

Do Reserve Requirements Matter? The Response of Bank Credit in Lebanon to Different Currency Reserve Requirements

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Abstract

The purpose of this paper is to investigate the impact of reserve requirement regulation on bank credit. I make use of different currency reserve requirements and a regulatory change in Lebanon to answer this question. In a wide sample of emerging countries including Lebanon, commercial banks receive deposits from savers and extend credit to the productive sector in both the local currency and a foreign currency, typically the dollar. Taking advantage of both time-series and cross-sectional variation in bank balance sheet data for over 50 banks from Lebanon, this research aims to isolate the statistical and economic significance of the currency-sensitive reserve requirement's impact on bank credit to the Lebanese private sector. I exploit the unique natural experiment that took place in June 2001 when there was a major increase in the reserve requirement ratio on deposits and particularly an increase from 0% to 15% on dollar deposits. I find that the currency composition of the balance sheet matters. Lending growth was overall negative in the 2001–02 period due to the tightening in the reserve requirement but the greater the proportion of liras in a bank's initial deposits, the less adversely affected was the bank. There is also support for a shift in overall lending from foreign currency to lira denomination at the time the regulatory change was announced. This paper also offers insight into the characteristics of companies that banks lend to, and elicits bankers' opinion by way of a unique bank survey. The research findings can serve the application of monetary policy in dollarized countries to avoid credit distortions to sectors that are bank-dependent for their investment and growth.

Keywords: dollarization, bank credit, monetary policy and financial regulation.

JEL Classification: E5, F31, G21.

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1 Introduction

In an increasing number of countries, such as Lebanon, the local currency is used together with a foreign currency, typically the dollar. Commercial banks also receive deposits and extend credit in both local and foreign currencies, and banking regulation can depend on the currency type. The purpose of this paper is to analyze the economic impact of currency-sensitive banking regulation on bank credit to the private sector, using a panel of 60 commercial banks operating in Lebanon over 1995 – 2004. The regulation in question is the bank reserve requirement ratio that differs based on whether the deposit made is in local or foreign currency. Lebanese regulation requires that a larger share of overall lira-denominated deposits than of foreign currency-denominated deposits be placed as reserves at the Central Bank. This difference was particularly significant prior to June 2001, when there was no reserve requirement on foreign-currency deposits in place. In contrast, the reserve requirement was 13% on all lira-denominated deposits. On June 2, 2001, the Central Bank of Lebanon issued circular number 84, which increased the reserve requirement on lira-denominated deposits to 25% on demand deposits but only to 15% on term deposits, which make up around 94% of lira deposits. Concurrently, the requirement on foreign currency deposits increased from 0% to 15%.

This paper's contribution is to provide the first analysis in the international economics literature on the effect of different currency reserve requirements on credit and its distribution. The advantage of using data from Lebanon comes from the following facts: 1) the Lebanese Central Bank radically changed the law governing commercial bank reserves in 2001; 2) banks in Lebanon are the most important source of external credit for firms; and 3) a large part of this credit is in dollars (about 82% in recent years based on Banque du Liban statistics). Evidence on the importance of bank intermediation in Lebanon is provided by a comparative study of the MENA region by Grais and Kantur (2003) that shows that Lebanon has the highest share of banking assets to GDP (272%) and the lowest stock market capitalization (10%) in the region. These facts allow the Lebanese case to be used to study the effect of an independent change in the reserve requirement law on banks' behavior, controlling for their initial share of dollar deposits among other variables. This paper is also part of a broader research area aimed at understanding monetary policy in partially dollarized countries such as Lebanon. The presence of banking systems with substantial assets and liabilities in foreign exchange is a widespread phenomenon across many countries. It is therefore important to understand the economic implications of currency-sensitive banking regulation, such as different

currency reserve requirements, on the availability and distribution of loanable funds and credit to the productive sectors of the economy.

The underlying hypothesis is that any increase in reserve requirements is expected to lead to a decrease in the remaining terms on the asset side of banks' balance sheet, such as credit to the private sector, holdings of government treasury bills and foreign assets. But because the increase in reserves is greater on foreign currency deposits and because banks tend to match the currency structure of their assets to their liabilities, this would imply that they will decrease their credit in foreign currency more than their credit in lira. And because banks prefer to lend in foreign currency because of exchange rate risk, they will not perfectly offset the decrease in foreign currency loans with increased lira lending. This means that there could be a bank-driven fall in total lending, which is expected to be more pronounced among the more dollarized banks. Therefore the purpose of my research is to test the following two hypotheses: first, whether banks were overall more inclined to lend in dollars prior to June 2001 and second, whether those banks that held a larger share of foreign-currency deposits prior to 2001 contracted credit more in response to the change in legislation. This paper also offers new insight into the characteristics of companies that access bank credit, and whether the observed relationship depends on bank size and bank ownership. In addition to the quantitative analysis, I investigate bankers' opinion by way of a unique bank survey carried out on senior loan officers. Finally, this paper offers a cross-country comparison of Lebanon with other financially dollarized economies.

I find that the currency composition of the balance sheet matters. Lending growth was overall negative in the 2001–02 period due to the tightening in the reserve requirement but the greater the proportion of liras in a bank's initial deposits, the less adversely affected was the bank. This effect is economically significant: a bank in the lower 25th percentile in its share of lira deposits experienced a 7–10% greater decline in commercial & customer lending compared with a bank at the 75th percentile. This effect was strongest among Lebanese majority-owned banks, while foreign-owned banks were not as constrained by the policy change. In addition, foreign currency liquid assets served as a buffer which banks were able to draw on to cushion any negative effect on their lending arising from the regulatory change. There is also support for a shift in overall lending from foreign currency to lira denomination at the time the regulatory change was announced, while reserves (and in particular foreign currency reserves) increased at the time the change took effect. The results are robust to controlling for other bank characteristics and macroeconomic conditions that could be capturing an alternative demand for credit hypothesis.

The findings of the complementing studies on borrower characteristics and on bank opinion can be summarized as follows: most companies are small by international standards (a quarter have 5 or less employees). Domestic banks (and in particular the larger ones) lend more to the smallest and youngest firms than do foreign banks. All banks have a comparable regional orientation but it is highly concentrated in Beirut. Most companies are in wholesale & retail trade and services but small banks tend to lend more to manufacturing companies while big banks to those in the service sector. Most banks prefer to lend in foreign currency than in lira (reflected in the higher interest rate charged on the latter loans), with the primary reason offered being perceived exchange rate risk followed by balance sheet matching considerations. Almost all loans are collateralized and most with foreign cash and financial values, including lira loans. Banks also gave their opinion about the difficulties in lending to potential borrowers. Lebanese interest rates are too high for borrowers and projects are considered too risky to finance. Banks also noted that reserves pay a competitive market rate, providing them with little incentive to extend credit to the private sector.

2 Context

There has been increasing interest by academics and policymakers in dollarized economies in recent years. In a survey paper, Baliño et al. (1999) find that eighteen countries under IMF programs have ratios of foreign exchange deposits to total deposits exceeding 30%, with Bolivia having the largest share at 82.3% as of 1995. The authors highlight the benefits of a dollarized banking system in remonetizing an economy where confidence in the local currency has been undermined. On the other hand, they argue that it can lead to increased fragility of the banking sector, loss of seignorage, and difficulty for the monetary authorities in choosing the appropriate policy targets. Financial dollarization has continued to increase all over the world despite declining worldwide inflation (see De Nicolo, Honohan, and Ize 2005). For example, the share of dollar deposits in South America increased from 46% to 56% and in Lebanon from 53% to 69% over the period 1996 to 2001. It is also a fact that the large part of borrowing in emerging markets is intermediated in dollars (see Hausmann, Panizza, and Stein 2001).

The purpose of this research paper is to investigate the effect of different currency reserve requirements on bank credit to the private sector. This research question has not received attention in the empirical literature on dollarization. I am aware of only one recent theoretical paper on a related topic, currency-blind deposit insurance. Broda and Levy-Yeyati (2003) argue that there is

excessive dollarization within banking systems in countries like Argentina because of explicit deposit insurance policy that is currency-blind. In their model, the equal treatment of dollar and local currency deposits in the event of default means that dollar claims experience a valuation gain when the exchange rate is devalued because the share of deposits repaid is the same.

The results can contribute to advancing the field of monetary economics in an international context and provide normative prescriptions as to the optimal reserve requirement policy. The results of this research are applicable to countries that have substantial financial dollarization and different currency reserve requirements. For example, Cyprus, Egypt and Slovenia have higher reserve requirements on local currency deposits similar to Lebanon. In contrast, Chile and Turkey have a higher reserve requirement on foreign currency deposits and some like Bolivia and Jordan treat deposits equally. The case of Lebanon would contribute substantially to the literature in that there was a significant change in regulation in 2001 that can be analyzed with this paper.

3 Method

The main research method used in this research was econometric analysis on an annual panel of roughly 60 banks operating in Lebanon over the period 1996 to 2004¹. This level of preciseness is warranted because analyzing total bank credit in the Lebanese banking system cannot convincingly answer the research question at hand. For example, there may be a decline in credit because of a general decline in Lebanese companies' demand for loans and not because of a decrease in bank lending in that period (see Kashyap and Stein, 2000, for a clear exposition). The advantage of panel data is that it exploits both the cross-sectional variation across banks as well as the time variation across years.

I test for the statistical and economic effect of different currency reserve requirements on bank credit to the Lebanese private sector by taking advantage of the change in reserve requirement regulation in 2001. I begin by running illustrative regressions for the periods 2001–02 and the rest of the sample, respectively, of the form:

$$\Delta \ln(\text{Loans})_{it} = \alpha + \beta LD_{it-1} + \gamma FCLA_{it-1} + \varepsilon_{it} , \quad (1)$$

where the dependent variable is the growth of a bank's total lending (or commercial & customer

¹We also collected data for 1995 and are in the process of including it into the sample but this involves more care due to a structural break in balance sheet reporting in Bilanbanques.

lending), LD is the bank's share of deposits in liras in the previous year, and $FCLA$ is the share of its assets that are foreign currency liquid assets. First lags of these variables are used to avoid biasing the results with a possible contemporaneous adjustment by banks. These regressions are illustrative because bank-specific and aggregate controls are not included. They also do not exploit the panel nature of the banks because the data is pooled. However, this regression provides a simple test of the hypothesis – namely, whether banks with a larger share of foreign-currency deposits are more constrained in their lending in the 2001–02 period than in other years. That is, loan growth is expected to be overall negative in the 2001–02 period due to the tightening in the reserve requirement ($\alpha < 0$) but the greater the proportion of liras in a bank's deposits, the less adversely affected the bank should be (expect $\beta > 0$). Similar reasoning suggests that banks with a higher buffer of liquid foreign currency assets (or net liquid assets, more generally) are able to draw upon these to cushion any negative effect on their lending (expect $\gamma > 0$). It is important to control for this liquidity because banks in Lebanon with higher foreign currency deposit shares also hold on average significantly higher foreign currency liquid assets, which would bias the coefficient on LD downwards.

Because of the limited cross-section, equation (1) can be extended to a panel regression to make use of the within-bank variation over the 1996–2004 sample as shown below:

$$\begin{aligned} \Delta \ln(Loans)_{it} = & \alpha + \delta I_{01-02,t} + \beta_1 LD_{it-1} + \beta_2 (I_{01-02,t} \times LD_{it-1}) + \\ & \gamma_1 FCLA_{it-1} + \gamma_2 (I_{01-02,t} \times FCLA_{it-1}) + \theta X_{it} + u_i + \varepsilon_{it} , \end{aligned} \quad (2)$$

where I_{01-02} takes on a value of 1 in 2001–02 and 0 otherwise, X captures various controls and interaction terms, both bank-specific (such as a bank's profitability and size), and macroeconomic (such as the Lebanese interbank rate and real GDP growth). The coefficients β_2 and γ_2 are expected to be positive. Results of regressions (1) and (2) will be discussed in a separate section below.

