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THE ROLE OF DOMESTIC FUNDING

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Net interoffice accounts of global banks: the role of domestic funding

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[‡] **Disclaimer:** The views expressed herein are solely those of the author and do not necessarily reflect those of the *Banque de France.* Any omissions and errors are mine.

French abstract

En utilisant les données tirées des bilans des banques américaines, la présente étude examine la réactivité des *comptes interentreprises nets* (c'est-à-dire les engagements nets des sociétés mères imputables à leurs bureaux à l'étranger) aux variations de différents types de financement domestique. Par ailleurs, elle analyse si la relation entre les comptes interentreprises nets et les taux directeurs domestiques dépend des différences transversales de la structure de financement des banques d'importance mondiale. Les résultats de l'estimation semblent indiquer que les emprunts interbancaires et les emprunts sous forme de pensions effectués dans le pays d'origine sont des moteurs importants des comptes interentreprises nets, les pensions étant considérables durant la période de crise. Une relation négative entre les taux de la politique monétaire et les comptes interentreprises nets est observée uniquement pour les banques d'importance mondiale ayant une part relativement plus élevée d'emprunts sous forme de pensions.

Mots clés : banques américaines d'importance mondiale, comptes interentreprises nets, financement
Codes de classement : G21, F34, E58

English abstract

Using US banks' balance sheet data, this paper examines the responsiveness of *net interoffice accounts*, that is, the net liabilities of parent offices due to their foreign-related offices, to variations in different types of domestic funding. Furthermore, it investigates whether the relationship between net interoffice accounts and domestic policy-steered rates depends on cross-sectional differences in the funding structure of global banks. Estimation results suggest that domestic interbank and repo borrowings are important drivers of net interoffice accounts, the latter being significant during the crisis period. A negative relationship between policy rates and net interoffice accounts is observed only for those global banks with a relatively higher share of repo borrowings.

Keywords: US global banks, net interoffice accounts, funding
JEL Classification: G21, F34, E58

I. Introduction

The current dimension of international banking has no historical precedents. The majority of large banking groups have an institutional structure that goes beyond national borders: global banks hold more than $10 trillion in assets through their foreign-related offices. The drivers of banking internationalisation, through the establishment of affiliates, branches and subsidiaries abroad, have changed considerably over the years, especially since the 1970s. Before the collapse of the Bretton Woods system, the growth in international banking activities was primarily driven by the need to support colonial expansions and to facilitate and finance trade and investments abroad (Darby, 1986). Also, the opening-up of foreign facilities could allow banks to take advantage of more favourable regulations and taxes, expand their activities by attracting local customers, and foster capital flows from high to low-savings countries.

In the last 30 years, banking internationalisation has been greatly affected by financial liberalisation which has enabled foreign-related offices to engage in varied and more complex operations on behalf of the parent bank, such as currency carry trade activities (Galati, Heath and McGuire, 2007; Hattori and Shin, 2009; McGuire and von Peter, 2009) and the settlement of currency positions in FX markets (Mullineux and Murinde, 2003). In addition, foreign offices have allowed banks to hold a more diversified and less volatile portfolio on a consolidated basis (Markowitz, 1952; Lewis,1999; Fratzscher and Imbs 2009; Schoenmaker and Wagner, 2011).

Attention has recently been drawn to the role of internal capital markets of global banks. De Haas and van Lelyveld (2010) show that parent offices reallocate capital among foreign subsidiaries according to business cycle fluctuations, stimulating, in this way, cross-border contagion of shocks. Parent offices themselves can also benefit from borrowing through internal capital markets, as this allows them to cushion against domestic adverse monetary policy or funding shocks. Cetorelli and Goldberg (2012) show that US parent offices increase their *net interoffice accounts*, that is, the net liabilities of domestically-located parent offices due to their related foreign offices[1], in response to monetary policy shocks, impairing the effectiveness of the domestic bank lending transmission channel. Cetorelli and

[1] Net interoffice accounts, as explained in details later in the paper, are obtained from the difference between claims due from foreign-related offices and liabilities due to foreign-related offices. If this variable is positive (negative), then the parent office is a net borrower (lender) vis-à-vis its foreign offices.

Goldberg (2011) have further showed that, during the latest crisis, US-located offices have resorted to borrowing from internal capital markets to prevent the deleveraging following funding shocks.

