domiciles of top performers along all dimensions, while some non-EU countries (Russia and USA) rank among the top performers only with respect to the number of entities. Finally, regarding the Brexit process (Henry *et al.*, 2018), we emphasize that a lot of banks from the UK are already established in many EU countries, even though the importance of the UK is driven more by exposure of foreign banks to the loan market than to the deposit market.

Country	Capital requirements for EEA branch	Capital entry requirements for not EEA branch	Not EEA countries with exemption on capital adequacy requirements
AT	No	No	All
BE	No	No	All
BG	No	No	All
CY	No	Yes	All
CZ	No	Yes	All
DE	No	Yes	Australia, Japan, USA
DK	No	Yes	None
EE	No	No	All
ES	No	No	All
FI	No	No	None
FR	No	Yes	All
GB	No	Yes	All
GR	No	Yes	None
HR	No	Yes	All
HU	No	Yes	All
IE	No	No	All
IT	No	Yes	Canada, Japan, Switzerland, USA
LT	No	Yes	All
LU	No	Yes	All
LV	No	No	All
MT	No	No	All
NL	No	Yes	None
PL	No	Yes	All
PT	No	Yes	All
RO	No	No	All
SE	No	Yes	All
SI	No	Yes	All
SK	No	No	All

Notes: AT = Austria, BE = Belgium, BG = Bulgaria, CY = Cyprus, CZ = Czech Republic, DE = Germany, DK = Denmark, EE = Estonia, ES = Spain, FI = Finland, FR = France, GB = Great Britain, GR = Greece, HR = Croatia, HU = Hungary, IE = Ireland, IT = Italy, LT = Lithuania, LU = Luxembourg, LV = Latvia, MT = Malta, NL = Netherlands, PL = Poland, PT = Portugal, RO = Romania, SE = Sweden, SI = Slovenia, SK = Slovakia Source: Central Bank data processed by the authors

Table 4. Capital Requirements for branches of foreign banks in the european countries

3.2 Methodology

In light of the importance of the selected organizational structure on non-harmonized application of prudential supervision instruments among EU countries (European Central Bank, 2017) to drive credit diversification abroad (Bremus and Fratzscher, 2015), analysis of the role of regulation on foreign entry choice may be studied via differences in capital requirements for branches of foreign banks on the basis of their country of origin (Table 4). The EU framework adopts, for all countries in the EEA, the home-country supervision approach. There are no additional capital requirements when a bank from the EEA decides to open a branch in another member country of the EEA. Many EU countries (17 of 28) apply an entry requirement for non-EEA foreign banks, but only four countries (Denmark, Finland, Greece and The Netherlands) apply full capital adequacy requirements to all foreign branches and two countries (Germany and Italy) exempt additional regulatory capital for a few foreign countries (Australia, Canada, Japan, Switzerland and USA).

Analysis of the impact of regulation on application of capital adequacy requirements to foreign branches in the banking market of a particular country considers the market share of foreign banks (Degryse *et al.*, 2012):

$$\%FD_{it} = \frac{\sum_{j=1}^{n} Deposits_{jt}^{Not\ \ EEA}}{\sum_{j=1}^{n} Deposits_{jt}^{Not\ \ EEA} + \sum_{k=1}^{m} Deposits_{kt}^{EEA}} \tag{1}$$

$$\%FL_{it} = \frac{\sum_{j=1}^{n} Loans_{jt}^{Not\ \ EEA}}{\sum_{j=1}^{n} Loans_{jt}^{Not\ \ EEA} + \sum_{k=1}^{m} Loans_{kt}^{EEA}} \tag{2}$$

$$HHI_{it} = \sum_{j=1}^{n+m} \left(\frac{TA_{jt}}{\sum_{j=1}^{n+m} TA_{jt}} \right)^2 \tag{3}$$

where, for each EU 28 country in the sample, the measures considered are focused on deposits from non-EEA banks ($\%FD_{it}$), loans from non-EEA banks ($\%FL_{it}$) and market concentration (HHI_{it}).

