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Abstract:

The paper analyses the monetary policy operations of central banks in the Middle East and North Africa (MENA). We distinguish the pattern of monetary policy operations of the liquidity providing central banks of the large industrialized countries (creditor central banks) and the liquidity absorbing central banks of emerging market economies (debtor central banks). Many debtor central banks provide liquidity through foreign exchange intervention in reaction to foreign exchange inflows. If the respective liquidity expansion is regarded as a threat to domestic price and financial stability, liquidity is partly absorbed through sterilization operations. The paper finds that most MENA countries are debtor central banks due to a general pattern of excessive liquidity creation as well as due to country specific reasons.

Keywords: *Emerging Markets, Debtor Central Banks, Foreign Exchange Inflows, Sterilization.*

JEL: F31

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1. Introduction

During the first half of the new millennium the world experienced historically low levels of interest rates. Starting from 1999 the Bank of Japan kept the Japanese interest rate at zero to reactivate the ailing Japanese economy. After the burst of the IT-bubble in the year 2000, the Federal Reserve cut the federal funds rate to historically low levels and only started to increase interest rates during the year 2004. Albeit to a lesser extent, the European Central Bank also reduced interest rates considerably and only started to increase interest rates during the year 2006.

The liquidity conditions in the large industrial countries in North America, East Asia and Europe had a strong impact on the emerging market economies. As the economic activity in the industrialized countries was (comparatively) weak and interest rates were low, investors discovered investment opportunities in the emerging markets where interest rates tended to be high(er). Driven by this “hunt for yield”, some emerging markets experienced an unprecedented degree of capital inflows. In other emerging markets and developing countries, foreign exchange inflows were driven by the global increase of commodity prices and thereby high export revenues.

The impacts of strong foreign exchange inflows into emerging market economies are diverse. While foreign exchange inflows contribute to lower interest rates and thereby higher investment, consumption and growth, monetary authorities may also face the threat of overinvestment, inflation and overheating. Then central banks may be inclined to absorb surplus liquidity from the domestic financial system to prevent risks to price and financial stability.

As will be shown in this paper the central banks of emerging market economies can use a broad variety of instruments to withdraw liquidity from the markets. Whichever instrument is used, there will be an asymmetric pattern of monetary policy in large industrialized countries and small emerging market economies. While the first ones are liquidity providing (creditor central banks), the latter ones are liquidity absorbing which we will call debtor central banks.

In part 2 we will characterize the asymmetric world monetary system and its impact on exchange rate and monetary policies. We explain in general the reasoning for becoming debtor and creditor central banks. The case studies in part 3 will show how central banks in countries of the Middle East and North Africa (MENA) conduct monetary policy operations in this environment. Section 4 concludes.

2. Monetary and Exchange Rate Policies by Creditor and Debtor Central Banks

2.1 The asymmetric nature of the world currency system

McKinnon and Schnabl (2004a, 2004b) stress the asymmetric nature of the world currency system. While the United States as the issuer of the most important international currency pursue an independent monetary policy, most countries outside Europe tend to stabilize exchange rates against the dollar. A similar situation applies to the euro area and its periphery. The European Central Bank is fully independent in monetary policy making, while at periphery of the European Monetary Union the euro is widely used as an intervention, reserve, and pegging currency (ECB 2007).

The central banks of large countries issuing international currencies such as the European Central Bank and the Federal Reserve seldom participate in foreign exchange markets. Interest rate decisions are focused on domestic inflation, growth and interest rate smoothing. The exchange rate is (widely) left to market forces. Foreign exchange intervention takes place occasionally to calm “disorderly market conditions”¹. The large countries issuing international currencies can float their currencies freely for mainly two reasons. First, in large closed economies long-term fluctuations in the exchange rate level affect a comparatively small part of the economy. Second, highly developed capital markets provide a broad variety of instruments to hedge the foreign exchange risk of short-term payment flows.