It is only recently that net interoffice accounts[2] have attracted notable attention, especially in those studies aimed at assessing cross-border contagion. This measure was formally used by Hattori and Shin (2007) to understand the scale of carry trade activities of foreign banks located in Japan, especially during the period of 'quantitative easing'. More recently, Shin (2012) and Gourinchas (2011) have looked at net interoffice positions of global banks when investigating the behaviour of foreign banks in the US during the dollar funding crisis in 2009.

The purpose of this paper is twofold. The aim is, first, to investigate the sensitiveness of net interoffice accounts to different types of domestic funding, i.e. obtained through repurchase agreements, interbank markets and private sectors deposits. Secondly, it is explored whether cross-sectional differences in the funding structure of global banks result in heterogeneous responses of net interoffice positions to domestic monetary policy.

The paper provides a first attempt to explore whether net interoffice accounts are explained by selected banks' liabilities and the funding structure of banks. Existing literature has, indeed, used broadly defined proxies of banks' funding that encompass aggregated liabilities of various natures owed to both domestic and foreign investors. Moreover, an empirical analysis that allows the effect that monetary policy has on net interoffice accounts to be conditional on the banks funding structure can help clarify the puzzling behaviour of US banks' net interoffice accounts observed during the latest crisis. That is, net interoffice accounts reached their historical high of $583 billion in the last quarter of 2008 in the same quarter in which total borrowings by depositary institutions at the Federal Reserve reached the unprecedented level of $667 billion and the effective federal funds rate stood at only 0.2%.

This paper, using bank-level information contained in the quarterly Consolidated Report of Condition and Income *(Call report)*, shows that net interoffice accounts increase when global banks reduce their borrowings from both domestic interbank markets and repo markets during the crisis. On the other hand, the effect of the effective federal funds rate on net interoffice accounts depends on the share of funding from repo markets of global banks, as found through the estimation of a threshold model.

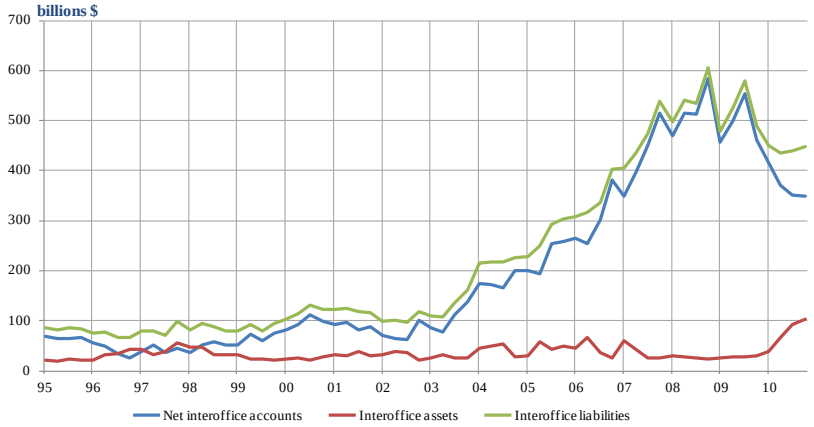
[2] Net interoffice accounts are also known in the literature as *net interoffice funding* or *net due from parent offices*.

The article is organized as follows. Section II proposes a number of stylised facts that support the following-up empirical analyses. Section III reports two sets of regression estimates. First, it presents the estimates of a dynamic panel regression in which net interoffice accounts are explained primarily by US global banks' balance sheet's funding variables. Second, it reports the estimates of a threshold model aimed at assessing whether cross-sectional variations in funding structure result in different behaviour of global banks vis-à-vis domestic monetary policy. Section IV concludes.

II. Interoffice liabilities: the US case

In the US, globalisation is a predominant feature of the banking sector: 17 out of the top 20 largest banks had foreign-related offices in 2007. Among all non-resident counterparties, foreign-related offices are the largest lenders to US financial institutions: in 2011 over 50% of gross foreign-held debt was due to own foreign offices. In net terms, domestically-located offices of US global banks are net borrowers to their foreign offices. As shown in Fig. 1, net interoffice accounts are mainly made up of interoffice liabilities, while interoffice assets have been historically low.