Percentage of foreign deposits is computed as the ratio of the sum of deposits of the non-EEA branches in a country to the sum of overall deposits in that country (Formula 1). Percentage of foreign loans is computed as the ratio of the sum of loans of the non-EEA branches in a country to the sum of overall loans in that country (Formula 2). Market concentration is measured as the sum of the square of the ratio between total assets of the bank and the overall assets of all banks domiciled in the same country (Formula 3).

Analysis of non-EEA deposits and loans using the Herfindahl index is performed separately for both banks that apply capital requirements and those that do not and for countries that offer capital requirement exemptions for non-EEA branches and those that do not. Comparison of the value of the measure for the two subsamples allows testing whether the capital entry requirement and/or capital adequacy requirement, or the exemption, affects

foreign bank decisions to enter into the loan or deposit markets and, more generally, the effect on the level of market competition.

A more detailed analysis of the role of regulatory restrictions on the foreign bank entry decision is performed by studying only banking groups that have at least one foreign branch in an EEA country; from a welfare point of view, the branch operating mode dominates because it economizes on private funds (Calzolari and Loranth, 2011). First, our analysis evaluates the impact of the characteristics of the international bank along with the host country features (Niepmann, 2018) on the choice to enter (e.g. Focarelli and Pozzolo, 2001) (4a). Second, in light of the possibility of regulatory arbitrage through branches in the European context, with an effect on lending that depends on the type of prudential instrument selected (Emter *et al.*, 2018), we extend the model by considering specifically the impact of capital entry requirements and capital adequacy requirements (4 b), via the following formulas:

$$\Pr\left(Y_{i,t}^{j}=1\right)=f\left(X_{it},Z_{jt}\right) \tag{4}$$

$$\Pr\left(Y_{i,t}^{j}=1\right)=f\left(X_{it},Z_{jt},CE_{t}^{j},CR_{t}^{j}\right) \tag{5}$$

where the dependent variable $\left(Y_{i,t}^{j}\right)$ equals 1 when banking group i has a foreign subsidiary or branch at year t in country j and they are managed and operated similarly (Curi *et al.*, 2015), X_{it} is a set of bank-specific variables, Z_{jt} is a set of country-specific variables, CE_{i}^{j} is a dummy variable equal to 1 when country j applies a capital entry requirement, and $CR_{i}^{j}$is a dummy variable equal to 1 if country j applies EU capital adequacy requirements to the firm on the basis of its country of domicile, and 0 in the case of general exemption.

Banks' specific independent variables are natural logarithm of total assets (TA_{it}), return of assets (ROA_{it}) and non-interest income (NII_{it}) for bank i at time t. The country-specific independent variables are exports, bank credit and stock market capitalization divided by GDP $\left(\text{respectively, } \frac{EXP_{t}^{J}}{GDP_{t}^{J}}, \frac{CRED_{t}^{J}}{GDP_{t}^{J}}, \frac{Mkt_{t}^{J}}{GDP_{t}^{J}}\right)$, inflation π_{t}^{J}, country average ROA, NII and total assets owned by banks $\left(\text{respectively, } \overline{TA_{t}^{j}}, \overline{ROA_{t}^{j}}, \overline{NII_{t}^{j}}\right)$. The analysis is performed by considering a probit panel model with fixed effects and, as a robustness test, by using a generalized linear model (GLM).

3.3 Results

Analysis of credit market features of countries that apply non-EEA restrictions shows several interesting differences for loan- and deposit-market exposure and overall market competition (Table 5).

Analysis of capital entry requirements does not show clear negative effects on foreign market interventions and, on average, from 2013 to 2017, countries that apply such constraint have non-EEA banks which are more active in both the deposit and loan markets. Countries that apply entry capital requirements have, on average, less concentrated lending markets, showing that this type of constraint has a limited effect on the economic convenience of a foreign bank entry strategy.