In contrast, McKinnon and Schnabl (2004a, 2004b) provide the rationale for exchange rate stabilization in small open economies with underdeveloped capital markets. They argue that emerging markets and developing countries cannot choose their monetary framework exogenously based on specific targets of economic policy making. Rather, the regime choice is endogenous, determined by several inherent and interdependent factors such as macroeconomic stabilization, international trade, and the currency denomination of international capital flows.

In many emerging market and developing countries exchange rate pegs help anchoring both inflation and inflation expectations and are an important tool for domestic price stabilization. Even if low inflation in principle can be achieved within inflation targeting frameworks, exchange rate volatility feeds into domestic macroeconomic instability in small and open economies (McKinnon 1963): As world market prices can be assumed to be given and imported goods take a large share in domestic prices, stabilizing exchange rates is equivalent to stabilizing the domestic price level.

Exchange rate stabilization in emerging markets and developing countries is also motivated from international goods markets as transaction costs for international trade decline. From this perspective fixed exchange rates are particularly important for small open economies with a high share of international trade as percent of GDP as well as for highly integrated economic regions with strong intra-regional trade linkages such as Europe and East Asia (McKinnon and Schnabl 2004a). In this context, also invoicing habits matter.

While trade of the large industrialized countries tends to be invoiced in domestic currencies, trade of emerging markets is overwhelmingly invoiced in international currency. Given this phenomenon of “external currency pricing” (Cook and Devereux 2006) (real) exchange rate devaluations fail to have an expansionary impact on the economy through rising exports, because exports are not immediately more competitive. While exports remain constant over the short term, imports collapse due to a rapid pass-through of the exchange rate change into import prices. As import volumes remain constant over the short term, nominal imports increase and the external balance deteriorates. Furthermore, over the longer term the depreciation will reduce the import demand of a country for imports. Therefore, there is an additional incentive to keep exchange rates stable.

Finally, underdeveloped capital markets as they are prevalent in emerging markets and development economies (Eichengreen and Hausmann 1999) provide an incentive for exchange rate stabilization. Due to a long tradition of inflation and depreciation, which have partially resulted in a high degree of dollarization or euroization of the respective economies, banks and enterprises can not use the domestic currency to borrow or to lend internationally. International investors and debtors are unwilling to accept liabilities and assets denominated in local currencies. The foreign exchange risk of net international debt and assets remains widely unhedged.

The monetary authorities can provide a substitute for fragmented capital markets by exchange rate stabilization (McKinnon and Schnabl 2004a, 2004b). From a short-term perspective, reducing day-to-day exchange rate volatilities softens the risk for short-term payments flows. From a more long-term perspective, fixed exchanges rates contribute to macroeconomic and financial stability as fluctuations in the exchange rate level constitute a risk for the balance sheets of banks and enterprises. In particular, in the case of liability dollarization, sharp depreciations lead to an increase in liabili-

¹ The Federal Reserve defines disorderly market conditions as rapid exchange rate changes as well as cases when the exchange rate does not reflect fundamental economic conditions (<http://www.ny.frb.org/aboutthefed/fedpoint/fed44.html>).

ties in terms of domestic currency. In highly euroized countries with a high stock of foreign debt such as for instance Croatia, the incentive to avoid sharp exchange rate fluctuations is even stronger (Chmelarova and Schnabl 2006).²

The asymmetric incentive for exchange rate stabilization in anchor currency countries and in emerging market countries is reflected in both the balance sheets of central banks and in the working mechanisms of monetary policies. While the European Central Bank and the Federal Reserve (henceforth creditor central banks) provide liquidity in their open market operations (OMOs), central banks of emerging market economies (henceforth debtor central banks) mainly supply liquidity by intervening in the foreign exchange market (i.e. by purchasing foreign assets). If the liquidity supply resulting in foreign exchange intervention is regarded as “excessive”, debtor central banks will absorb part of the liquidity by sterilization operations.