Fig. 1. Net interoffice accounts of US global banks

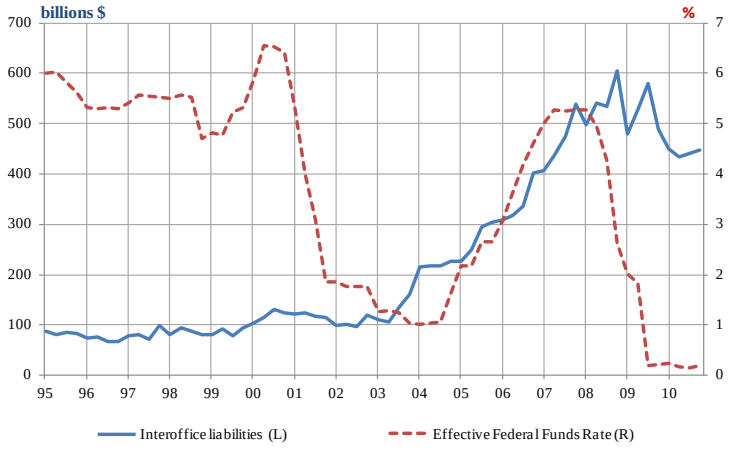


Source: Federal Reserve Board and Call Report

The biggest increase in interoffice liabilities of US banks was over the period 2002 to 2008, up by 550%. Existing literature suggests a few explanations for this observed increase: restrictive domestic monetary policy, carry trade activities, unsynchronised business cycles and domestic funding shortages. A closer look at a few stylised facts suggests that funding availability of US banks has been the most prominent factor in explaining the sustained increase in interoffice liabilities. First, the global dimension of the latest crisis weakens the hypothesis of capital re-allocation among offices located in countries experiencing different phases of the business cycle (de Haas and van Lelyveld, 2010). Europe and the UK, the two non-offshore foreign banking systems to which US banks have the largest inter-office debts (Fig. A.1 in the Appendix), for instance, were experiencing economic downturns as well. Second, the carry trades explanation (Hattori and Shin, 2007) could not justify this increase either, given the convergence in worldwide interbank interest rates and the increase in exchange rate volatilities, which resulted in large FX position unwinds (Melvin and Taylor, 2009). Policy interest

rate differentials with the euro area and the UK, for instance, have remained positive or null during the whole crisis. Third, interoffice liabilities could not have been stimulated by a restrictive domestic monetary policy: from late 2007 they have kept raising despite the rapid and drastic cut in the federal funds rate and several emergency liquidity injections by the Fed. Fig. 2 below shows the evolution of interoffice liabilities in relation to the federal funds rate. Over the great moderation period, characterised by low interest rates and notable credit expansion, the growth in interoffice liabilities was rather contained. It is only over the period 2004-2007 that interoffice liabilities started to escalate following the gradual rise in the federal funds rate: this evidence is in support to the fact that when domestic monetary policy is tighter, liquidity flows from foreign related offices to parents are higher (Cetorelli and Goldberg, 2012). However, the crisis period has shown a reversal in the relationship between these two series as interoffice liabilities have kept high notwithstanding the low levels of the federal funds rate.

Fig. 2. Interoffice liabilities and the Federal Funds Rate



Source: Federal Reserve Board and Call Report

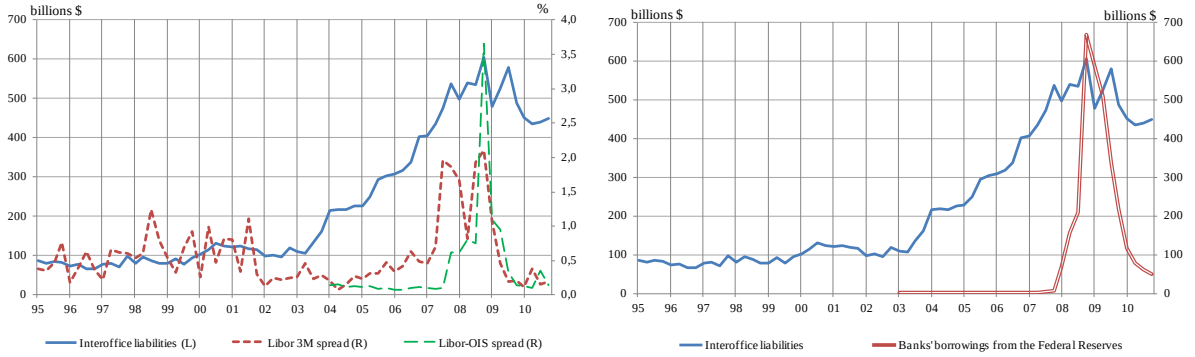
The disconnection between interoffice liabilities and policy interest rates during the crisis can be attributed to disruptions in funding markets. The level of the federal funds rate (as well as the growth in base money), indeed, do not yield adequate information on the ease to obtain funding from sources other than the central bank. In particular, during the crisis, the Fed's non-conventional interventions, i.e. in form of considerable liquidity injections, pushed the federal funds rate to historical low levels while funding from other sources was largely tapped. Falling asset prices and difficulties in pricing some illiquid securities held on the banks' balance sheets had, indeed, notable consequences on both

secured and unsecured borrowings.