Countries adopting an exemption policy for non-EEA banks are able to attract more foreign banks, and the average size of exposure to the deposit and loan markets is

	Capital entry requirements to non-EEA branch		Exemption on capital adequacy requirements for non-EEA branches	
	Applied (%)	Not Applied (%)	Applied (%)	Not Applied (%)
$\%FD_{it}$				
2011	4.87	9.42	6.62	0.26
2012	4.97	9.99	6.90	0.29
2013	6.14	4.13	5.29	0.46
2014	6.96	3.95	5.72	0.40
2015	6.99	4.10	5.80	0.38
2016	7.06	4.38	5.94	0.46
2017	7.59	5.21	6.59	0.46
$\%FL_{it}$				
2011	4.24	9.37	6.23	0.17
2012	4.27	9.68	6.33	0.46
2013	4.84	4.10	4.47	0.54
2014	5.89	3.74	4.97	0.51
2015	5.68	3.67	4.82	0.50
2016	5.49	4.28	4.93	0.59
2017	6.06	5.34	5.69	0.60
HH_{it}				
2011	26.45	37.28	26.13	32.00
2012	25.45	37.38	25.66	31.39
2013	19.41	20.17	16.25	24.20
2014	18.25	19.21	15.24	23.73
2015	18.60	19.04	15.49	22.95
2016	18.05	18.50	15.03	22.42
2017	17.59	17.45	14.38	22.05

Table 5.
Capital Requirements for foreign banks and credit market features in the european countries

Notes: $\%FD_{it}$= percentage of not EEA banks' deposits on the overall market computed on the basis of the Formula (1); $\%FL_{it}$= percentage of not EEA banks' loans on the overall market computed on the basis of the Formula (2); HHI_{it} = Herfindahl-Hirsman concentration index on the basis of the total assets of banks classified by Country computed on the basis of the Formula (3)
Source: Orbis data processed by the authors

approximately 10 times higher than countries that apply full capital requirements to non-European banks. Market concentration of countries that adopt an exemption policy for non-EEA banks is significantly lower than other markets, showing that, in contrast to other markets (Strahan, 2003), the choice to open to foreign competitors does not cause a decrease in business for local banks, due to M&A policies adopted by multinational banks to enter a given market (Focarelli and Pozzolo, 2001). Moreover, this evidence stresses the importance of the introduction of EU parent undertakings when financial services are offered only through branches by non-EU banks (European Central Bank, 2017).

Analysis of banking groups with foreign branches in an EU country allows us to identify several interesting features of markets selected by international banking groups (Table 6).

Although the host countries considered belong to the World Trade Organization (Curi *et al.*, 2015), markets preferred by foreign banks for international investment are less involved in international trade. Additionally, foreign banks select developed banking systems (Jaffe and Levonian, 2001) characterized by larger credit market size, high inflation and above-average size of competitors in the market. These results confirm that going abroad contributes to overbanking in some EU markets (Hartmann *et al.*, 2017). In

	(4a)	(5a)	(4b)	(5b)
$\frac{EXP_t^J}{GDP_t^J}$	–0.52** (0.22)	–0.65** (0.14)	–0.32** (0.12)	–0.25** (0.04)
$\frac{CRED_t^J}{GDP_t^J}$	0.67** (0.28)	0.60** (0.21)	0.87** (0.28)	0.51** (0.11)
$\frac{Mkt_t^J}{GDP_t^J}$	0.03 (0.02)	0.17 (0.12)	0.06 (0.05)	0.19 (0.16)
$\frac{\pi_t^J}{ROA_t^J}$	0.36** (0.12)	0.29** (0.11)	0.46** (0.16)	0.39** (0.15)
	–0.01 (0.13)	–0.01 (0.43)	–0.02 (0.10)	–0.02 (0.23)
$\frac{NII_t^J}{TA_t^J}$	0.01 (0.02)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
	0.15** (0.06)	0.15** (0.05)	0.14** (0.05)	0.16** (0.02)
ROA_{it}	–0.08* (0.04)	–0.15** (0.06)	–0.09* (0.05)	–0.21** (0.07)
NII_{it}	0.04** (0.01)	0.06** (0.03)	0.05** (0.01)	0.07** (0.02)
TA_{it}	0.22** (0.07)	0.22** (0.06)	0.21** (0.07)	0.24** (0.07)
CE_t^J	–	0.80** (0.34)	–	0.61** (0.23)
CR_t^J	–	–0.65** (0.27)	–	–0.74** (0.27)
Constant	–0.04** (0.01)	–0.05** (0.02)	–0.14** (0.03)	–0.12** (0.03)
No banking groups	104	104	104	104
No obs	2912	2912	2912	2912
Fitness statistics	χ^2=8.91 (0.00)	χ^2 =13.32 (0.00)	AIC =221 BIC = 232	AIC = 142 BIC = 149