A creditor central bank faces a liquidity deficit in the domestic banking system, whereas a debtor central bank faces a liquidity surplus. The definition of a liquidity deficit or surplus and therefore the definition of a creditor or debtor central bank crucially depends on the definition of autonomous factors. Autonomous factors affect liquidity and thus, they affect commercial banks’ deposits held at the central bank, however, they do not belong to the monetary policy operations of the central bank.³ They can be determined by the behaviour of the public, as in the case of banknotes in circulation, or by exchange rate objectives of the central bank, as net foreign assets change due to foreign exchange interventions. The fact that the sum of the autonomous factors is larger on the liability side than on the asset side of the central bank balance sheet implies that the central bank faces a liquidity deficit in the domestic banking system and vice versa in case of a liquidity surplus.

If, for example, net foreign assets are the only liquidity-providing autonomous factor and banknotes in circulation are the only liquidity-absorbing autonomous factor, the central bank will be in a creditor position, if banknotes in circulation exceed net foreign assets. In contrast, net foreign assets will exceed banknotes in circulation in case of a debtor central bank. A creditor central bank, therefore, will supply liquidity in its regular monetary policy operations by providing new balances on banks’ deposits at the central bank, with which banks can refinance their business operations. In contrast, the debtor central bank in this example has already supplied excess liquidity by foreign exchange interventions and therefore needs to absorb liquidity by its monetary policy operations, i.e. steriliza-

² In contrast, countries which are able to hold international debt and assets in domestic currencies such as the US and the euro area, exchange rate fluctuations leave the balance sheet of domestic banks and enterprises widely unaffected.

tion operations. This implies an asymmetric causality in monetary policy making. While monetary policy operations of the Euro Area and the US primarily steer domestic money market conditions, monetary policy operations of emerging market central banks tend to respond to changes in liquidity conditions usually generated by concerns over exchange rate stability.

2.2 Creditor Central Banks

The working mechanism of monetary policy by creditor central banks and the respective impact on the central bank's balance sheets can be explained by referring to the stylized central bank balance sheet as shown in Table 1. The European Central Bank and the Federal Reserve issue base money by independent decisions on open market operations which supply liquidity to the financial system. As the economy grows, the central bank increases its volume of open market operations on the asset side of its balance sheet. On the liability side currency in circulation expands. Liquidity is mainly provided by increases of low-risk domestic assets based on outright purchases of domestic government bonds, repurchase agreements (repos) or collateralized lending to banks. Foreign assets remain widely unchanged.

Figure 1 shows the development of the most important balance sheet items for the Eurosystem since 1999. The balance sheet consolidates the balance sheets of national central banks participating in the European monetary union. The – in comparison to the US – large stock of foreign reserves is mostly due to the past history of exchange rate stabilization under the Bretton Woods System and the European Monetary System. Net foreign assets are the main autonomous factor on the asset side. Changes of the net foreign assets, however, are mainly driven by valuation changes because the Eurosystem as a large and independently floating area hardly intervenes in the foreign exchange market.⁴

Currency in circulation and government deposits are the main autonomous factors on the liability side and the sum of both exceed net foreign assets. In fact, even without government deposits as an autonomous factor, currency in circulation exceeds net foreign assets and therefore puts the Eurosystem in a creditor position. Thus, the Eurosystem faces a liquidity deficit and open market operations on the asset side such as repos and collateralized lending are the main liquidity providing in-

³ For a similar definition of autonomous factors see ECB Monthly Bulletin, July 2001, p. 42.

⁴ Since the start of the monetary union in 1999, the Eurosystem has only intervened in autumn 2000 in the foreign exchange market. Three consecutive interventions aimed at strengthening the euro against the dollar.

struments, whereas currency in circulation is the main liquidity absorbing item and expands together with open market operations on the asset side.⁵

Apart from currency in circulation, other items on the liability side are shown as negative figures in Figure 1. Reserve requirements develop steadily reflecting the fact that the reserve ratio has remained constant since the creation of the Eurosystem. Minimum reserves in the Eurosystem contribute to the institutional framework of monetary policy implementation by stabilizing interest rates in the money market and enlarging the structural liquidity shortage. In contrast to open market operations they are not used for actively implementing changes in the monetary policy stance. The size of government deposits is small, as many national central banks within the Eurosystem only provide essential fiscal agent functions to their governments, whereas most other banking services to the government are provided by commercial banks.