The tensions in the unsecured credit markets, particularly in interbank markets, since the outburst of the subprime crisis were mainly generated by the increase in counterparty risk which resulted in rising margin requirements and widening of Libor-OIS spreads (Hordahl and King, 2008). As shown in Fig. 3(a) below, when unsecured funding illiquidity caused considerable spikes in the Libor and Libor-OIS spreads, changes in interoffice liabilities followed a similar path to that of those spreads. Indeed, the peak of the interoffice liabilities in 2008 coincided exactly with the historically high level of the Libor-OIS spread, which reached over 3.5% in the last quarter of 2008. Interoffice liabilities started to decrease only in the second quarter of 2009 when the Libor-OIS spread in the US returned to below 1%.

Fig. 3. Interoffice liabilities vs. Libor spreads and borrowings from the FED

(a) *(b)*



Source: Federal Reserve Board, Datastream and Call Report

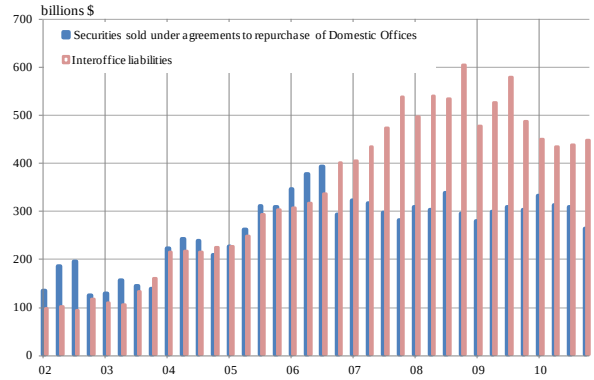
Fig. 3(b) shows that the relatively large decline in interoffice liabilities at the beginning of 2009, i.e. the first time since the beginning of the crisis, coincided with the introduction of the Term Asset-Backed Securities Loan Facility (*TALF*) program. With the TALF, conditions in funding markets started to ease as banks were granted both additional funds from the Fed ($1 trillion) and the possibility of borrowing from the Fed by using a much wider class of collateral (including mortgage-backed ABSs).

Borrowings through repurchase agreements, which constitute a prominent source of funding for US banks, were also severely hit by the turmoil as activity in repo markets dried up and repo transactions were limited to those involving very short-term maturities and highest-quality collateral. As showed in

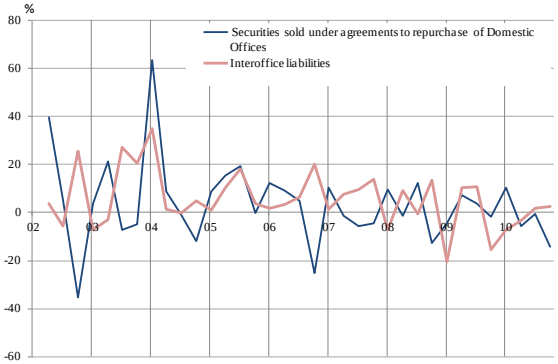
Fig. 4, until late 2006, interoffice liabilities and securities sold under agreements to repurchase (levels) were moving at similar pace. Afterwards, repo borrowings by US global banks slowed down, keeping steadily at about $300 billion, while net interoffice liabilities kept on increasing. In particular, since 2006 quarterly growth rates of the two series moved in opposite directions, suggesting a certain degree of substitution between the two funding sources.