Notes: The table presents results of a probit regression model with fixed effects (a) and a GLM regression model (b) that is considering as dependent variable a dummy that assume value 1 if the banking group has a foreign branch in the country j at time *t* and zero otherwise. The table report coefficient estimates and their standard deviation in brackets and statistical fitness statistics (Chi-Square, Aikake Information coefficient, and Bayesian information criterion). The independent variables are: CE_t^J is a dummy equal to one when the country j applies a capital entry requirement; CR_t^J is a dummy variable assuming value one if the country j applies EU capital adequacy requirements to the firm on the basis of its country of domicile and 0 in the case of general exemption; TA_{it}, ROA_{it}, and NII_{it} are respectively the natural logarithm of the total assets, the return on assets and the non-interest income for the bank i at time t; the macro-economic variables EXP_t^J/GDP_t^J, $CRED_t^J/GDP_t^J$, Mkt_t^J/GDP_t^J, and π_t^J are respectively the exports, the bank credit and the stock market capitalization divided by the GDP, the inflation π_t^J for the country j at time t; the banking market variable are $\overline{TA_t^J}$, $\overline{ROA_t^J}$, $\overline{NII_t^J}$ that represent respectively the country average ROA, NII and Total assets owned by banks in the country j at time t. *Statistical significant at 10% level, **Statistical significant at 5% level

Source: Orbis data processed by the authors

Table 6. Foreign bank entry choices on the basis of country features, bank performance and regulation

accordance with Buch *et al.* (2011), international banks interested in going abroad are big enough to support fixed costs and, moreover, their efficiency is determined by their focus on off-balance-sheet operations yielding high net interest income (Generale and Gobbi, 1999). This is consistent with reductions in domestic banks in the host market upon arrival of foreign competitors (Claessens *et al.*, 2001); moreover, contrary to Focarelli and Pozzolo (2001), who analyze a different time period, banks going abroad want to increase their return on assets; this can be pursued by attempting to enter more efficient banking systems (Niepmann, 2018), while country ROA is not significant.

Empirical results confirm the importance of bank capital in fostering geographic diversification of banks (Ennis, 2001). Normally, capital entry requirements have a positive impact on the probability of having international players in a country's banking sector because, independently of business strategy, risk aversion matters for the decision to go abroad, determining a preference for sound banking systems (Buch *et al.*, 2014) and, on the other hand, only banks that respect minimum requirements are able to grow in foreign markets, especially during periods of crisis (Temesvary and Banai, 2017). Finally, capital entry requirements can favor accession of foreign banks when domestic banks find it difficult to raise capital in financial markets to comply with minimum capital requirements (Degryse *et al.*, 2012).

Regarding the reasons behind entry of foreign banks in developed and developing countries (Claessens *et al.*, 2001), the choice to impose additional capital adequacy requirements for non-EEA banks reduces the probability of having a foreign branch in the country because operating costs increase and it is not possible to exploit the regulatory arbitrage stemming from differing prudential policy stringency in the host country with respect to the home country (Emter *et al.*, 2018), negatively impacting the financial synergies deriving from a branch structure (Luciano and Wihlborg, 2018).