Table 1: Stylized Central Bank Balance Sheet

Assets	Liabilities & Capital
1. Net Foreign Assets (incl. gold)	3. Base Money 3.1 Currency in circulation 3.2 Deposits of commercial banks 3.2.1 Required reserves 3.2.1.1 Domestic currency 3.2.1.2 Foreign currency 3.2.2 Other deposits of commercial banks
2. Domestic Assets 2.1 Claims on central government 2.1.1 Securities 2.1.1.1 OMO: outright purchases 2.1.1.2 Purchased by other procedures 2.1.2 Others: loans, advances 2.2 Claims on the banks 2.2.1 OMO: repos, collateralized lending 2.2.2 Others: credit, bail-out operations 2.3 Claims on private sector 2.4 Other assets	4. OMO: Debt securities sold 5. Liabilities to banks 5.1 OMO: reverse repos, deposit taking auctions 5.2 Others 6. Government deposits 7. Other liabilities 8. Capital and reserves

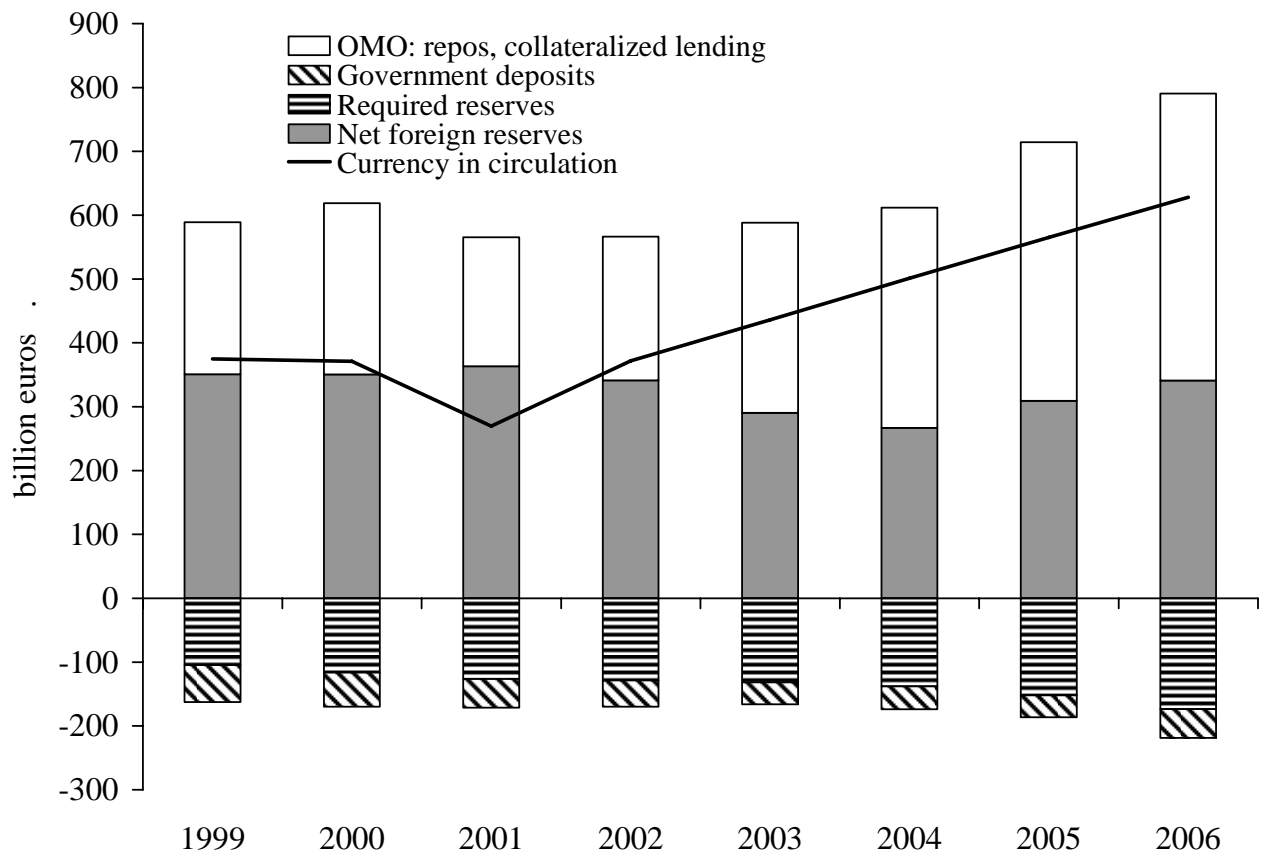
Note: OMO = open market operations.