Complementing the bank regressions, we gathered data on borrower characteristics, carried out a unique bank survey on senior loan officers, and produced comparative statistics placing Lebanon in an international context with respect to its banking sector dollarization and reserve requirements. Each of these three activities will be discussed in greater detail in the next section. Borrower characteristics are tabulated from a random sample of over 800 companies from the Kompas 2005 database of about 8000 companies. Information was collected on the characteristics of these firms, in terms of size, age, sector, region, as well as on the company's main banks. This gives an added

dimension to the lending data in Bilanbanques, which reports overall credit to customers (and at most total commercial loans).

3.1 Data

Annual data on individual bank-level balance sheet and income statement data for the decade from 1995 to 2004 was collected from various issues of the annual publication entitled Bilanbanques, produced by Mr. Freddie Baz of Banque Audi since the early 1980s. This data is not available in electronic format, and was meticulously inputted by several research assistants. We also collected information on bank mergers and other bank characteristics such as foreign ownership (based on shareholder information) and date of establishment from Bilanbanques as well as the Banque du Liban. There were a number of bank exits and name changes over the sample period that were accounted for in the empirical analysis by creating a unique bank code. Another issue with the data was how to treat mergers and acquisition (M&A) (there were about 18 over the ten-year period). Acquirer's balance sheet variables will spike upwards on completion of the purchase. To ensure this doesn't affect the results of the regressions, we force merge banks involved in M&A activity, so that their structure throughout the sample reflects the groups' composition at the end of the sample (namely end-December 2004).

Descriptive statistics on the Bilanbanques data are shown in Table A1 for domestic banks and Table A2 for foreign banks². Some stylized facts are that the share of total banking system assets held by domestic commercial banks increased from 74% in 1996 to 85% by 2004; there has been a general decline in loans over the period from about 30% of total assets to 20% for domestic banks and in securities (mostly government bonds) from about 38% to 30%; this decline has been reflected in an increase in cash and central bank assets in 2001 and an even more marked rise in 2003³. The main source of bank funding is deposit funding (over 70%), of which about 60% is in foreign currency for the average domestic bank and 75% for the average foreign bank. Profitability has declined over the period and non-performing loans have increased for both groups of banks⁴. Finally, banks' overall interest margin has decreased over the period from about 4.5% to 2.4%, reflecting a shift into safe assets. But the drop in bank lending accompanying this cannot be attributed to a decrease in

²Note that there are some discrepancies in the summary statistics displayed in that the sum of the Lebanese lira (LL) and foreign currency items (FC) for some of the balance sheet items does not quite add up to the total. The reason for this is that the total is based on a typically larger set of banks that reported the total but fewer banks reported the decomposition of, say their interbank assets into LL and FC.

³Possible reasons behind this later increase in reserves will be discussed in the Results section.

⁴Indeed, the true figures are probably higher because banks under-report these items.

the net interest margin on loans & advances. The difference between the interest rate received on loans & advances and that paid on deposits has remained roughly constant over the period at about 3% for domestic banks and 5% for foreign banks⁵.

I also collected data on macroeconomic variables (including the interbank rate, growth, and inflation) from Banque du Liban, the International Monetary Fund Public Information Notices (PINs), JPMorgan Chase (from Datastream) for the eurobond EMBIG spread on Lebanon's foreign currency debt, and the Federal Reserve FRED database for US inflation and federal funds interest rate data. The exchange rate was the one used and reported in Bilanbanques to convert various balance sheet items. Additional data on company characteristics was randomly sampled from the 2005 edition of Kompass Lebanon business directory⁶. Data was collected on the company's name, detailed 5-digit industry code for the company's three main business lines (e.g. printing and publishing within manufacturing), its headquarters location, date of establishment, number of employees, and the company's three main banks.

In order to supplement the statistical data collected from Bilanbanques, I prepared an original survey of both qualitative and quantitative questions to fill the gaps and residual questions left unanswered by the statistical balance sheet and income statement data⁷. For example, survey questions elicited a qualitative rating indicating how important various factors are in a bank's decision to lend to a potential borrower in Lebanon, as well as questions about the reserve requirement policy in Lebanon. The survey also included quantitative questions on the collateral, interest rate, and maturity required on the different loans and whether these differ depending on the currency the loan is denominated in. The initial sample of banks was based on the 2004 Bilanbanques number of active banks (58). Of these, 8 were investment subsidiaries of commercial banks (e.g. BLOM Invest) and were not separately surveyed and one bank, Allied, has since fully merged with BankMed. This left a sample of 49 possible banks for survey distribution, of which 38 were visited as of 31/5/2007. There were 15 cooperative banks, of which four were majority foreign-owned and one was a big bank. Therefore, the sample is skewed towards smaller banks but the foreign share is representative of the fraction of banking assets that is foreign-owned.

⁵Foreign banks have a more favorable spread, mostly reflecting the lower deposit rates they pay because of higher customer confidence.

⁶This involved choosing a random initial number in the directory (from 1 to 10) and then sampling every 10th company to get a random sample of over 800 companies. This method was employed due to resource constraints in inputting the entire sample of over 8000 companies from the hard-copy directory.

⁷A copy of this eight page survey is available upon request. The survey was distributed with a cover page explaining its purpose in both English and Arabic, as well as a confidentiality agreement signed by myself and the graduate student research assistants. The latter administered and collected the survey in person from a senior loan officer at each of the banks visited.

Finally, we collected data from the IMF's International Financial Statistics and the World Bank's World Development Indicators to compare Lebanon with other countries in terms of bank assets as a share of GDP, and bank credit to the private sector as a share of commercial banks' total assets. International data (by region and country) on foreign currency deposits to total deposits was collected from Gulde et al (2004) and De Nicolo et al (2005) to compare Lebanon with other financially dollarized countries. Cross-country information on reserve requirement policy and whether it differed by domestic or foreign currency deposits was inferred from a World Bank database collected by Barth, Caprio and Levine (2001, updated 2003), "The Regulation and Supervision of Banks around the World: A New Database".

4 Results

4.1 The impact of a change in the reserve requirement regulation on bank lending

4.1.1 Aggregate evidence

Before discussing the results of regressions (1) and (2), I present the aggregate time-series stylized evidence based on the consolidated bank balance sheets from Bilanbanques⁸. Figure 1 supports the hypothesis that banks were overall more inclined to lend in dollars prior to 2001. The hypothesis is that any increase in reserve requirements is expected to lead to a decrease in the remaining terms on the asset side of the banks' balance sheet, such as credit to the private sector, holdings of government treasury bills, foreign assets, etc. But because the increase in reserves is greater on foreign currency deposits and because banks tend to match the currency structure of their assets to their liabilities (for example, about 35% of total bank assets and liabilities were in Lebanese lira over the sample period), this would imply that they will decrease their credit in foreign currency more than their credit in lira. Figure 1 shows that the share of total bank credit in liras was about 10.8% in 1996–2000 and increased sharply in 2001–02 reaching 14.6% by 2002. This is only illustrative evidence

⁸This exercise and the results largely compare with the figures presented in this project's research proposal, which was based on consolidated monthly data from the Banque du Liban's online site, <http://www.bdl.gov.lb>. However, it is worth revisiting this analysis to confirm that the data reported by the banks to Bilanbanques is generally consistent with the information they report to the Central Bank. The advantage of the Banque du Liban data is its monthly frequency so the announcement effect of the regulatory change can be studied within the same year. For example, the monthly data showed that the share of total bank credit in liras increased immediately beginning in June 2001 when the announcement of the change in the reserve requirement was made. In contrast, the ratio of reserves to total assets only increased in October 2001, when the law was applied. These results suggest that banks react rationally and adjust the composition of their asset portfolio when the announcement is made and before the law becomes effective.

but it does provide preliminary confirmation of the hypothesis.

Figure 2 shows that the adjustment in bank reserves⁹ took place in 2001, when the share of bank assets held in the form of cash and reserves at the Central Bank increased from about 10.2% in 2000 to 14.5% in 2001. Concurrently, the aggregate ratio of credit to total bank assets declined but this may be on account of a general decline in credit over the previous years. This question will be taken up in the next section because individual bank data will be better able to distinguish whether this was driven by supply or demand for credit. What is striking from Figure 2 is the dramatic increase in the ratio of reserves to total assets in 2003, reaching over 30% of assets and remaining high in recent years. This is puzzling because it is not on account of any regulatory change in required reserves and therefore consists of a sharp increase in voluntary reserve balances, and in particular those in lira as seen in Figure 3. The effect of this increase and some reasons behind it will be addressed in the next section. Figure 3 also confirms that the 2001 reserve requirement increase had a differential effect, in that reserves in foreign currency increased while those in lira remained largely stable¹⁰.

4.1.2 Cross-bank differences

Table 1 presents the estimation results of equation (1) and the results of equation (2) are shown in Tables 2 and 3. Among the sample of all banks operating in Lebanon (both domestic and foreign-owned), total loan growth was slightly negative in the 2001–02 period but there is no apparent evidence that the share of liras in a bank’s deposits had any significant effect on a bank’s lending, nor significantly so compared with the rest of the sample (where no effect is expected). However, foreign banks operating in Lebanon are a priori less constrained by policy because they have access to funds from their parent bank. Therefore, the first two columns of Table 1 present the pooled results for 2001-02 and the rest of the sample period, respectively, limiting the sample to majority-Lebanese owned banks. Total lending by banks that held a larger share of lira deposits was less adversely affected in response to the change in legislation – the estimated coefficient on the lagged share of lira deposits is 0.04 in 2001-02 compared with -0.007 in the rest of the years (although both estimates are not statistically different from zero). There is also evidence that having foreign

⁹The data in Bilanbanques is only available for the sum of cash and Central Bank assets – which I denote as reserves. Therefore, these reserves include not only required reserves but also voluntary holdings of cash and excess reserve balances at the Central Bank.

¹⁰Information on the currency composition of reserves is not available from the Banque du Liban’s monthly data on consolidated bank balance sheets, so the Bilanbanques data shown in Figure 3 provides additional support for the differential effect of the change in law.

currency liquid assets provided a buffer which banks were able to draw upon in 2001-02 to offset the negative effect on bank loans coming from the regulatory change. This coefficient is positive in that period compared with a negative and significant effect at the 1% level for the rest of the sample period¹¹.

Columns (3) and (4) present results for the growth of commercial and other customer loans. These are a subset of total loans, and are a better proxy for total current loans to the private sector because substandard loans are deducted. In addition, very short-term loans and advances such as net debtor/creditor accounts and overdraft accounts are not included. And also excluded are loans and advances to related parties, since these may be difficult to adjust if a bank is tied to other parties. Current commercial and other customer lending was significantly affected by the change in regulation and we now observe that a bank's currency composition of deposits has a statistically and economically significant effect on bank lending in 2001-02 (the coefficient on the lagged share of deposits in lira is 0.38 and significant at the 5% level compared with a coefficient statistically not different from zero in the other years. There was a significant decline in overall bank lending in that period, but a bank at the 25th percentile in its share of lira deposits experienced a 7.96% greater decline in commercial & customer lending compared with a bank at the 75th percentile¹². Therefore, the result in 2001-02 is not only statistically but also economically significant. Note that the results are robust to replacing the first lag with the second lag of the share of lira deposits so that the results for the 2001-02 period are not contaminated by banks re-optimizing their liability composition during that period¹³. Similar results are obtained for the effect of foreign currency liquid assets and net liquid assets, with a bank at the 25th percentile in its share of liquid foreign currency assets experiencing a 2.5% greater drop in lending compared with a bank at the 75th percentile¹⁴. The results are also robust to including the (lagged) ratio of lira loans in total loans – so that the coefficient on the ratio of lira deposits to total deposits is not spuriously reflecting currency composition of the loan portfolio and its possible effect on lending¹⁵.