4. Conclusion

Foreign banks invest in many EU countries, creating new entities with intermediation policies that differ from local financial intermediaries, but the presence of foreign banks differs country by country both for banks with EU and those with non-EU ultimate owners. One motivation that can justify a bank's choice to invest abroad is attributable to differences in prudential regulation for banks based in non-EEA countries. Notable differences in regulation apply to capital requirements for foreign branches; to support foreign bank participation in local credit markets, several European countries have no additional capital requirements for banks based abroad. Analysis of the current EU market shows that reduced capital requirements increases foreign bank interest in offering loans and collecting deposits in a country and supports competition inside that market. Our results are robust with respect to analysis of bank features and country characteristics.

Our results show that for foreign banks, there are regulatory arbitrage opportunities in selecting the European countries in which they will operate, because there are differences in capital requirements for non-EEA banks. Countries that apply lower constraints on foreign players will increase market competition (for the lending and/or deposit market), but local players must then compete with foreign players that do not suffer the same regulatory costs. This scenario may create an improper competitive advantage for non-EEA banks and can increase the role of foreign banks in local European financial markets. Co-existence of more and less regulated entities in the same banking market will reduce the effectiveness of any national supervision rules and may increase risk for all players (lenders and borrowers) in the industry, especially in extreme crisis scenarios.

Further development of this analysis should consider the opportunity that foreign banks have to access EU markets. It should also distinguish between EEA and non-EEA countries that may be more (less) confident with respect to EU regulation and thus be less (more) frequently sanctioned by supervisory authorities. The literature has already shown for other developed markets (e.g. USA) that country of origin and previous experience in operating in a regulated credit market have an effect on the probability of being sanctioned by the local supervisory authority (Wu and Salomon, 2017). Empirical evidence related to the EU and the differing behavior of EU and other foreign banks may be interesting for better evaluation if

banks coming from a similar supervisory framework have easier access to an EU national market or if it is still necessary to invest in strengthening the effectiveness of a uniform regulatory framework for all the countries in a banking union framework.

References

Aiyar, S., Calomiris, C. and Wieladek, T. (2014), "Does macroprudential regulation leak? Evidence from a UK policy experiment", *Journal of Money, Credit and Banking*, Vol. 46 No. S1, pp. 181-214.

Ball, C.A. and Tschoegl, A.E. (1982), "The decision to establish a foreign bank branch or subsidiary: an application of binary classification system", *The Journal of Financial and Quantitative Analysis*, Vol. 17 No. 3, pp. 411-424.

Barth, J.R., Caprio, G. and Levine, R. (2002), "Bank regulation and supervision: what works best?", working paper n. 9323, NBER, New York, NY.

Beck, R., Dedola, L., Giovannini, A. and Popov, A. (2016), "Financial integration and risk sharing in a monetary union", *Financial Integration in Europe*, Frankfurt am Main.

Berger, A.M., De Young, R., Genay, H. and Udell, G.F. (2000), "Globalization of financial institutions: evidence from cross-border banking performance", *Brookings-Wharton Papers on Financial Services*, Vol. 2000 No. 1, pp. 23-120.

Bremus, F. and Fratzscher, M. (2015), "Drivers of structural change in cross-border banking since the global financial crisis", *Journal of International Money and Finance*, Vol. 52 No. 1, pp. 32-59.

Buch, C. (2005), "Distance and international banking", *Review of International Economics*, Vol. 13 No. 4, pp. 788-804.

Buch, C. and Goldberg, L. (2017), "Cross-Border prudential policy spillovers: how much? How important? Evidence from the international banking research network", *International Journal of Central Banking*, Vol. 13 No. S1, pp. 506-558.

Buch, C., Koch, C. and Koetter, M. (2011), "Size, productivity, and international banking", *Journal of International Economics*, Vol. 85 No. 2, pp. 329-334.