The Eurosystem provides an example of a typical creditor central bank, because the central bank faces a liquidity deficit in the domestic banking system which is mainly created and enlarged by the demand for currency. In this monetary policy setting, domestic interest rates are the operational targets of monetary policy which is primarily conducted with respect to domestic targets such as domestic price stability and growth. International capital flows and exchange rates are allowed to

⁵ Euro cash was introduced in January 2002. Since then, the stock of currency in circulation is steadily increasing.

adjust freely to these “exogenous” interest rate changes. As a result, exchange rate volatility both in terms of levels and day-to-day returns is high. As the interest rate decisions of creditor central banks are primarily focused on domestic targets, foreign exchange intervention is rare. When it takes place it is sterilized because unsterilized intervention would impair the independence of domestic monetary policy making.⁶

Figure 1: Consolidated Balance Sheet of the Eurosystem (1999-2006)



Source: ECB.

2.3 Debtor Central Banks

Foreign versus domestic assets

The causality in monetary policy operations by debtor central banks tends to be reverse compared to monetary policy operations by creditor central banks. Creditor central banks independently decide on monetary policy and therefore conduct their liquidity management usually by aiming at a domes-

⁶ In line with this assumption, the Federal Reserve Bank of New York which is in charge of US foreign exchange intervention sterilizes its foreign exchange intervention automatically, fully and instantaneously (Cross 1998: 93). The European Central Bank takes foreign exchange intervention into account within the monetary policy operations of the same maintenance period.

tic short-term interest rates as an operational target. Monetary policy operations by debtor central banks tend to react to exchange rate concerns which play a dominant role. Foreign exchange interventions against appreciation pressure on the domestic currency lead to autonomous increases of liquidity due to increases of net foreign assets. Monetary policy operations then react and sterilize excess liquidity created by foreign exchange interventions.

Foreign exchange inflows can be driven by several factors such as foreign direct investment, short-term capital inflows attracted by high interest rates, remittances (as in Jordan or Lebanon) or current account surpluses (as in the oil exporting countries). As foreign exchange inflows lead to appreciation pressure the central banks of emerging markets tend to intervene in the foreign exchange market thereby creating liquidity. The central banks may react to “exchange rate driven” liquidity creation by sterilization operations because they attempt to reach two goals at the same time: (1) Exchange rate stability as well as (2) price and / or financial stability.

This general pattern can be observed in many emerging market economies and is also reflected in the balance sheets of the MENA central banks. Typical debtor central banks such as the central bank of Jordan in our sample face a liquidity surplus in the domestic banking system which is created by foreign exchange market interventions. Net foreign assets are the main liquidity providing autonomous factor and exceed currency in circulation as the main autonomous liquidity absorbing autonomous factor. In the face of foreign exchange inflows, net foreign assets on the asset side of the central bank balance sheet increase. If the reserve accumulation remains fully unsterilized changes in the stock of foreign reserves correspond to changes in base money. Then the liquidity supply to the domestic economy can become “excessive” and the central bank may decide to withdraw liquidity from the market by sterilization operations.