The regressions shown in Tables 2 and 3 account for the panel nature of the sample by including

¹¹That is, banks that held a high proportion of liquid foreign currency assets were not oriented towards lending and generally experienced subsequent lending falls as they raised their liquid assets.

¹²Note that the 25th percentile of lira deposit share among domestic banks over the sample period was 0.318 compared with 0.527 for the 75th percentile.

¹³The results are also qualitatively similar if we restrict the event period to 2001 (although not as statistically significant). Given that the announcement took place in the middle of 2001 and only annual balance sheet data is available, it is reasonable to combine the years 2001 and 2002.

¹⁴Note that the 25th percentile of foreign currency liquid asset share among domestic banks over the sample period was 0.0085 compared with 0.124 for the 75th percentile.

¹⁵If anything, the lagged share of lira loans has a negative and significant effect on next period's total current loan growth.

bank fixed effects to capture any bank-specific variation in lending not accounted for by the other variables. As in Table 1, the standard errors are also clustered by bank. Results for total loans are shown in columns (1) and (2), and in columns (3) and (4) for commercial and customer loans. The first of each of these columns is for the entire sample of banks while the second column excludes foreign banks. Results are similar to Table 1, and there is a greater effect on domestic banks (and in particular the effect arising from lira deposits). For example, the coefficient on the 2001-02 period is negative but the interaction term between that period and a bank's share of lira deposits is significantly positive in columns (2) and (4) (note that the coefficient on the share of lira deposits is generally insignificant – meaning that the observed effect is specific to the 2001–02 event).

Additional interactions are allowed in the regressions presented in columns (5) and (6) which study whether the effect on lending is evident in both big and small banks¹⁶. For example, the results in column (6) (limited to domestic banks) show that lending by small banks is more sensitive to the foreign currency liquid asset buffer *but* it is lending by big banks that is more sensitive to the share of lira deposits. The literature generally documents that small banks are more constrained because they have a higher cost of external finance. One possible way of reconciling the results observed is that holding the share of lira deposits (and all else) fixed, small banks are more constrained than big banks in raising outside funds and, therefore, their lending will be more sensitive to whatever buffer of foreign currency liquid assets they hold. But holding the foreign currency liquid asset share (and all else) fixed, big banks with a higher share of foreign currency deposits may be more adversely affected than a similar small bank because the magnitude of funds necessary to be raised are larger the greater the scale of the bank. Given that all banks were faced with a tightening of foreign currency liquidity in the Lebanese market in 2001–02, big banks would have experienced more difficulty in making up for the necessary funds to maintain lending.

Robustness checks The results presented in Table 2 are robust to controlling for other bank characteristics that could be driving the results. For example, if banks with a larger share of lira deposits happened to also be more profitable in the 2001–02 period, and increased profitability is what drives increased lending, then it would be wrong to attribute the observed effect to the ratio of lira deposits. The results are robust to these critiques, and including variables (and their interaction with the 2001–02 period) such as a bank's liquidity, net liquid assets, equity value to assets, return

¹⁶Big banks are defined as those in the upper 85th of the percentile of the fraction of total real system assets. This translated to the nine banks: Audi, BLOM, Bank of Beirut, Libano-Francaise, BankMed, Byblos, Credit Libanais, and Fransabank, as well as BBAC for the last two years of the sample (2003–04).

on assets (profitability), and the ratio of non-performing loans to total loans among other controls does not change the results.

Another possible criticism is that the results in 2001–02 may be driven by companies' demand for credit rather than by the supply of bank credit. For example, banks with a larger share of lira deposits may have been lending to firms whose credit demand happened to be higher during that period. Since firm demand is not directly observable, I include macroeconomic controls to the regressions presented in Table 3. Based on the descriptive statistics in Table A1, the increase in the reserve requirement in 2001 was also accompanied by a tightening of liquidity in the Lebanese market with the interbank rate rising to an average of 9.7% compared with 7.6% in 2000. This increase in interest rates could have led to a direct fall in borrowers' demand for credit as well as an indirect effect if the net worth of these borrowers also fell, decreasing their ability to obtain credit¹⁷.

To test these ideas, column (1) of Table 3 includes the change in the interbank rate and real GDP growth to the standard panel regression (Table 2, column (4)). As expected, an increase in the interest rate is associated with a fall in lending significant at the 10% level and positive GDP growth is associated with an increase in lending (although not statistically significant). Column (2) also includes the interaction of the interbank rate with a bank's share of lira deposits. The coefficient is negative suggesting that the lending of banks with a greater share of lira deposits is more adversely affected when there is a rise in the interest rate¹⁸. Other results (not reported in the interest of space) show that a rise in the eurobond spread on Lebanon's foreign-currency denominated debt (a common proxy for country risk) also has a negative effect on bank lending. And that the lending of banks with a greater share of lira deposits increases more in times of positive real GDP growth (but is statistically insignificant). In all these regressions, the coefficient on the interaction of 2001–02 with a bank's share of lira deposits remains significant and in fact its magnitude increases when controlling for the interest rate effect and interaction (because the interest rate increase in 2001 would be expected to dampen the benefits of a higher lira deposit share in that period).

Columns (3) and (4) show that the results are not sensitive to the way the dependent variable is defined. Column (3) replicates the regression shown in column (2) but replacing the growth of commercial and customer loans with the change in the ratio of these loans to the previous year's

¹⁷But what would also be needed is that those banks with a greater share of lira deposits lent to borrowers who were not as affected by the tightening in interest rates during that period, such as firms in the tradable sector that are insulated from domestic conditions. This is not realistic since banks with a greater share of foreign currency deposits, and not lira deposits, would be expected to be the ones lending to firms in the tradable sector.

¹⁸This could be on account of firm demand for credit but is also consistent with a bank lending channel of monetary policy.

total assets. Column (4) replaces commercial and customer loans with total loans. All results are also robust to taking the real growth in lending instead of the nominal growth in lending, and accounting for possibly spurious changes in loans arising from exchange rate fluctuations (although the latter would have only been relevant at the beginning of the sample (up to 1998) as the exchange rate has been since fixed at 1507.5 LL/USD). Finally, results are also robust to including a dummy for 2003 when there was also a large (voluntary) increase in reserves documented in Figures 2 and 3. As would be expected, there was a negative effect on lending in that year (see also the descriptive statistics shown in Tables A1 and A2) but no significant differential effect according to the share of lira deposits. These results suggest that banks were in fact constrained by the regulatory-driven increase in reserves in 2001–02, and in line with the hypothesis. In contrast, the increase in reserves in the more recent period has been a voluntary decision on the part of the banks. Support for this view is provided in some responses to a question in the bank survey, which will be described in detail below. When banks were asked why have commercial bank reserves averaged about 30% of assets since the 2003 period, in excess of the minimum required reserves, they gave answers that suggest that it is a bank-driven choice. For example, that there are no other alternatives for investment, banks are depositing more money for local settlement-related transactions, and that the reserves are also interest-bearing on the foreign currency (US dollar) reserves, paying market rates.

4.2 The characteristics of companies in Lebanon: Matching the industry data to banks

Information on the type of borrowers that different banks lend to is not available in Bilanbanques. This section describes a way around this by matching data on banks to borrowers using a random sample from the Kompas business directory database. The main limitation of this database is that it has no information on the quantity of loans extended by a bank to the reporting company (only the bank name is listed). The first column of Table 4 tabulates the total random sample of 804 companies in Kompas based on their size, region, age, and sector. The second two columns tabulate the companies according to whether their primary banker is a domestic or foreign majority-owned bank. This involved matching the banks reported by the companies with the bank characteristic information derived from Bilanbanques. I also assumed that the first bank reported is the firm's main bank¹⁹. The last two columns of Table 4 do a similar decomposition by bank size. The

¹⁹This is a reasonable assumption since the banks are not alphabetically listed or ordered by size. However, the summary statistics in Table 4 are roughly similar if they are tabulated by the top 3 banks the firm deals with and

fraction of firms in Kompas whose main bank is a domestic bank is 0.723 which compares with the average fraction of total system loans in Bilanbanques accounted for by domestic banks (0.752). Similarly, the fraction of firms in Kompas whose main bank is a big bank is 0.666 compared with an average fraction of 0.628 of total system loans in Bilanbanques extended by big banks.

Most companies in Lebanon are relatively small by international standards with over 25% of the Kompas sample consisting of firms with five or less employees, and 75% with 24 or less employees. When disaggregated by bank type, domestic banks lend more to the smallest firms (0.276 of companies that cite domestic banks as their main bank are small while only 0.213 of companies citing foreign banks as their main bank are small). This Kompas data is only cross-sectional from the 2005 edition, but suppose it reflects the pattern over the recent past. Then smaller firms would have been more affected by the 2001 change in legislation because it constrained domestic banks more (see Table 2). What is also interesting from the company size distribution is that big banks are more likely to lend to the smallest firms (0.284 of their borrowers), and *not* the small banks (only 0.209 of their borrowers). This is suggestive but would also compound the negative effect on the smallest Lebanese companies because big banks with a larger share of foreign currency deposits were more constrained by the change in the reserve requirement (Table 2). Similarly, a greater proportion of domestic banks' borrowers were younger firms (by date of establishment) compared with foreign banks. And the same is true of big banks' borrowers.

In terms of regional distribution, all banks had a comparable regional orientation to the random sample of Kompas companies. However, this regional distribution is highly concentrated in Beirut (0.432) and Metn (0.306), followed distantly by other areas with very few borrowers in the periphery such as Tripoli, Saida and Tyr, and Zahle. Finally, the industry distribution in Lebanon is skewed towards wholesale & retail trade (0.445) and services (0.302), followed by manufacturing (0.194). A noticeable difference exists between big and small banks. Small banks are more likely to lend to manufacturing (0.240 of their borrowers) compared with big banks (0.181 of their borrowers). A larger share of big bank lending is in turn extended to companies in the services sector.

4.3 Results of a bank survey

Results of the bank survey we carried out are discussed in this section and the main results are reported in Table 5. As discussed in the Section on Data, the survey was distributed to 38 banks out of a possible 49 and there was a 39% cooperation ratio (15 banks completed the survey). Because

not just the first one listed.

not all banks answered all the questions, I report the number of responses to each question in Table 5. The survey results should be interpreted with caution because of the limited sample size but there are a number of interesting findings discussed below. The Lebanese head office is in Beirut for 11 of the 14 banks analyzed and in Metn, Mount Lebanon, for the remaining 3 banks. The median year of establishment in Lebanon was in 1953, median number of employees is 286, and median capital is USD 35 mn. The principal activity is commercial banking, followed by consumer & credit card banking.

Loan officers were asked to rate how problematic are different factors in their decision to lend to a potential borrower in Lebanon, where a 1 indicates no obstacle and a 4 indicates a major obstacle. They were also asked to list the most important obstacle from among the various ones (or name a factor if not in the list). In line with the evidence on the excess holdings of cash and reserves in recent years, no bank cited having insufficient loanable funds as an obstacle. The most important obstacle cited was that Lebanese bank lending rates are too high for potential borrowers, followed by the obstacle that many potential borrowers present projects which banks assess as, on average, profitable but too risky to finance²⁰. Also cited was that projects are expected to be overall unprofitable. There is also evidence from Table 5 that the obstacles are greater on foreign currency lending compared with lira lending.