Buch, C., Koch, C. and Koetter, M. (2014), "Should I stay or should I go? Bank productivity and internationalization decisions", *Journal of Banking and Finance*, Vol. 42 No. 1, pp. 266-282.

Calzolari, G. (2001), "Theory and practice of regulation facing multinational enterprises", *Journal of Regulatory Economics*, Vol. 20 No. 2, pp. 191-211.

Calzolari, G. and Loranth, G. (2011), "Regulation of multinational banks: a theoretical enquiry", *Journal of Financial Intermediation*, Vol. 20 No. 2, pp. 178-198.

Cerutti, E., Dell'Ariccia, G. and Martinez Peria, M. (2007), "How banks go abroad: branches or subsidiaries", *Journal of Banking and Finance*, Vol. 31 No. 6, pp. 1669-1692.

Cerutti, E., Correa, R., Fiorentino, F. and Segalla, E. (2017), "Changes in prudential policy instruments – a new cross-country database", *International Journal of Central Banking*, Vol. 13 No. S1, pp. 447-503.

Cetorelli, N. and Goldberg, L. (2012), "Banking globalization and monetary transmission", *The Journal of Finance*, Vol. 67 No. 5, pp. 1811-1843.

Chang, C.E., Hasan, I. and Hunter, W.C. (1998), "Efficiency of multinational banks: an empirical investigation", *Applied Financial Economics*, Vol. 8 No. 6, pp. 689-696.

Claessens, S. and Van Horen, N. (2012), "Being a foreigner among domestic banks: asset or liability?", *Journal of Banking and Finance*, Vol. 36 No. 5, pp. 1276-1290.

Claessens, S., Demirgürç-Kunt, A. and Huizinga, H. (2001), "How does foreign entry affect domestic banking market?", *Journal of Banking and Finance*, Vol. 25 No. 5, pp. 891-911.

Curi, C., Lozano-Vivas, A. and Zelenyuk, V. (2015), "Foreign bank diversification and efficiency prior to and during the financial crisis: does one business model fit all?", *Journal of Banking and Finance*, Vol. 61 No. S1, pp. S22-S35.

De la Mata Munoz, A. (2010), "The future of cross-border banking after the crisis: facing the challenges through regulation and supervision", *European Business Organization Law Review*, Vol. 11 No. 4, pp. 575-607.

Degryse, H., Havrylchyk, O., Jurzyk, E. and Kozak, S. (2012), "Foreign bank entry, credit allocation and lending rates in emerging markets: empirical evidence from Poland", *Journal of Banking and Finance*, Vol. 36 No. 11, pp. 2949-2959.

Deslandes, J., Dias, C. and Mugnus, M. (2018), *Third Country Equivalence in EU Banking and Financial Regulation*, Economic Governance Support Unit, Brussel.

Emter, L., Schmitz, M. and Tirpak, M. (2018), "Cross-border banking in the EU since the crisis: what is driving the great retrenchment?", Working paper n. 2130, European Central Bank, Brussels.

Ennis, H. (2001), "On the size distribution of banks", *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 1, pp. 1-25.

European Banking Authority (2018), "Guidelines on supervision of significant branches", available at: https://eba.europa.eu (accessed 1 August 2020).

European Central Bank (2017), "Opinion of the European central bank of 8 november 2017 on amendments to the union framework for capital requirements of credit institutions and investment firms", available at: https://eur-lex.europa.eu/ (accessed 1 August 2020).

Fáykiss, P., Grosz, G. and Szigel, G. (2013), "Transforming subsidiaries into branches: should we be worrying about it?", Occasional Papers, No. 106, Magyar Nemzeti Bank, Budapest.

Fidrmuc, J. and Hainz, C. (2013), "The effect of banking regulation on cross border lending", *Journal of Banking and Finance*, Vol. 37 No. 5, pp. 1310-1322.