Additionally, the size of the liquidity surplus will not only depend on the size of autonomous factors on the asset side, but also on the size of autonomous factors on the liability side that absorb liquidity. The autonomous liquidity demand will be comparatively high in countries with a (history) of a sound macroeconomic environment and therefore a low degree of currency substitution. In this case, currency in circulation will be relatively high and increasing. In contrast, in countries with a long history of macroeconomic instability and inflation domestic transactions may be widely based on international currencies. Then, as for instance in Lebanon or Israel, currency in circulation will be relatively low and hardly change with economic activity. Comparatively small liquidity expansions as created by foreign exchange interventions or fiscal financing will then create a comparatively large amount of surplus liquidity.

Therefore, a debtor central bank can also emerge in countries that face balance of payments deficits over some years, as long as the accumulated level of autonomous factors on the asset side, e.g. net foreign assets, exceeds autonomous factors on the liability side, e.g. currency in circulation. The level of foreign reserves may not emerge endogenously by foreign exchange inflows and exchange rate concerns, but it can be guided by an adequacy measure for foreign reserves. Given a sufficiently low demand for domestic currency, net foreign reserves can then quickly outweigh currency in circulation and even interventions that only have accumulated a minimum adequate level of foreign reserves, have already created a liquidity surplus in the domestic banking system.

Finally and in addition to the liquidity creation due to reserve accumulation central banks in emerging market economies may create (excessive) liquidity by purchasing government bonds. In this case domestic assets become a major liquidity providing autonomous factor. For instance, in Egypt, a substantial part of central bank assets consist of government bonds, which – in contrast to creditor central banks – do usually not reflect monetary policy operations but a form of fiscal financing.⁷ Liquidity creation takes place by non-monetary policy operations on the asset side, i.e. fiscal and quasi-fiscal operations. If this operation puts price stability at risk, the central bank partly absorbs liquidity by monetary policy operations on the liability side.

Liquidity Absorbing Transactions

There are different forms of liquidity-absorbing monetary policy operations which are reflected on the liability side of the stylized central bank balance sheet in Table 1.⁸ Item 3.2 includes “required reserves” (item 3.2.1) and “other deposits of commercial banks” (item 3.2.2). These other deposits of commercial banks can simply reflect excess reserves and thereby signal an unabsorbed liquidity surplus. Additionally, item 3.2.2 can include more market-oriented monetary policy instruments other than required reserves such as deposit facilities. Banks can use deposit facilities on their own initiative to place excess liquidity at a given interest rate at the central bank. Deposit facilities are therefore more market-oriented than required reserves, which often are not remunerated. Open market operations are considered as the most market-oriented monetary policy instruments and are reflected in item 4 and 5.1 (i.e. debt securities issued, reverse repos, or deposit taking auctions). They usually bear an interest rate that is close to a market rate.⁹

⁷ In general the central banks of emerging markets and developing countries will prefer to hold the bonds of the large industrial countries rather than domestic governments bonds, because US or euro area bonds are less risky assets.

⁸ For an overview of monetary policy operations see Bindseil (2005).

⁹ These forms of market-based sterilization operations are for instance widely used by the central banks in Central and Eastern Europe that intend to join the European Monetary Union and therefore have adopted market oriented principles.

Because the rate of return of market oriented central bank sterilization instruments competes with other investment opportunities of commercial banks, the interest rate paid on market based sterilization instruments needs to be close to the domestic market interest rate level. The downsides of market-oriented sterilization instruments can be substantial sterilization costs, in particular if the interest rate differential between emerging market economies and reserve currency countries is positive and high. Sterilization costs can have an impact on the financial soundness of the central bank. Eventually the central bank independence can be affected if sterilization costs erode the central banks' capital base (Schobert 2006a).

Less costly ways to sterilize are reserve requirements. Central banks can use an active reserve requirement policy in order to absorb liquidity. It is less costly, because central banks can determine the respective remuneration rate discretionarily or often decide not to remunerate it at all. The downside is that increasing and changing reserve requirements will lead to higher and more volatile interest rates and even financial disintermediation. As commercial banks may tend to circumvent reserve requirements with low remuneration the central bank may be forced to successively broaden the reserve base.