When asked about their lending preferences, a greater number of banks responded that they prefer to lend in foreign currency (USD) compared with Lebanese lira (LL), and of these the primary reason was perceived exchange rate risk, followed by balance sheet currency matching considerations. Most loans are collateralized with close to half of both USD and LL loans collateralized with cash and financial values in USD. In contrast only 17% of collateral is cash and financial values in LL for USD loans and 29% for LL loans. So even loans in Lebanese lira are more likely to be collateralized in dollars. That is, some sectors of the economy are generally unable to obtain credit because of their limited dollar collateral. A third main type of collateral in Lebanon is real estate, accounting for 31% of USD loans and 19% of LL loans. This suggests that lending is exposed to property cycles in Lebanon. Interestingly, when asked directly whether the collateral they ask for depends on whether the bank loan is in USD or in LL, banks responded overwhelmingly in the negative, contrary to the collateral disaggregation they provided in the previous question (reinforcing that these bank survey results should be interpreted with caution). Banks also responded that the maturity of the loan

²⁰There was also one bank that cited another factor, which was market instability. This can be nested within the excessive riskiness of projects view.

contract does not depend on the loan's currency.

However, most said that the interest rate on the loan does matter, with 9.2% the median interest rate on USD loans and 13.5% the median interest rate on LL loans, reflecting currency risk. But most banks appear to discount currency risk because they do not typically buy hedging contracts on their foreign currency exposure, nor do they ask that their borrowers hedge the currency exposures of their companies. Most banks also do not typically lend foreign currency loans to borrowers in the tradable sector (the median is only 20% of foreign currency loans). Of the banks that do not hedge their foreign currency exposure, the reasons were equally divided between no perceived exchange risk and because banks are unable to do so or it is too costly. While the primary reason banks do not typically ask their borrowers to hedge their foreign currency exposure is because of no perceived exchange risk. That there is no perceived exchange rate risk is supported in a later question with most banks responding that they expect the exchange rate to be stable over the next year.

A slight majority of banks consider that the current reserve requirement policy in Lebanon constrains their ability to lend to the private sector, which is a somewhat surprising result given that most banks appear to be holding reserves well in excess of the requirement in recent years. It can therefore be inferred that an even greater number would have perceived the reserve requirement to be constraining in the 2001–02 period when the regulatory change was binding. Banks also responded that they are equally or more constrained by the requirement on USD deposits than on LL deposits and therefore the majority believe that the current reserve requirement policy in Lebanon should be maintained and not equalized or reversed (recall that the current reserve requirement is overall greater on LL deposits – if we include both demand and term deposits – than on USD deposits).

When asked about their opinion of the reserve requirement increase in 2001, most banks responded that it did not come as a surprise and that it did not lead to a significant change in their bank's asset portfolio. How can these answers be reconciled with the significant results from the aggregate and individual bank analysis discussed in the previous Section? One possibility is that these two survey questions were not very well designed (in addition to the event having taken place 5 years before the survey was carried out). For example, the regulatory change was announced by the Banque du Liban in circular number 84 in June 2001 but only implemented in October 2001. Therefore, it should not have come as a surprise to banks when the law was made effective in October (and indeed the aggregate monthly data reported by the Banque du Liban suggests that banks increased the ratio of their lira lending in June 2001 and not October 2001). Moreover, banks may have interpreted the question on whether there was a change in their asset portfolio as whether the

level of their assets changed, instead of whether there was a shift in the types of assets held as shown in the empirical analysis²¹.

4.4 The international evidence

The final output of this research paper was to provide a comparative study of Lebanon and other financially dollarized countries on several dimensions – financial dollarization, currency-specific reserve requirements, and the extension of bank credit to the private sector. Tables 6 and 7 provide regional and country information on foreign currency deposits to total deposits. This ratio has been consistently increasing across a diverse group of world regions shown in Table 6 (with the exception of industrial countries and the Caribbean). For example, the share of dollar deposits in South America increased from 46% to 56% and in Lebanon from 53% to 69% over the period 1996 to 2001 (reaching 76% in March 2005 in a politically uncertain environment before subsequently declining). Based on the average ratio over 1995-2001, Lebanon ranks 15th among a group of 101 countries as shown in Table 7.

I compare reserve requirements across countries in Table A3, focusing on whether there are different foreign currency reserve requirements compared with domestic currency ones. I interpret a country's regulation using a database of over 150 countries compiled at the World Bank by Barth et al (2003) and supplement missing information with data from various issues of the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Of the sample of countries, I find that 28 countries have a different currency reserve requirement. Of these, ten have a higher requirement on local currency deposits (e.g. Lebanon and Egypt) and eighteen have a higher one on foreign currency deposit (e.g. Chile and Turkey). One avenue of future research is to analyze individual bank data from these other countries to assess how important different currency reserve requirements are for lending and investment.

Finally, data from the IMF's International Financial Statistics shows that the aggregate credit to the private sector as a share of commercial banks' assets over the period 2000-2004 was 70.2% in the US and 40.4% for a set of financially dollarized countries (Turkey, Jordan, Egypt, Brazil, Mexico, and the Czech Republic). In contrast, the figure for Lebanon is markedly less at 29.4% and declined from 34.1% in 2000 to 24.4% in 2004 (which is also observed in the descriptive statistics in Tables A1 and A2). One could argue that the ratio of bank assets to total GDP is over 300% in Lebanon,

²¹This question was deliberately phrased in general terms so as not to bias the responses in one way or another. But it may have been too vague.

one of the highest in the world (e.g. Barth et al (2003) report that the highest ratio in the world is Switzerland and the lowest is Venezuela, with a respective 539% and 6% ratio of bank assets to total GDP). Therefore, if we were to measure the ratio of bank credit to the private sector to GDP instead of to total assets, Lebanon would not be so low in an international context²². But countries like the UK and Germany with a comparable ratio of bank assets to GDP of over 300% extended a respective 44% and 60% of their bank assets as credit to the private sector. Some reasons behind Lebanon's low comparative figure of 29.4% can be found in the bank survey evidence. Lebanese interest rates are too high for borrowers and projects are considered too risky to finance. Banks also noted that reserves pay a competitive market rate, providing them with little incentive to extend credit to the private sector.

5 Concluding remarks

The results of this research paper have shown that the currency composition of the bank balance sheet matters. The regulatory change in the reserve requirement may have been introduced to tighten monetary policy or because of concerns about insufficient liquidity in the banking system, especially dollar liquidity. However, regulatory changes can have unintended consequences such as a drop in lending as banks scramble to adjust their asset portfolios. In addition, Lebanese banks may be reluctant to offer credit in Lebanese lira because of exchange rate risk considerations, as documented in the survey responses. If the change in bank regulation led to a decline in lending in foreign currency that was not perfectly undone by an increase in lira loans, then aggregate lending would decline. Those banks found to be most constrained are the domestic banks, those with a higher share of foreign currency deposits, and those with low buffers of foreign currency liquidity.

The productive sectors of the economy that are most dependent on bank loans would in turn be adversely affected. And some sectors will be more affected than others because they are dependent on the more constrained banks for their external finance. The results of this research can, therefore, serve to devise monetary and regulatory policy recommendations in order to avoid credit distortions to sectors that are dependent on banks for their investment and growth. This will hold for any country like Lebanon where banks are the main source of credit and the large part of this credit is in a foreign currency.

²²This is true and Lebanon averaged about 74.5% over the 1995-2006 period. This figure was obtained by combining data on Lebanese GDP from the Ministry of Economy and Trade with data on bank credit to the private sector from the Banque du Liban.

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Figure 1

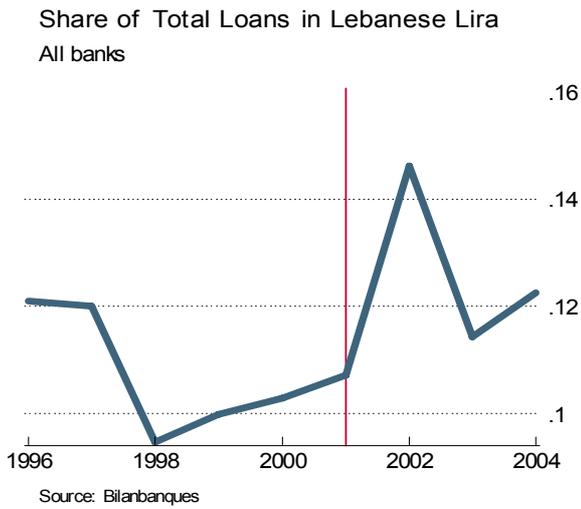


Figure 2

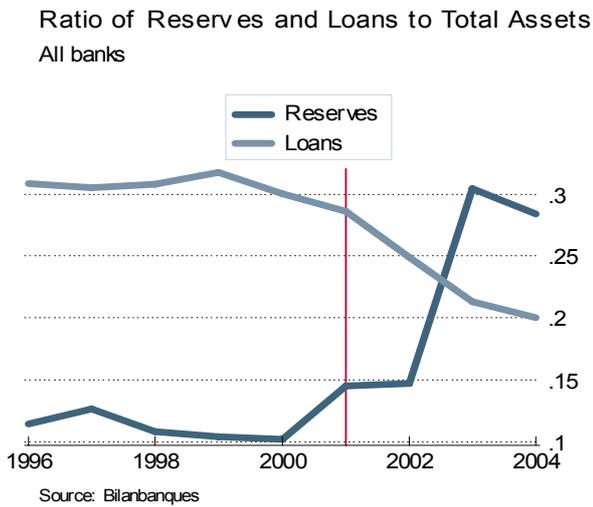


Figure 3

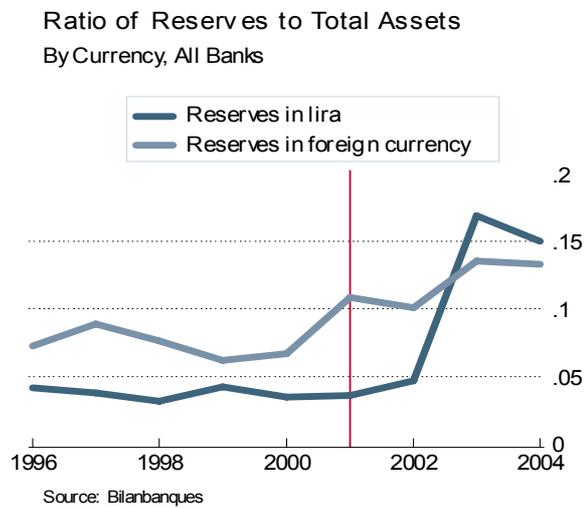


Table 1. Illustrative regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent variable: annual growth of:					
	Total loans & advances	Total loans & advances	Commercial loans & customer loans			
Share of deposits in Lira, lag 1 year	0.0401 (0.0867)	-0.0066 (0.0664)	0.3811 (0.1823)**	0.0320 (0.0929)	0.4026 (0.1482)**	0.1020 (0.0896)
Foreign currency liquid assets to total assets, lag 1 year	0.0615 (0.3418)	-1.1224 (0.1974)***	0.2176 (0.4868)	-0.9241 (0.2950)***		
Net liquid assets to total assets, lag 1 year					0.0054 (0.0014)***	0.0015 (0.0012)
Constant	-0.0050 (0.0467)	0.2116 (0.0326)***	-0.1659 (0.0936)*	0.1583 (0.0543)***	-0.4346 (0.1106)***	-0.0176 (0.0841)
Sample period	2001 & 2002	1996-04 excl 01&02	2001 & 2002	1996-04 excl 01&02	2001 & 2002	1996-04 excl 01&02
Number of banks	38	41	37	40	37	40
Foreign banks excluded?	Y	Y	Y	Y	Y	Y
Observations	73	218	71	213	70	212
R ²	0.002	0.15	0.04	0.04	0.10	0.01

Notes:

Robust standard errors in parentheses; standard errors are clustered by bank

* significant at 10%; ** significant at 5%; *** significant at 1%

Note: Total loans & advances are the sum of: commercial loans, customer loans, overdraft accounts, net debtor/creditor accounts & cash collateral, loans & advances to related parties, doubtful loans.