Fiechter, J., Oekter-Robe, I., Ilyina, A., Hsu, M., Santos, A. and Surti, J. (2011), "Subsidiaries or branches: does one size fit all?", Staff Discussion Note, n. 14, IMF, New York, NY.

Fillat, J., Garetto, S. and Smith, A. (2018), "To branch or not to branch? A quantitative evaluation of the consequences of global bank's organizations", paper presented at the Society for Economic Dynamics 2019 meeting, available at: https://economicdynamics.org/meetpapers/2018/paper_1079.pdf (accessed 1 August 2020).

Focarelli, D. and Pozzolo, A.F. (2000), "The determinants of cross border bank shareholdings: an analysis with bank-level data from OECD countries", Temi di discussione n. 381, Banca d'Italia.

Focarelli, D. and Pozzolo, A.F. (2001), "The pattern of cross border bank mergers and shareholding in OECD countries", *Journal of Banking and Finance*, Vol. 25 No. 12, pp. 2305-2337.

Generale, A. and Gobbi, G. (1999), "Corporate governance and bank profitability: empirical evidence from the Italian experience. The monetary and regulatory implications of changes in the banking industry", *BIS Conference Papers*, Vol. 7, pp. 34-54.

Giannetti, M. and Laeven, L. (2012), "The flight home effect: evidence from the syndicated loan market during financial crises", *Journal of Financial Economics*, Vol. 104 No. 1, pp. 23-43.

Gilje, E., Loutskina, E. and Strahan, P. (2016), "Exporting liquidity: branch banking and financial integration", *The Journal of Finance*, Vol. 71 No. 3, pp. 1159-1184.

Goldberg, L.G. and Johnson, D. (1990), "The determinants of US banking activity abroad", *Journal of International Money and Finance*, Vol. 9 No. 2, pp. 123-137.

Goldberg, L.G. and Saunders, A. (1981), "The growth and organizational form of foreign banks in the U. S", *Journal of Money, Credit and Banking*, Vol. 13 No. 3, pp. 365-374.

Grosse, R. and Goldberg, L.G. (1991), "Foreign bank activity in the United States: an analysis by country of origin", *Journal of Banking and Finance*, Vol. 15 No. 6, pp. 1093-1112.

Gual, J. (2004), "The integration of EU markets", in Gual, J. (Ed.), *Building a Dynamic Europe. The Key Policy Debates*, Cambridge University Press, Cambridge.

Hale, G. and Obstfeld, M. (2016), "The euro and the geography of international debt flows", *Journal of the European Economic Association*, Vol. 14 No. 1, pp. 115-144.

Hannan, T. and Prager, R. (2004), "The competitive implications of multimarket bank branching", *Journal of Banking and Finance*, Vol. 28 No. 8, pp. 1889-1914.

Harr, T. and Rønde, T. (2004), *Branch or Subsidiary? Capital Regulation of Multinational Banks*, MIMEO.

Hartmann, P., Huljak, I., Leonello, A., Marqués, D., Martin, R., Moccero, D., Palligkinis, S., Popov, A. and Schepens, G. (2017), "Cross-border bank consolidation in the euro area", *Financial Integration in Europe*, Frankfurt am Main, Germany.

Hasan, I., Kim, S.J. and Wu, E. (2015), "The effect of ratings-contingent regulation on international bank lending behavior: evidence from the Basel 2 accord", *Journal of Banking and Finance*, Vol. 61 No. S1, pp. S53-S68.

Henry, C., Herbst, J. and Snowdon, P. (2018), "Brexit survey. The impact on the foreign banking sector", available at: www.nortonrosefulbright.com/ (accessed 1 August 2020).

Houston, J., Lin, C. and Ma, Y. (2012), "Regulatory arbitrage and international bank flows", *The Journal of Finance*, Vol. 67 No. 5, pp. 1845-1895.