Fig. 4. Interoffice liabilities and securities sold under agreements to repurchase

(a): levels



(b):quarterly growth rates



Source: Call Report

III. Empirical investigation

Variables and sample

The econometric analysis presented in this paper is centred on several bank-level variables available from the quarterly Consolidated Report of Condition and Income, or Call Report, collected by the Federal Financial Institutions Examination Council (FFIEC). A bank is defined as global whenever it has non-zero values of *net due to/from own foreign offices, Edge and Agreement subsidiaries and International Banking Facilities* (Schedule RC-H[3]) at some point of the sample. The dependent variable is Net Interoffice Accounts, *nioa*, which is constructed as the difference between "due to" and "due from" own foreign-related offices, so that it takes a positive (negative) value whenever parent offices are net borrowers (lenders) vis-à-vis their foreign offices.

The descriptive statistics of *nioa*, as reported in Table 1, show that despite the fact that in 15 years the number of US global banks has almost halved (201 in 1995 against 113 in 2010), aggregated net borrowings owed to foreign offices have more than tripled from 2002 to sample-end. In 2008 *nioa* reached its historical high of $583 billion; in the two following years it diminished slightly but still kept higher than the levels observed before 2006. There is large cross-sectional variation in *nioa*, as can be noticed from the very low values of mean and median and very large minimum and maximum values, more marked towards the end of the sample. As showed in Table 2, the larger the global bank (i.e. in terms of total assets) the more it borrows in net terms from its foreign offices; in particular, in 2008 almost 70% of *nioa* was due from the largest 6 banks with total assets of more than $200 billion.

The quarterly unbalanced panel considered in the estimation contains 102 global banks over the period 1995 to 2010; the banks included in the sample are those for which at least 7 years of consecutive data points of *nioa* are available. The bank-level balance sheet variables considered capture primarily the ease of obtaining funding from a variety of channels. Funding of domestic offices is broken down into borrowings from domestic inter-bank debt, deposits of the private sector and repurchase agreements. The former two types of funding are further classified into demand and term deposits. Funding availability at foreign offices is accounted by their total deposits. The effective federal funds rate is used to keep close track of the central bank's steered policy rate. A number of macroeconomic

[3] In particular, banks with foreign offices complete the FFIEC 031 reporting form and the Schedule RC-H therein.

variables were initially incorporated to the analysis to capture other possible determinants of *nioa*, such as interest rate differentials, exchange rates and real GDP, but they were not statistically significant. Details and summary statistics on all the variables kept in the analysis are reported in Table 3. Total deposits held by foreign offices have expanded greatly over the years, reflecting the growing importance of banking globalization: they quadrupled over the period 2001-2009 reaching $1.3 trillion. Funding obtained by domestic offices at home comes mainly from transaction deposits of the private sector ($383 billion in 2009) and securities sold under repo agreements ($256 billion in 2009). Funding though interbank deposits have increased notably over the years, reaching a total of almost $50 billion in 2009 (transactional and non-transactional confounded).

Nioa: disentangling the drivers

The inference is based on the baseline regression of the type:

$$\Delta nioa_{i,t} = \sum_{j=1}^{4} \beta_j \Delta nioa_{i,t-j} + \sum_{p=0}^{4} \mu_p \Delta dep^{F}_{i,t-p} + \sum_{h=0}^{4} \kappa_h \Delta r_{i,t-h} + \sum_{q=0}^{4} \Phi'_{i,t-q} \lambda_q + v_{it} \qquad (1)$$

Where i is the index for each bank such that $i = 1,\ldots,N$ and t is the time index. $dep^{F}_{i,t-1}$ are deposits at foreign offices and $r_{i,t}$ is the federal funds rate. The vector $\Phi_{i,t}$ contains those variables which refer to different sources of funding available to domestic offices: demand and term deposits of both the private sector and domestic banks and collateralized borrowings (i.e. under repurchase agreements). Regression (1) also includes time dummies and a crisis dummy equal to one from 2007q3 onwards. Judson and Owen (1999) suggest that in a dynamic setting with an unbalanced panel and a small time sample, the one-step Generalised Method of Moments (GMM) dynamic panel estimator yields the smallest distortions, compared to other dynamic panel estimators. Pioneered by Arellano and Bond (1991), this estimator removes the fixed effects by first-differencing and makes it possible to obtain consistent and asymptotically normally distributed estimators. Moreover, the Arellano and Bond estimator allows handling the endogeneity problem by instrumenting the endogenous variable with its lagged values. Within the empirical framework presented in this paper, indeed, possible endogeneity might arise from the fact that changes in *nioa* affect the way banks finance themselves on domestic funding markets.