Commercial loans & customer loans are a subset of total loans, where substandard loans (if available) are deducted. This gives an indication of current commercial & consumer loans.

Table 2. Bank Panel 1996 - 2004: Comparing by bank type

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent variable: annual growth of:					
	Total loans & advances	Total loans & advances	Commercial loans & customer loans			
	0.4531	0.2185	0.1913	0.3651	0.1768	0.3575
Share of deposits in Lira, lag 1 year	(0.1357)***	(0.2067)	(0.4525)	(0.3160)	(0.4542)	(0.3180)
	-0.1672	-0.2343	-0.2805	-0.3276	-0.2777	-0.3173
Years 2001 & 2002 dummy	(0.0397)***	(0.0469)***	(0.0935)***	(0.1064)***	(0.0959)***	(0.1091)***
	0.0600	0.1382	0.3120	0.4704		
Interaction of Dummy 2001 & 2002 with lagged share of deposits in lira	(0.0727)	(0.0750)*	(0.1927)	(0.2102)**		
	-0.7067	-1.0566	-0.6715	-1.2913	-0.6905	-1.3150
Foreign currency liquid assets to total assets, lag 1 year	(0.2402)***	(0.2370)***	(0.5083)	(0.4145)***	(0.5216)	(0.4215)***
	0.7804	1.0577	0.8369	0.8449		
Interaction of Dummy 2001 & 2002 with lagged share of foreign currency liquid assets	(0.2681)***	(0.2506)***	(0.4574)*	(0.5373)		
					0.0100	0.0736
Big bank dummy					(0.0417)	(0.0295)**
					0.5726	1.0461
Interaction of big bank with Dummy 2001 & 2002 and with lagged share of deposits in lira					(0.3123)*	(0.4567)**
					0.2873	0.4240
Interaction of small bank with Dummy 2001 & 2002 and with lagged share of deposits in lira					(0.1960)	(0.2216)*
					-0.1999	-0.5704
Interaction of big bank with Dummy 2001 & 2002 with lagged share of foreign currency liquid assets					(0.6523)	(1.0741)
					1.0424	1.0734
Interaction of small bank with Dummy 2001 & 2002 with lagged share of foreign currency liquid assets					(0.5551)*	(0.6022)*
	-0.0736	-0.1338	-0.0223	-0.1184	-0.0192	0.1570
Constant	(0.0663)	(0.0320)***	(0.2122)	(0.0278)***	(0.2118)	(0.1357)
Number of banks	64	41	63	40	63	40
Foreign banks excluded?	N	Y	N	Y	N	Y
Observations	419	291	409	284	409	284
R ²	0.44	0.48	0.17	0.22	0.17	0.22

Notes:

Robust standard errors in parentheses; standard errors are clustered by bank.

* significant at 10%; ** significant at 5%; *** significant at 1%

Panel regressions are estimated with bank fixed effects.

Table 3. Bank Panel 1996 - 2004: Controlling for aggregate conditions in the economy

	(1)	(2)	(3)	(4)
	Dependent variable:			
	Growth of Commercial loans & customer loans	Growth of Commercial loans & customer loans	Change in ratio of Commercial loans & customer loans to last year's total assets	Growth of Total loans & advances
Share of deposits in Lira, lag 1 year	0.2323 (0.3226)	-0.0873 (0.2988)	0.0039 (0.0461)	0.1132 (0.2556)
Years 2001 & 2002 dummy	-0.2914 (0.1084)**	-0.3605 (0.1081)***	-0.0578 (0.0165)***	-0.2618 (0.0469)***
Interaction of Dummy 2001 & 2002 with lagged share of deposits in lira	0.4960 (0.2143)**	0.6315 (0.2182)***	0.0843 (0.0314)**	0.2033 (0.0934)**
Foreign currency liquid assets to total assets, lag 1 year	-1.1391 (0.4359)**	-1.2099 (0.4211)***	-0.1911 (0.0528)***	-1.0591 (0.2360)***
Interaction of Dummy 2001 & 2002 with lagged share of foreign currency liquid assets	0.6605 (0.5571)	0.6899 (0.5775)	0.1345 (0.0792)*	1.0475 (0.2562)***
Real GDP growth rate, lag 1 year	1.2516 (1.0395)			
Change in Interbank rate, lag 1 year	-0.0062 (0.0032)*	0.0039 (0.0081)	0.0018 (0.0015)	0.0043 (0.0045)
Interaction of lagged change in Interbank rate with Lagged share of deposits in lira		-0.0226 (0.0148)	-0.0058 (0.0029)**	-0.0104 (0.0087)
Constant	-0.1848 (0.0366)***	-0.0747 (0.0523)	0.0347 (0.0470)	-0.1130 (0.0374)***
Number of banks	40	40	41	41
Foreign banks excluded?	Y	Y	Y	Y
Observations	284	284	291	419
R ²	0.24	0.25	0.34	0.44

Notes:

Robust standard errors in parentheses; standard errors are clustered by bank.

* significant at 10%; ** significant at 5%; *** significant at 1%

Notes:

Panel regressions are estimated with bank fixed effects.

Table 4. Matching industry statistics from Kompass dataset to banks

	Kompass sample	Domestic bank	Foreign bank	Big bank	Small bank
Fraction of total system assets (Bilanbanques)		0.792	0.208	0.645	0.355
Fraction of total system loans (Bilanbanques)		0.752	0.248	0.628	0.372
Fraction of firms with primary banker (Kompass)		0.723	0.273	0.666	0.329
<i>Distribution of firms across Kompass sample, and by primary bank type:</i>					
Size					
Small firms (5 or less employees)	0.265	0.276	0.213	0.284	0.209
Medium-size (6-24)	0.476	0.479	0.511	0.448	0.564
Big (25-59)	0.157	0.153	0.206	0.177	0.151
Very big (60 or more)	0.102	0.092	0.071	0.091	0.076
Region					
Beirut	0.432	0.439	0.421	0.432	0.439
Metn	0.306	0.318	0.306	0.306	0.330
Baabda, Aley, and Chouf	0.103	0.093	0.093	0.101	0.077
Kesrouane, Batroun, Jbeil and Bcharreh	0.114	0.126	0.104	0.121	0.118
Tripoli and Akkar	0.019	0.012	0.022	0.016	0.014
Saida and Tyr	0.012	0.008	0.022	0.011	0.014
Zahle	0.014	0.004	0.033	0.013	0.009
Age					
Old (established <= 1981)	0.259	0.237	0.262	0.234	0.262
Middle (established > 1981 & < 1997)	0.468	0.485	0.459	0.493	0.448
Young (established >= 1997 & < 2000)	0.161	0.164	0.180	0.171	0.163
Very young (established >= 2000)	0.112	0.114	0.098	0.101	0.127
Sector					
Agriculture, hunting, fishing & forestry	0.005	0.006	0.005	0.009	0.000
Mining & Quarrying	0	0	0	0	0
Electricity, gas, and water	0	0	0	0	0
Manufacturing	0.194	0.198	0.208	0.181	0.240
Construction & public works	0.054	0.056	0.071	0.065	0.050
Wholesale/Retail Trade (commerce)	0.445	0.468	0.443	0.450	0.484
Services	0.302	0.272	0.273	0.295	0.226

Source: Author's calculations using Kompass Lebanon 2005 for a random 10% of the companies (804 companies out of the database's 8245 companies). Data on banks from Bilanbanques, various issues.

Table 5. Tabulating results of bank survey

Survey Method: Initial sample of banks was based on the 2004 Bilanbanques number of active banks (58). Of these, 8 were investment subsidiaries of commercial banks (e.g. BLOM Invest) and were not separately surveyed and one bank, Allied, has since fully merged with BankMed. This left a sample of 49 possible banks for survey distribution (carried out on senior loan officers in 2006/07 by graduate research assistants).

Summary of surveys distributed and completed: 38 banks of the 49 were visited and as of 31/5/2007 a total of 12 were non-responsive, 11 were pending, and 15 banks had completed the survey. This translates to a cooperation rate of 39% based on surveying 78% of the set of Lebanese banks. Of the 38 banks visited, 11 were majority foreign-owned banks, and 6 were big banks. Of the 15 cooperative banks, 4 were foreign and 1 was a big bank. Therefore, the sample is skewed towards smaller banks but the foreign share is representative.

I. Summary of general characteristics on responding banks:

The Lebanese head office is in Beirut for 11 of the 14 banks analyzed and in Metn, Mount Lebanon, for the remaining 3 banks. The median year of establishment in Lebanon was in 1953, median number of employees is 286, and median capital is USD 35 mn. The principal activity is commercial banking, followed by consumer & credit card banking.

II. Bank Loans: LL and USD Lending

How problematic are these different factors in your decision to lend to a potential borrower in Lebanon?

	Number of responses	Median Response (1: no obstacle, 2: minor, 3: moderate, 4: major obstacle)	Number of banks listing as major obstacle	Which is the MOST important obstacle? (Number of banks)
(a) Many potential borrowers present projects which we assess as overall unprofitable and therefore we expect that the borrower will not be able to pay back the loan	14	2.5	3	2
(b) Many potential borrowers present projects which we assess as, on average, profitable, but too risky to finance	14	2.0	2	3
(c) Potential borrowers do not have sufficient guarantees or collateral to post on their loans <i>and specifically in:</i>	14	3.0	2	1
Foreign currency (USD) loans	14	2.5	2	
Lebanese lira (LBP) loans	14	2.0	2	
(d) Lebanese bank lending rates are too high for potential borrowers <i>and specifically on:</i>	14	2.5	4	4
Foreign currency (USD) loans	12	2.0	3	
Lebanese lira (LBP) loans	13	2.0	1	
Short-term loans	14	2.0	0	
Long-term loans (over one year)	14	2.0	2	
(e) Potential borrowers have insufficient credit history and a relationship with our bank	14	2.0	1	2
(f) We have insufficient loanable funds <i>and specifically for lending in:</i>	12	1.0	0	0
Foreign currency (USD)	13	2.0	0	
Lebanese lira (LBP)	11	1.0	0	
Short-term loans	14	1.0	0	
Long-term loans (over one year)	14	1.0	0	
(g) Other factor (please specify) (The bank cited market instability as a factor)	1		1	1

Table 5. Tabulating results of bank survey, cont'd

	Number of responses			
Currency preference for lending?	14			
We are indifferent between lending in USD and in LBP		5		
We prefer to lend in USD compared with LBP		6	Of these banks, the primary reason given was perceived exchange rate risk, followed by balance sheet currency matching considerations	
We prefer to lend in LBP compared with US		3	No consensus reason was given, but reasons also included exchange rate risk and balance sheet currency matching, in addition to likelihood of repayment of borrower, loan duration, and government subsidies.	
<hr/>				
II.4 Please provide a distribution of the collateral posted by your borrowers	9	Aggregated Response:		
Type of collateral		% of collateral by type of loan:		
		USD loans	LBP loans	
(a) Cash and financial values denominated in USD		43	46	
(b) Cash and financial values denominated in LBP		17	29	
(c) Real estate (land and buildings)		31	19	
(d) Real guarantees (non-real estate)		1	1	
(e) Personal guarantees		4	3	
(f) Other collateral		2		
(g) Non-collateralized loans (e.g. overdrafts)		2	3	
		100	100	
<hr/>				
		No	Yes	
Does the collateral or guarantee you ask for from a borrower depend on whether the bank loan is in USD or in LBP?	14	13	1	
Does the maturity of the loan contract depend on whether the loan is in USD or in LBP?	14	13	1	
Does the interest rate on the loan depend on whether the bank loan is in USD or in LBP?	14	9	5	
			Of these banks, the median interest rate on USD loan is 9.2% and on LL 13.5%	
<hr/>				
		No	Yes	If yes, share hedged (median)
Do you typically buy hedging (insurance) contracts on the foreign currency exposure of your bank's balance sheet?	14	11	3	30
Are your foreign currency loans typically lent to borrowers in the tradable sector (such as exporters with a cash flow in foreign currency)? ⁽¹⁾	12	8	4	20
				Note: this is the share of a bank's foreign currency loans which are lent to borrowers with foreign currency earnings abroad
Do you typically ask that your borrowers hedge the foreign currency exposure of their companies and business?	13	9	4	35
		Of the banks that do not hedge their foreign currency exposure, the reasons were equally divided between no perceived exchange risk and because banks are unable to do so or it is too costly. While the primary reason banks do not typically ask their borrowers to hedge their foreign currency exposure is because of no perceived exchange risk. That there is no perceived exchange rate risk is confirmed in a later question when the majority of banks (9) expect the exchange rate to be stable over the next year.		