Howcroft, B., Ul-Haq, R. and Carr, C. (2011), "An examination of cross-border strategies in banking", in Molyneux, P. (Ed.) *Bank Strategy, Governance and Ratings. Palgrave Macmillan Studies in Banking and Financial Institutions*, Palgrave Macmillan, London.

Huang, R. (2008), "Evaluating the real effect of bank branching deregulation: comparing contiguous counties across US state borders", *Journal of Banking and Finance*, Vol. 87 No. 3, pp. 679-705.

Jaffe, D. and Levonian, M. (2001), "The structure of banking systems in developed and transition economics", *European Financial Management*, Vol. 7 No. 2, pp. 161-181.

Kroszner, R. and Strahan, P. (1999), "What drives deregulation? Economics and politics of the relaxation of bank branching restriction", *The Quarterly Journal of Economics*, Vol. 114 No. 4, pp. 1437-1467.

Kroszner, R. and Strahan, P. (2014), "Regulation and deregulation of the US Banking industry: causes, consequences, and implications for the future", in Rose, N. (Ed.), *Economic Regulation and Its Reform: What Have We Learned?*, University of Chicago Press, Chicago.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (1998), "Law and finance", *Journal of Political Economy*, Vol. 106 No. 6, pp. 1113-1155.

Luciano, E. and Wihlborg, C. (2018), "Financial synergies and systemic risk in the organization of bank affiliates", *Journal of Banking and Finance*, Vol. 88 No. 1, pp. 208-224.

Mccauley, R.N. and Seth, R. (1992), "Foreign bank credit to US corporations: the implications of offshore loans", *FRBNY Quarterly Review*, Vol. 17 No. 1, pp. 52-65.

Margerit, A., Magnus, M. and Mesnard, B. (2017), "Third – country equivalence under EU banking legislation", available at: www.europarl.europa.eu (accessed 1 August 2020).

Niepmann, F. (2015), "Banking across borders", *Journal of International Economics*, Vol. 96 No. 2, pp. 244 -265.

Niepmann, F. (2018), "Banking across borders with heterogeneous banks", Discussion Paper n. DP12607, CEPR, London.

OECD (2017), "The Conditions for Establishment of Subsidiaries and Branches in the Provision of Banking Services by Non-Resident Institutions", Report, OECD, Paris.

Official Journal of the European Union (2019), "Directive (EU) 2019/878 of the European parliament and of the council", available at: https://eur-lex.europa.eu/ (accessed 1 August 2020).

Peek, J. and Rosengren, E. (2000), "Collateral damage: effects of the Japanese bank crisis on real activity in the United States", *American Economic Review*, Vol. 90 No. 1, pp. 30-45.

Rajan, R. (1998), "The past and future of commercial banking viewed through an incomplete contract lens", *Journal of Money, Credit and Banking*, Vol. 30 No. 3, pp. 524-550.

Sagari, S. (1986), *The Financial Services Industry: An International Perspective*, MIMEO.

Strahan, P.E. (2003), "The real effect of US banking deregulation", *Review*, Vol. 85 No. 4, pp. 111-128.

Temesvary, J. (2014), "The determinants of US banking international activities", *Journal of Banking and Finance*, Vol. 44 No. 1, pp. 233-247.

Temesvary, J. (2015), "Foreign activities of US banks since 1997: the roles of regulations and market conditions in crises and normal times", *Journal of International Money and Finance*, Vol. 56 No. 1, pp. 202-222.

Temesvary, J. and Banai, A. (2017), "The drivers of foreign bank lending in Central and Eastern Europe: the roles of parent, subsidiary and host market traits", *Journal of International Money and Finance*, Vol. 79 No. 1, pp. 157-173.

Terrell, H.S. (1993), "US branches and agencies of foreign banks: a new look", *Federal Reserve Bulletin*, Vol. 79 No. 10, pp. 913-925.

Wu, Z. and Salomon, R. (2017), "Deconstructing the liability of foreignness: regulatory enforcement actions against foreign banks", *Journal of International Business Studies*, Vol. 48 No. 7, pp. 837-861.

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