The first column of Table 4 reports the GMM estimates of (1) with a limited set of variables (i.e. most notably, excluding interbank and repo domestic borrowings), that is, all those series that are available over the whole sample 1995-2010 (see Table 2 for details); the estimates reported have been chosen according to a general-to-specific approach. The current effective federal funds rate is positive but with a marginally significant coefficient. On the other hand, deposits at foreign offices have a significant and contemporaneous (i.e. intra-quarter) impact on *nioa* during the crisis, with a coefficient equal to 1.62.

A clearer pattern appears when considering the entire set of explicative variables over the sample 2002-2010, as shown in the second column of Table 4. Here, net interoffice accounts are also contemporaneously and positively affected by increases in deposits in foreign offices during the crisis but with a larger estimated coefficient equal to 2.5. This result suggests that during the crisis there was an intensified risk of cross-country contagion arising from an increased transfer of liquidity from foreign to domestic offices, withdrawn from local deposits raised in the host country.

The coefficient of the interaction variable of the quantity of domestic funding obtained through repurchase agreements and the crisis dummy is significant and negative, implying that parent offices borrow more from their affiliates when funding from domestic repo markets is impaired during the crisis. This evidence suggests that the reduction of liquidity in repo markets during the crisis, caused by the the deterioration of banks' balance sheets and uncertainty about the fundamental value of some assets, has lead global banks to tap this drop in funding by withdrawing funds from their foreign offices. While the negative coefficient of domestic repo funding becomes significant only during the crisis, interbank transactional deposits affect significantly *nioa* with a negative coefficient over the whole sample. This result suggests that borrowings from foreign offices are a customary alternative source of funding as they are used to make up for shortages in interbank transaction deposits, which are rather liquid and volatile. The federal funds rate is not significant in this relatively shorter sample, in support to the the fact that domestic funding conditions have been an important driver of *nioa*, notwithstanding the level of the federal funds rate.

Cross-sectional differences in repo funding

In the previous sub-section it has been argued that domestic funding conditions both in interbank and repo markets are important determinants of *nioa*. The effect of the federal funds rate on *nioa*, on the other hand, is rather unclear. This section aims at shedding some light on whether the impact of the federal funds rate on *nioa* varies across banks depending on their funding structure. Most notably, the focus will be here on funding through securities sold under repo agreements, which constitutes for many global banks an important source of funding, and, as showed in Table 4, has had a negative and strongly significant effect on *nioa* during the crisis. In the considered sample of global banks there are, indeed, important cross-sectional differences in the ratios of repo funding-to-total assets, which can vary between 0 and 0.5. A Panel Threshold Regression Model (PTRM), as proposed by Hansen (1999), is used to test whether the effect of policy rates on *nioa* differs when accounting for cross-sectional variations in funding through repo markets of global banks. The PTRM estimated has the following form:

$$\left(\frac{nioa}{a}\right)_{it} = \mu_i + \beta_1' r_t I((\frac{repo}{a})_{it} \leq \gamma\ ) + \beta_2' r_t I((\frac{repo}{a})_{it} > \gamma\ ) + \beta_3' z_{it} + \varepsilon_{it} \qquad (2)$$

Where $I(\cdot)$ is an indicator function, a_{it} stands for total assets of bank i at time t, r_t is the effective federal funds rate at time t and $repo_{it}$ are securities sold under agreements to repurchase at domestic offices of bank i at time t. The vector z_{it} contains regime-independent variables such as the ratio of foreign deposits-to-total assets as well as additional regressors to reduce the possibility of spurious correlations[4]. ε_{it} is the vector of disturbances of bank i at time t and γ is the threshold of the variable *securities sold under agreements to repurchase-to-total assets*. Specification (2) allows the coefficient of r_t to depend on a *threshold variable* which is the ratio of repo debt-to-total assets.

Table 5 shows the regression slope estimates of (2) and the estimated threshold, γ, for the balanced quarterly panel over the period 2002 to 2010, which includes 51 global banks. The estimated coefficient of $r_t I((\frac{repo}{a})_{it} \leq \gamma)$ is positive and significant at 5% significance level, equal to 0.12. This

[4] These regressors include the square and the cube of deposits at foreign offices and repo funding as well as the product of these two variables, as in Hansen (1999).

evidence suggests that those banks that finance their assets with a relatively lower share of borrowings through repo agreements, equal to 20% or less of their total assets (as found by the estimate of the threshold at the bottom of Table 5), adjust their *nioa* in the same direction of federal funds rates. For these banks, then, a loosening in domestic monetary policy results in a reduction in net borrowings of domestic banks from their foreign affiliates. The estimated coefficient of $r_t I((\frac{repo}{a})_{it} > \gamma)$, on the other hand, is negative and significant at 5% significance level, equal to -0.35. That is, banks that finance more than 20% of their assets with borrowings through repo agreements react differently to a change in domestic policy rate: a fall in federal funds rate results in an increase on *nioa*.