Table 5. Tabulating results of bank survey, cont'd**III. Lebanese reserve requirement and the change in legislation**

	Number of responses
Which of the following two statements best reflects your opinion of the current reserve requirement policy on deposits in Lebanon?	
The requirement constrains our ability to lend to the private sector	7
Our lending decisions our not affected by the reserve requirement	6
If your answer was that the reserve requirement constrains your lending, then which of the following statements best reflects your opinion?	
We are equally constrained by the requirement for lending in USD and LBP loans	6
We are more constrained by the requirement on USD deposits for lending in USD loans	4
We are more constrained by the requirement on LBP deposits for lending in LBP loans	1
Do you believe that the current reserve requirement policy in Lebanon is appropriate? Please select:	
The reserve requirement (rr) on the LBP deposits relative to USD deposits should stay as it is: that is overall (term and demand) rr LBP > rr USD	5
The policy should be reversed so that the rr USD > rr LBP	3
The policy should be equalized across term and demand so that rr LBP = rr USD	2
No opinion	0
In your opinion, which of the following reasons BEST explains the Banque du Liban's motive to raise reserve requirements in June 2001 and especially on dollar deposits?	
A general tightening of monetary policy in a stable macro environment	3
A tightening of monetary policy to respond to exchange rate pressures	5
A tightening in the regulatory policy because of concerns of insufficient liquidity in the banking system, and especially dollar liquidity	4
Other reason	1
Which of the following two statements best reflects your opinion on the change in policy in 2001 and the increase in the reserve requirement?	
It was expected by our bank	11
It came as a surprise	2
Which of the following statements best reflects your opinion of the change in policy?	
The increase in the reserve requirement had no effect on our bank's asset portfolio	12
The increase in the reserve requirement led to a significant change in our bank's asset portfolio	0
Total Lebanese commercial bank reserves as a share of assets has averaged about 30% over 2003 - 2005. This figure is in excess of the minimum reserves required on banks total deposits and is an increase over the previous years. There has been no increase in reserve requirements in recent years. What do you think accounts for the fact that banks are holding excess reserves in recent years?	4
Reasons offered by the banks:	
Banks are depositing more money for local settlement related transactions; the reserves are also interest-bearing on USD reserves, paying market rates. No other alternatives for investment. For hedging. And the ability of banks to foresee economic events.	

Notes:

⁽¹⁾ In addition to these questions, bankers were also asked whether they favored Lebanon adopting a policy similar to Chile, which prohibits lending in dollars to borrowers who are not in the tradable (export & import) sector. The 3 responses were in the negative, and suggested that Lebanon has always had a free market and that it will lead to a significant cut in credit because the risk of devaluation of the lira will prohibit aggressive lending in the lira.

Other questions:

There was a section IV of the survey on background questions which asked banks to provide various estimates on the composition of their assets and liabilities, shares in lira, and questions relating to the type of lending they extended. Unfortunately, even less banks chose to answer this section (a total of 3 banks), so these results cannot be taken as representative. But some interesting insight is provided: the average fraction of their assets that are in the form of loans & advances is 15%, and less than 2% of these are in lira). The sectoral distribution of their foreign currency loans is (median response): 40% to trade, 15% to services, 27% to construction, 5% to industry, and 15% to individuals (mortgages & credit card). The main use of commercial lending was for working capital (short-term financing) and for foreign trade transactions (over 90%). While only about 10% was for fixed investment purposes. This was confirmed by most loans having a maturity of under one year.

**Table 6. Average Foreign Currency Deposits to Total Deposits
(In percent)**

Regions	Number of Countries	1996	1997	1998	1999	2000	2001
South America	8	45.8	46.1	49.4	53.2	54	55.9
Transition economies	26	37.3	38.9	43.5	44.3	46.9	47.7
Middle East	7	36.5	37.2	37.7	37.5	38.2	41.9
Africa	14	27.9	27.3	27.8	28.9	32.7	33.2
Asia	13	24.9	28	26.8	28.8	28.7	28.2
Central America and Mexico	7	20.6	20.8	22	22.1	22.5	24.7
Caribbean	10	6.3	7.6	6.8	6.7	6.1	6.2
Industrial countries	14	7.4	7.5	7.5	6.7	7	6.6

Source: Gulde et al 2004, "Financial Stability in Dollarized Economies", IMF Occasional Paper # 230 which is based on National authorities, IMF; IFS database and IMF staff estimates

Table 7. Foreign Currency Deposits to Total Deposits (Average 1995 - 2001)

Rank		Rank, cont'd			
1	Cambodia	93.2	51	24.8	Egypt
2	Bolivia	90.0	52	24.8	St. Kitts and Nevis
3	Uruguay	80.0	53	24.3	Hungary
4	Bosnia-Herzegovina	73.6	54	23.7	Trinidad and Tobago
5	Lao PDR	73.0	55	22.6	United Arab Emirates
6	Armenia	71.4	56	21.9	Uganda
7	Croatia	70.4	57	21.4	Indonesia
8	Nicaragua	67.4	58	21.0	Jamaica
9	Peru	65.7	59	21.0	Poland
10	Angola	65.1	60	20.2	Saudi Arabia
11	Georgia	64.6	61	19.1	Estonia
12	Azerbaijan	63.6	62	19.0	Israel
13	Belarus	63.2	63	17.5	Netherlands
14	Argentina	61.3	64	17.3	Malawi
15	Lebanon	60.4	65	15.5	Guinea-Bissau
16	Tadjikistan	57.6	66	14.8	Slovak Republic
17	Macedonia FYR	56.8	67	13.4	United Kingdom
18	Paraguay	55.4	68	11.4	Uzbekistan
19	Kyrgyz Republic	51.9	69	11.4	Barbados
20	Congo Dem. Rep. of	50.6	70	11.1	Czech Republic
21	Bulgaria	50.5	71	10.9	Kenya
22	Yemen	49.6	72	8.2	China
23	Turkey	49.0	73	8.1	Mexico
24	Mozambique	48.3	74	8.0	El Salvador
25	Kazakhstan	47.5	75	6.7	Japan
26	Latvia	47.5	76	6.6	Chile
27	Sao Tome & Principe	46.3	77	5.4	Antigua and Barbuda
28	Hong Kong	45.7	78	4.2	Nigeria
29	Bahrain	40.6	79	4.1	Netherlands Antilles
30	Lithuania	40.6	80	3.8	Italy
31	Costa Rica	40.4	81	3.8	Denmark
32	Moldova	38.3	82	3.7	Norway
33	Romania	37.7	83	3.5	New Zealand
34	Ecuador	37.6	84	3.2	Finland
35	Vietnam	37.5	85	3.1	South Africa
36	Mongolia	37.4	86	2.8	Bhutan
37	Zambia	36.3	87	2.7	Korea
38	Slovenia	35.3	88	2.4	Malaysia
39	Ukraine	35.2	89	2.4	Dominica
40	Haiti	35.1	90	2.2	Belize
41	Russia	34.0	91	2.0	Bahamas, The
42	Turkmenistan	31.3	92	1.9	Austria
43	Philippines	30.7	93	1.9	St. Vincent&Grenadines
44	Albania	28.6	94	1.8	Spain
45	Honduras	28.4	95	1.4	Sweden
46	Ghana	28.1	96	1.0	Thailand
47	Tanzania	28.0	97	0.8	Guatemala
48	Greece	27.4	98	0.5	Comoros
49	Guinea	25.4	99	0.3	Bangladesh
50	Pakistan	24.9	100	0.3	Switzerland
			101	0.2	Venezuela

Source: Author's calculations based on foreign currency deposit share (1990 - 2001) provided in De Nicolo et al, Journal of Banking and Finance, "Dollarization of bank deposits: Causes and consequences", 29, 2005, Appendix A, Table 4.

Table A1. Descriptive statistics for Domestic Banks

	All Years	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number of banks	40	40	40	40	39	39	40	41	40	40
Mean assets (1996 USD millions)	910.9	500.1	634.5	776.1	861.3	892.6	936.4	1035.5	1179.3	1379.7
Median assets (1996 USD millions)	309.6	151.5	194.4	245.5	283.1	344.9	376.0	353.9	389.0	461.1
Fraction of total system assets	0.792	0.739	0.746	0.751	0.760	0.766	0.795	0.811	0.830	0.850
<i>Fraction of total assets in type category, all banks (mean)</i>										
Assets, of which:										
Cash and Central Bank (Reserves)	0.157	0.103	0.125	0.105	0.107	0.110	0.149	0.140	0.284	0.283
in Lebanese Lira (LL)	0.066	0.038	0.040	0.032	0.041	0.038	0.040	0.041	0.160	0.159
in Foreign Currency (FC)	0.092	0.065	0.085	0.073	0.066	0.075	0.113	0.099	0.124	0.125
Securities ⁽¹⁾	0.350	0.385	0.337	0.369	0.381	0.368	0.363	0.358	0.294	0.297
in LL	0.258	0.356	0.288	0.310	0.297	0.276	0.241	0.221	0.177	0.154
in FC	0.069	0.011	0.020	0.046	0.057	0.068	0.094	0.114	0.097	0.117
Interbank assets	0.134	0.141	0.149	0.139	0.107	0.135	0.126	0.153	0.121	0.133
in LL	0.016	0.026	0.022	0.015	0.011	0.013	0.008	0.012	0.014	0.018
in FC	0.134	0.128	0.145	0.136	0.107	0.136	0.133	0.153	0.127	0.139
Total loans ⁽²⁾	0.273	0.288	0.303	0.303	0.321	0.307	0.282	0.257	0.208	0.196
in LL	0.055	0.058	0.065	0.052	0.062	0.059	0.055	0.061	0.038	0.040
in FC	0.224	0.230	0.239	0.252	0.259	0.248	0.234	0.202	0.175	0.172
of loans:										
Current Loans (Commercial and consumer) ⁽²⁾ , of which	0.178	0.181	0.207	0.202	0.203	0.202	0.184	0.166	0.131	0.128
Commercial loans	0.120	0.118	0.136	0.129	0.123	0.150	0.125	0.116	0.092	0.096
Total liabilities, of which:										
Total deposits	0.741	0.756	0.730	0.705	0.726	0.740	0.743	0.759	0.749	0.761
in LL	0.318	0.406	0.326	0.303	0.348	0.317	0.270	0.272	0.320	0.305
in FC	0.434	0.369	0.423	0.399	0.378	0.423	0.474	0.503	0.464	0.471
of deposits:										
Sight	0.065	0.076	0.068	0.069	0.051	0.066	0.057	0.062	0.068	0.065
Time & Saving	0.646	0.657	0.629	0.608	0.648	0.650	0.663	0.662	0.640	0.654
Interbank liabilities (including to BDL)	0.041	0.026	0.026	0.049	0.043	0.044	0.041	0.048	0.045	0.046
in LL	0.019	0.011	0.014	0.023	0.011	0.028	0.014	0.022	0.022	0.022
in FC	0.028	0.023	0.018	0.025	0.031	0.026	0.031	0.032	0.031	0.034
Subordinated & long-term debt	0.016	0.016	0.020	0.009	0.014	0.019	0.017	0.018	0.014	0.012
Other liabilities	0.084	0.102	0.099	0.106	0.104	0.085	0.072	0.066	0.050	0.069
Equity	0.118	0.100	0.125	0.131	0.113	0.112	0.121	0.110	0.141	0.111
<i>Footnotes (mean)</i>										
Percent of total assets in Lebanese Lira (LL)	0.435	0.516	0.457	0.451	0.465	0.422	0.389	0.372	0.438	0.407
Percent of total liabilities in LL	0.461	0.534	0.483	0.477	0.490	0.449	0.418	0.399	0.468	0.430
Percent of total loans in LL	0.183	0.208	0.208	0.157	0.176	0.174	0.171	0.214	0.163	0.177
Percent of total deposits in LL	0.436	0.522	0.432	0.449	0.493	0.445	0.392	0.366	0.418	0.405
Percent of loans that are non-performing ⁽³⁾	0.112	0.047	0.050	0.072	0.100	0.111	0.143	0.144	0.169	0.157
Net liquid assets (% of assets) ⁽⁴⁾	0.582	0.587	0.572	0.519	0.511	0.539	0.585	0.599	0.658	0.666
Profitability (Return on assets) ⁽⁵⁾	0.011	0.016	0.015	0.015	0.011	0.010	0.009	0.008	0.009	0.007
Interest rate receivable on loans & advances (%) ⁽⁶⁾	0.103	0.120	0.119	0.113	0.105	0.118	0.114	0.094	0.083	0.066
Interest rate payable on deposits (%) ⁽⁶⁾	0.075	0.093	0.088	0.088	0.082	0.085	0.072	0.064	0.057	0.045
Overall interest margin on interest earning assets ⁽⁶⁾	0.033	0.045	0.040	0.037	0.030	0.030	0.026	0.031	0.030	0.024
on LL	0.042	0.053	0.053	0.054	0.038	0.034	0.032	0.041	0.038	0.027
on FC	0.025	0.035	0.029	0.023	0.024	0.026	0.026	0.025	0.023	0.017
<i>Aggregate</i>										
Real GDP growth (in %)	3.2	4.0	4.0	3.0	-1.2	1.2	4.2	2.9	5.0	6.0
Coincident Indicator of Economic Activity, % change	3.2	1.1	2.3	3.7	0.1	-0.6	6.0	2.1	6.3	8.3
Interbank rate, LL (in %)	8.4	11.2	13.0	11.2	7.5	7.6	9.7	7.6	4.0	3.9
Interbank rate, change (in %)	-3.4	-23.7	1.8	-1.8	-3.8	0.1	2.1	-2.0	-3.6	-0.1
Lebanon Eurobond stripped spread (in basis points)	428.1			249.9	237.9	205.2	502.4	928.4	511.9	361.1

Source: Author's calculations based on Bilanbanques for bank data; and Banque du Liban, IMF, and JP Morgan Chase EMBIG for Aggregate data.

Notes:

- ⁽¹⁾ Securities are the sum of Lebanese treasury bills and other government bills, Bonds and financial instruments with fixed income, and securities with variable income.
- ⁽²⁾ Total loans are the sum of commercial loans, other loans to customers, overdraft accounts, net debtor/creditor accounts and cash collateral, loans and advances to related parties, and doubtful loans. Current loans are defined as the sum of commercial and other loans to customers after deducting information on substandard loans.
- ⁽³⁾ Calculated as the sum of doubtful and substandard loans (note that this information is under-reported by the banks).
- ⁽⁴⁾ Net liquid assets is a summary measure not precisely defined in Bilanbanques. But it is roughly equal to the sum of cash and central bank, securities, and net interbank assets.
- ⁽⁵⁾ Defined as the ratio of net after-tax profit to total assets. Note that the profit and loss account is under-reported by banks.
- ⁽⁶⁾ Interest rate on loans calculated as ratio of interest income on loans & advances to related parties to total loans and advances to customers. Interest rate on deposit calculated as ratio of interest expenses on deposits from customers and other creditor accounts to deposits from customers. Finally, overall interest margin is calculated as the difference between interest received and interest paid as a ratio of average interest-earning assets (and similarly on LL and FC because data is provided by currency breakdown on the overall interest margin).

Table A2. Descriptive statistics for Foreign Banks

	All Years	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number of banks	20	21	21	23	21	21	21	18	18	18
Mean assets (1996 USD millions)	486.6	353.5	411.4	468.3	504.7	518.6	536.3	535.5	535.5	540.2
Median assets (1996 USD millions)	134.8	95.4	124.7	136.1	160.3	146.3	178.2	165.0	140.4	172.8
Fraction of total system assets	0.208	0.261	0.254	0.249	0.240	0.234	0.205	0.189	0.170	0.150
<i>Fraction of total assets in type category, all banks (mean):</i>										
Assets, of which:										
Cash and Central Bank (Reserves)	0.171	0.149	0.171	0.133	0.121	0.144	0.166	0.179	0.257	0.239
in Lebanese Lira (LL)	0.050	0.053	0.052	0.035	0.036	0.035	0.035	0.052	0.090	0.065
in Foreign Currency (FC)	0.123	0.096	0.119	0.105	0.085	0.113	0.131	0.128	0.167	0.174
Securities ⁽¹⁾	0.234	0.257	0.221	0.237	0.293	0.250	0.223	0.224	0.185	0.208
in LL	0.172	0.231	0.210	0.207	0.222	0.175	0.139	0.138	0.095	0.105
in FC	0.067	0.020	0.016	0.036	0.090	0.113	0.072	0.074	0.095	0.112
Interbank assets	0.116	0.108	0.126	0.154	0.115	0.112	0.124	0.104	0.097	0.099
in LL	0.013	0.006	0.008	0.039	0.012	0.013	0.006	0.005	0.010	0.008
in FC	0.115	0.105	0.122	0.121	0.114	0.106	0.132	0.118	0.105	0.110
Total loans ⁽²⁾	0.275	0.300	0.295	0.291	0.285	0.268	0.275	0.253	0.255	0.245
in LL	0.034	0.043	0.056	0.043	0.046	0.025	0.023	0.022	0.019	0.022
in FC	0.261	0.270	0.244	0.270	0.261	0.252	0.278	0.256	0.262	0.250
of loans:										
Current Loans (Commercial and consumer) ⁽²⁾ , of which	0.148	0.155	0.170	0.162	0.147	0.149	0.132	0.135	0.137	0.133
Commercial loans	0.104	0.118	0.126	0.110	0.104	0.110	0.086	0.091	0.095	0.088
Total liabilities, of which:										
Total deposits	0.691	0.728	0.673	0.644	0.664	0.659	0.708	0.720	0.716	0.725
in LL	0.183	0.254	0.199	0.198	0.201	0.161	0.156	0.160	0.160	0.143
in FC	0.512	0.474	0.474	0.478	0.462	0.498	0.552	0.559	0.556	0.582
of deposits:										
Sight	0.104	0.104	0.096	0.073	0.077	0.079	0.091	0.131	0.137	0.164
Time & Saving	0.569	0.611	0.561	0.560	0.574	0.571	0.603	0.561	0.553	0.525
Interbank liabilities (including to BDL)	0.055	0.035	0.032	0.049	0.048	0.046	0.072	0.078	0.080	0.068
in LL	0.028	0.037	0.028	0.035	0.036	0.013	0.017	0.027	0.036	0.015
in FC	0.035	0.011	0.019	0.035	0.032	0.059	0.059	0.048	0.028	0.038
Subordinated & long-term debt	0.002	0.000	0.005	0.004	0.003	0.002	0.002	0.000	0.000	0.000
Other liabilities	0.131	0.149	0.151	0.146	0.139	0.166	0.112	0.103	0.103	0.094
Equity	0.121	0.087	0.138	0.156	0.146	0.126	0.106	0.099	0.101	0.114
<i>Footnotes (mean)</i>										
Percent of total assets in Lebanese Lira (LL)	0.304	0.374	0.347	0.350	0.406	0.260	0.233	0.246	0.243	0.244
Percent of total liabilities in LL	0.328	0.391	0.364	0.379	0.426	0.291	0.259	0.271	0.268	0.267
Percent of total loans in LL	0.128	0.169	0.176	0.140	0.146	0.113	0.087	0.095	0.088	0.118
Percent of total deposits in LL	0.250	0.353	0.291	0.282	0.271	0.225	0.215	0.208	0.204	0.178
Percent of loans that are non-performing ⁽³⁾	0.140	0.053	0.078	0.102	0.140	0.152	0.168	0.178	0.193	0.199
Net liquid assets (% of assets) ⁽⁴⁾	0.515	0.511	0.509	0.506	0.516	0.454	0.497	0.543	0.535	0.572
Profitability (Return on assets) ⁽⁵⁾	0.008	0.010	0.010	0.011	0.005	0.009	0.007	0.008	0.006	0.005
Interest rate receivable on loans & advances (%) ⁽⁶⁾	0.100	0.122	0.121	0.104	0.100	0.096	0.094	0.084	0.085	0.091
Interest rate payable on deposits (%) ⁽⁶⁾	0.052	0.071	0.064	0.065	0.060	0.055	0.052	0.038	0.031	0.027
Overall interest margin on interest earning assets ⁽⁶⁾	0.033	0.036	0.032	0.039	0.033	0.035	0.035	0.029	0.028	0.029
on LL	0.048	0.046	0.050	0.056	0.030	0.063	0.073	0.044	0.039	0.036
on FC	0.030	0.030	0.024	0.042	0.031	0.027	0.039	0.028	0.026	0.027
<i>Aggregate</i>										
Real GDP growth (in %)	3.2	4.0	4.0	3.0	-1.2	1.2	4.2	2.9	5.0	6.0
Coincident Indicator of Economic Activity, % change	3.2	1.1	2.3	3.7	0.1	-0.6	6.0	2.1	6.3	8.3
Interbank rate, LL (in %)	8.4	11.2	13.0	11.2	7.5	7.6	9.7	7.6	4.0	3.9
Interbank rate, change (in %)	-3.4	-23.7	1.8	-1.8	-3.8	0.1	2.1	-2.0	-3.6	-0.1
Lebanon Eurobond stripped spread (in basis points)	428.1			249.9	237.9	205.2	502.4	928.4	511.9	361.1

Source: Author's calculations based on Bilanbanques for bank data; and Banque du Liban, IMF, and JP Morgan Chase EMBIG for Aggregate data.

Notes:

⁽¹⁾ Securities are the sum of Lebanese treasury bills and other government bills, Bonds and financial instruments with fixed income, and securities with variable income.