This set of results confirms the prediction that those global banks that finance a greater share of their assets through repo markets borrow more from their foreign affiliates when their collateral deteriorates during a banking crisis. The negative and significant effect of federal funds rate on *nioa* for those banks can be explained as follows. The slow increase in the federal funds rate from 2003 happened in conjunction with inflating asset prices which enhanced the value of banks' collateral. During this period, those global banks that were greatly relying on borrowings from repo markets had strong collateral and were, thus, not particularly relying on borrowings from foreign affiliates. However, as the federal funds rate started to fall dramatically in 2008 and the banking crisis had deteriorated banks' balance sheets, those global banks started borrowing more from their foreign affiliates, to compensate the rising difficulty in borrowing from repo markets.

IV. Conclusion

This paper contributes to further understanding the reasons why US banks borrow from their foreign-related offices. The first part of the empirical analysis focuses on banks' access to domestic funding, both from secured and unsecured markets, and its role in explaining changes in net interoffice accounts (*nioa*), that is, the net liabilities of parent banks due to their foreign offices. It is shown that while variations in domestic interbank deposits and securities sold under repurchase agreements significantly affect *nioa* with a negative sign, deposits by the private sector, both on demand and at term, have no significant effect. The second part of the empirical investigation shows that domestic monetary policy, proxied by the federal funds rate, affects positively and significantly net interoffice accounts only for those global banks whose funding structure entails a low share of borrowings through repo markets. This result suggests that cross-sectional differences in funding structure of global banks are an important factor to be taken into account when studying the dynamics of interoffice lending and borrowings.

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Appendix

Table 1. Descriptive Statistics for net interoffice accounts, $Bn

Year	Sum	Mean	Median	Min	Max	Std. Dev.	Obs.
1995	63,1	0,3	0,0	-6,0	8,9	1,2	201
1996	23,0	0,1	0,0	-16,5	7,1	1,6	188
1997	43,6	0,3	0,0	-12,5	11,5	2,3	152
1998	62,0	0,5	0,0	-4,2	8,1	1,5	134
1999	81,5	0,6	0,0	-3,0	11,9	1,8	131
2000	110,4	0,9	0,0	-3,4	20,7	2,7	128
2001	96,0	0,8	0,0	-3,7	18,8	2,8	122
2002	99,1	0,9	0,0	-7,4	21,2	3,0	116
2003	140,4	1,3	0,0	-7,4	16,3	3,6	111
2004	197,9	1,8	0,0	-9,0	48,4	6,4	107
2005	255,4	2,1	0,0	-30,2	65,1	8,5	124
2006	378,4	3,3	0,1	-8,2	81,0	11,7	115
2007	513,0	4,4	0,1	-12,1	87,7	14,6	117
2008	583,0	5,0	0,1	-10,8	116,5	18,5	117
2009	459,6	4,0	0,1	-13,1	103,5	14,0	116
2010	346,9	3,1	0,1	-73,2	111,6	16,3	113

Source: Call report. **Notes:** Net interoffice accounts refer to the FDIC series 'Net due to own foreign offices, Edge and Agreement subsidiaries and IBFs' (ffiec code rcon2941) minus 'Net due from own foreign offices, Edge and Agreement subsidiaries and IBFs' (ffiec code rcon2163). Figures relate to amounts reported in the fourth quarter of the corresponding year.

Table 2. Nioa by bank size as at 2008

Total assets range ($Bn)	Total nioa ($Bn)	Number of global banks
≤100	73	97
>100 and ≤200	110	14
>200	400	6
Total	***583***	***117***

Table 3. Summary statistics and source of other balance-sheet variables, $Bn

	Total	Source	Code	Availability
	Total deposits at foreign offices	Call Report	rcfn2200	1995-2010
1995	226,89			
2001	469,36			
2009	1301,43			
	Non-transaction deposits at domestic offices of the private sector	Call Report	rcon2385	1995-2010
1995	0,08			
2001	1,52			
2009	10,52			
	Transaction deposits at domestic offices of the private sector	Call Report	rcon2215	1995-2010
1995	129,52			
2001	250,12			
2009	383,00			
	Interbank non-transaction deposits at domestic offices	Call Report	rconb552	2001-2010
1995	-			
2001	5,04			
2009	22,67			
	Interbank transaction deposits at domestic offices	Call Report	rconb551	2001-2010
1995	-			
2001	17,28			
2009	25,06			
	Securities sold under agreements to repurchase at domestic offices (*)	Call Report	rconb995	2002-2010
1995	-			
2001	128,20			
2009	255,96			

(*) Figures for 2001 refer to those of the first quarter 2002.

Table 4. GMM Estimation, Dependent variable: d(nioa)

Variable (in first difference)	Sample 1995-2010	Sample 2002-2010
$nioa_{t-1}$	-0.137***	-0.015
$nioa_{t-2}$	-0,066*	0.007
$nioa_{t-3}$	0.011***	0.003
Crisis dummy	0.540	-3.290
Foreign deposits	0.200	0.387
Foreign deposits*crisis dummy	1.620**	2.450***
Federal funds rate	1.550*	1.087
Federal funds $rate_{t-1}$	-1.130	-0.527
Federal funds $rate_{t-1}$*crisis dummy	-0.268	0.468
Interbank transaction deposits	-	-0.067***
Repo $debt_{t-1}$	-	0.084
Repo $debt_{t-1}$*crisis dummy	-	-1.112***
Cross-sections included	97	60
Sargan test p-value	0.440	0.314
Serial correlation (4^{th} order)	0.541	0.356

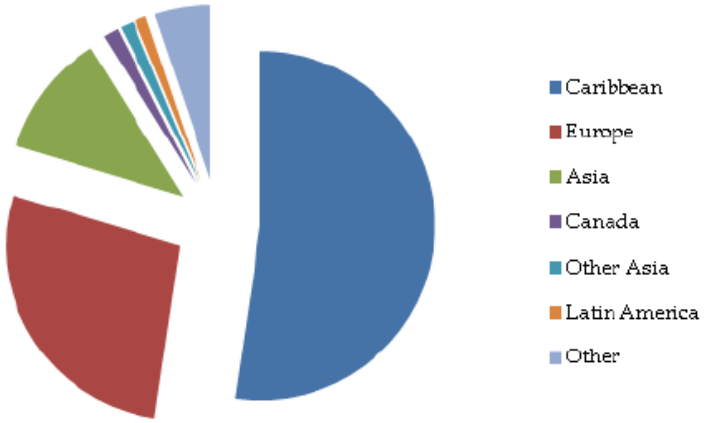
Notes: Table 4 reports the estimators of a dynamic Generalized Methods of Moments (GMM) regression where Net Inter-Office Accounts (nioa) is the dependent variable. Time dummies estimates are not reported in the table. Standard errors and covariance are corrected for heteroskedasticity and serial correlation (White cross-section). Lags of the dependent variable in levels are used as instruments. The Sargan test for over-identifying restriction is distributed accordind to a $\chi 2$ distribution. The crisis dummy takes the value of 1 over the priod 2007q3-2010q4 and 0 otherwise. ***, **, * refer to statistical significance at the 0.001, 0.05 and 0.1 respectively. The regressions have been chosen according to a general-to-specific method.

Table 5: Panel threshold regression estimation
dependent variable: nioa-to-assets

Regime-dependent variable	**Repo financing**	**Estimate**
Federal funds rate	low	0.116** [0.049]
Federal funds rate	high	-0.352** [0.152]
Regime-independent variable		**Estimate**
Foreign deposits-to-assets	-	0.640*** [0.070]
Threshold		
γ		0.202

Notes: The table reports the estimates of a Panel Threshold regression where NIOA-to-assets is the dependent variable. In brackets White standard errors, i.e. corrected for heteroskedasticity and serial correlation (White cross-section). ***, **, * refer to statistical significance at the 0.001, 0.05 and 0.1 respectively.

Fig. A.1. US banks' liabilities due to foreign offices, by location of foreign offices



Source: Treasury International Capital System.
Notes: Data refers to yearly average values of gross liabilities due to foreign affiliates over the period 1998-2003.

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