⁽²⁾ Total loans are the sum of commercial loans, other loans to customers, overdraft accounts, net debtor/creditor accounts and cash collateral, loans and advances to related parties, and doubtful loans. Current loans are defined as the sum of commercial and other loans to customers after deducting information on substandard loans.

⁽³⁾ Calculated as the sum of doubtful and substandard loans (note that this information is under-reported by the banks)

⁽⁴⁾ Net liquid assets is a summary measure not precisely defined in Bilanbanques. But it is roughly equal to the sum of cash and central bank, securities, and net interbank assets.

⁽⁵⁾ Defined as the ratio of net after-tax profit to total assets. Note that the profit and loss account is under-reported by banks.

⁽⁶⁾ Interest rate on loans calculated as ratio of interest income on loans & advances to related parties to total loans and advances to customers. Interest rate on deposit calculated as ratio of interest expenses on deposits from customers and other creditor accounts to deposits from customers. Finally, overall interest margin is calculated as the difference between interest received and interest paid as a ratio of average interest-earning assets (and similarly on LL and FC because data is provided by currency breakdown on the overall interest margin).

Table A3. Comparing reserve requirement regulation across countries

	Income Level (Grouping according to Caprio et al 2001). High Income = 0; Other = 1	What percent of the commercial banking system's assets is foreign currency denominated?	What percent of the commercial banking system's liabilities is foreign-currency denominated?	Author interpretation of whether there are different FC/LC reserve requirements (based on responses to questions 7.3-7.6 in Caprio et al): Different? 1 Equal? 0	If different, then LC > FC: 1 and if FC > LC: 2	RR on LC	RR on FC if different
Summary statistics on the data	38 high income countries and 111 other	Median: 26.8%	Median: 24.5%	28 Countries		10 countries with LC > FC req and 18 countries with FC > LC req.	
Lebanon	1	66.30%	64.50%	1	1	25% on demand; 15% on time	15%
Albania	1	37.6%	37.2%	0		10%	
Algeria	1	2.35%	10.71%	0		6.25%	
Anguilla		14.30%	61.10%	0		6%	
Antigua and Barbuda	1	17.13%	14.20%	0		6%	
Argentina	1	74.70%	73.20%	0		17%	
Armenia	1	60.10%	80.80%	0		8%	
Aruba	0	26.80%	21.50%	0		7%	
Australia	0	7.20%	39.10%	0		0	
Austria	0	N/A	N/A	0		N/A	
Azerbaijan	1	N/A	N/A	0		10%	
Bahrain	1	52%	43%	0		5%	
Belarus	1	50.30%	N/A	0		10%	
Belgium	0	28%	30%	0		0	
Belize	1	11.30%	15.20%	0		6%	
Benin	1	0	0	0		N/A	
Bhutan	1	37.35%	0.08%	0		20%	
Bolivia	1	83.20%	91.10%	0		12%	
Bosnia and Herzegovina	1	50.00%	64.00%	0		5%	
Botswana	1	1%	18%	0		3.25%	
Brazil	1	22.40%	21.40%	0		60% demand; 20% savings; 15% time	
British Virgin Islands	0	N/A	N/A	0		Lump sum	
Bulgaria	1	55.10%	56.60%	0		8%	
Burkina Faso	1	0	0	0		N/A	
Burundi	1	20%	20%	0		8.50%	
Cambodia	1	98%	98%	0		8%	
Cameroon	1			0		7.75% on demand; 5.75% fixed term	
Canada	0	42%	45%	0		0	
Central African Republic	1			0		5% on demand; 3% fixed term	
Chad	1			0		5% on demand; 3% fixed term	
Chile	1	32.60%	32.70%	1	2	9% on demand; 3.6% on time deposits	13.6 - 19%
Colombia	1	6.20%	6.00%	1	1	N/A	0
Commonwealth of Dominica	1	10.50%	2.39%	0		6%	
Congo	1			0		7.75% on demand; 5.75% fixed term	
Costa Rica	1	57.16%	54.38%	0		5%	
Côte d'Ivoire	1	0	0	0		N/A	
Croatia	1	28.83%	71.66%	0		19%	
Cyprus	0	34%	34%	1	1	6.50%	0
Czech Republic	1	18%	17%	0		2% for up to 2 year maturity	
Denmark	0	47.71%	48.86%	0		0	
Ecuador	1	100%	100%	0		4%	
Egypt	1	29.80%	29.60%	1	1	14%	10%
El Salvador	1	100%	100%	0		N/A	
Equatorial Guinea	1			0		7.75% on demand; 5.75% fixed term	
Estonia	1	63.60%	45.60%	0		13%	
Fiji	1	10.50%	9.52%	0		5%	

Finland	0	29%	26%	0			N/A
France	0	16.30%	15.00%	0			N/A
Gabon	1						5% on demand; 3% fixed term
Gambia	1	2.89%	0.40%	0			16%
Germany	0	6.50%	5.70%	0			N/A
Ghana	1	30%	27%				9% primary reserve; 25% secondary reserve (these earn t-bill interest)
Gibraltar	0	N/A	N/A	0	1	1	9% across the board
Greece	0	16.26%	17.20%	0			2% on mostly up to 2 year maturity
Grenada	1	10.80%	21.56%	0			6%
Guatemala	1	15%	14%	0			14.60%
Guernsey	0	66%	67%	0			0
Guinea	1	28.20%	19.50%	0			5.50%
Guinea Bissau	1	0	0	0			N/A
Guyana	1	7.40%	2.49%	0			12%
Honduras	1	33.20%	33.70%	1		2	12% 50%
Hong Kong, China	0	57%	53%	0			0
Hungary	1	35.30%	34.70%	0			5%
Iceland	0	37%	46%	0			1.5-4%
India	1	6.61%	6.73%	0			5.50%
Ireland	0	40.10%	42.90%	0			N/A
Isle of Man		35%	35%	0			0
Israel	0	32%	31%				6% up to 6 days 3% 1wk - 1yr and 0 for > 1yr
Italy	0	11.50%	14.50%	0			2%
Japan	0	N/A	N/A	N/A			N/A
Jersey	1			0			0
Jordan	1	38.50%	37%	0			8%
Kazakhstan	1	65.11%	83.75%	N/A			N/A
Kenya	1	6%	14%	0			10%
Kuwait	0	20.20%	20.40%	1		1	20% 0
Kyrgyzstan	1	53.60%	64.50%	0			10%
Latvia	1	65.10%	65.80%	0			3%
Lesotho	1	22%	3%	0			3%
Liechtenstein	0	N/A	N/A	0			0
Lithuania	1	51.30%	52.30%	0			6%
Luxembourg	0	40%	45%	0			N/A
Macau, China	0	68.28%	66.06%				3% demand; 2% liabilities up to 3 months; and 1% liab > 3 mo
Macedonia, Republic of	1	64%	53%		1	1	10% on LC demand and up to 3 mo; and 5% on other term LC deposits
Madagascar	1	18.70%	18.10%	0			24% on demand
Malaysia	1	7.10%	6.20%	0			4%
Mali	1	0	0	0			N/A
Malta	1	50.77%	51.68%	0			4%
Mauritius	1	10.20%	9.30%	0			5.50%
Mexico	1	17.10%	16.60%	0			0%
Moldova, Republic of	1	39.68%	47.29%	0			8%
Montserrat	1	14.89%	2.33%	0			6%
Morocco	1	4%	5%	1		1	14% 0
Namibia	1	5%	6%	0			1%
Netherlands	0	N/A	N/A	0			2% for up to 2 year maturity
New Zealand	0	8.42%	22.97%	0			0
Nicaragua	1	51.80%	71.30%	0			19.25%
Niger	1	0	0	0			N/A
Nigeria	1	15.21%	4.61%	1		1	0
Norway	0	22.20%	32.70%	0			0
Oman	1	25%	21%	0			N/A
Pakistan	1	18.30%	22.20%	1		2	5% 20%
Panama	1	100%	100%	0			0

Papua New Guinea	1	3.60%	7.60%	0		5%	
Paraguay	1	61.14%	64.98%	1	2	15% for up to 2 yrs	6.5% for up to 2 yrs
Peru	1	73.41%	72.24%	1	2	6%	6%+20%
Philippines	1	28.57%	32.49%	1	1	17%	0%
Poland	1	23.90%	18%	1	1	4.50%	
Portugal	0	8.20%	9.60%	0		N/A	
Puerto Rico	1	0	0	0		0	
Qatar	0	50%	33%	0		2.75%	
Romania	1	50%	47.07%	1	2	18%	25%
Russia	1	37.90%	32.10%	1	2	7%	10%
Rwanda	1	30%	26%	0		8%	
Saint Kitts and Nevis	1	18.70%	5.30%	0		6%	
Saint Lucia	1	13.40%	4.60%	0		6%	
Saint Vincent and The Grenadines	1	13.00%	8.00%	0		6%	
Samoa (Western)	1	17%	25%	0		4.80%	
Saudi Arabia	1	26%	24%	0		N/A	
Senegal	1	0	0	0		N/A	
Serbia & Montenegro	1	65.00%	61.60%	0		20%	
Seychelles	1	0.06%	3.75%	0		2.50%	
Singapore	0	75%	75%	0		N/A	
Slovakia	1	18.50%	17.30%	N/A		N/A	
Slovenia	0	34.40%	35.30%	1	1	7%	2%
South Africa	1	10.50%	9.10%	0		2.50%	
South Korea	1	10.14%	9.66%	0		N/A	
Spain	0	9%	11%	0		2% for up to 2 year maturity	
Sri Lanka	1		15%	1	1	10%	0
Sudan	1	23%	30%	0		14%	
Suriname	1	25.80%	45%	N/A		N/A	
Swaziland	1	30%	0.80%	0		3%	
Sweden	0	N/A	N/A	0		0	
Switzerland	0	56%	54%	0		0%	
Taiwan	0			0		5%-10.75%	
Tajikistan	1	70%	73%	0		18%	
Thailand	1	12.20%	4.00%	0		6%	
Togo	1	0	0	0		N/A	
Tonga	1	18%	16%	0		15%	
Trinidad and Tobago	1	27.58%	32.58%	1	1	18%	0
Tunisia	1	7.40%	8.80%	1	1	2% for < 3 mo; 1% for 3-2 yrs; 0 otherwise	0
Turkey	1	45.60%	56.60%	1	2	6%	11%
Turkmenistan	1	N/A	95%	0		N/A	
Turks and Caicos Islands	0			0		10%	
Ukraine	1	38.00%	37.40%	N/A		N/A	
United Arab Emirates	1	33%	11%	0		14% demand; 1% on time	
United Kingdom	0	53%	53%	0		N/A	
United States	0	N/A	N/A	0		N/A	
Uruguay	1	77.64%	89.98%	1	1	27.5% < 30 days; 21.5% for 30 - 180 days; 5% for > 180 days	10% < 180 days; 4% > 180 days
Vanuatu	1	53%	8.50%	1	2	10%	50%
Venezuela	1	17%	2%	0		15%	
Zimbabwe	1	2.60%	5.70%	0		50% demand; 20% saving	
Other cties in Balino et al (1999) but not in above Caprio et al sample:							
Malawi				0		20%	
Maldives				0		35%	
Nepal				0		12%	
Sao Tome and Principe				1	2	15%	30%
Tanzania				1	1	12%	0%
Lao PDR				0		12%	12%
Uzbekistan				1	1	25%	0%
Vietnam				0		10%	

Source: Author's calculations based on Barth, Caprio, and Levine (2001, updated 2003) World Bank, "The Regulation and Supervision of Banks around the World: A New Database", available at <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20345037~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html>