Alternatively, government deposits held at the central bank can restrict liquidity growth in the domestic banking system. Government deposits are usually regarded as an autonomous factor on the central banks' balance sheet in large industrial countries. In some countries, government deposits can nevertheless function like quasi-monetary policy operations, as changes in government deposits actively assist the liquidity management of the central bank. This instrument is prevalent in countries, in which the government receives a major share of the inflows in foreign currency. For example the revenues can originate from oil exports such as in Algeria and Iran, and are placed at so called stabilization funds held at the central bank.

Also large privatization receipts of the government can be deposited at the central bank to avoid undue liquidity expansion as for example in Tunisia in 2006. In both cases a close cooperation between the central bank and the fiscal authorities is necessary as the degree of sterilization will strongly hinge on government decisions in preserving the central banks' desired liquidity conditions. This can also be regarded as a downside, because an independent central bank rather conducts its liquidity management without cooperating with the government.¹⁰ The costs of this alternative way of restricting liquidity growth will correspond to the remuneration of the government deposits, if the deposits are interest-bearing.

3. Monetary Policy Operations at Debtor Central Banks in MENA Countries

3.1. Overview and Data

The country study on debtor central banks in the MENA region includes Algeria, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Morocco, Saudi Arabia, Syria, Tunisia and Turkey. Energy exports play a major role in Algeria, Iran, Kuwait and Saudi Arabia, which belong to the Organization of Petroleum Exporting Countries (OPEC) as well as for Syria and Egypt, which are major non-OPEC oil exporting countries.¹¹ Exchange rates in these six countries as well as in Jordan and Lebanon are pegged or tightly managed to the US dollar, Tunisia and Morocco peg or tightly manage their currencies to a basket including the euro. Turkey and Israel officially claim floating exchange rates within an inflation targeting framework.

The central bank balance sheet data are collected from the financial statements of central banks or other statistical publications of the respective central bank with the exception of net foreign assets. Net foreign assets are calculated by using data for monetary authorities from the International Financial Statistics of the International Monetary Fund. To compare the structural differences across countries and over time we present annual data of the most important balance sheet items from 1997 until 2006 (depending on data availability). They include currency in circulation, net foreign assets, monetary policy operations, banks' and government deposits and – if applicable – other liquidity creating operations such as fiscal or quasi-fiscal operations.

Generally, required reserves are used as liquidity-absorbing monetary policy instruments by all central banks of the sample. All central banks apart from Syria and Saudi Arabia report market-based sterilization operations, though the size and activity differs largely cross section and over time (see Figures 2 to 4). Government deposits play an important role on the central banks' balance sheets in Algeria, Iran, Saudi Arabia, and Syria. Fiscal operations on the asset side are reflected in the balance sheet item "claims to the government". They usually include direct advances to the government, i.e. lending for budgetary purposes, or outright purchases of government securities for monetary policy purposes. The item "claims to banks" can emerge, even if the banking system on aggregate is in a liquidity surplus. It either reflects a malfunctioning of the interbank market in case of open market operations or often bail-out operations or preferential loans to individual banks in case of other credit operations.

¹⁰ Therefore, many national central banks in the Eurosystem, rather prefer government deposits to be held at commercial banks and only hold low levels of government deposits in order to fulfill essential fiscal agent functions.

¹¹ Egypt is a growing gas producer.

3.2 Country Analysis

Algeria, Iran, Kuwait and Saudi Arabia

The balance sheets of the central banks of *Algeria, Iran, Kuwait, and Saudi Arabia* as shown in Figure 2 reflect that these OPEC countries and depend heavily on oil export revenues. On the asset side of the central bank balance sheets net foreign assets are dominating.¹² All four central banks are debtor central banks. Excess liquidity is mainly absorbed by reserve requirements and also by open market operations in case of Kuwait.

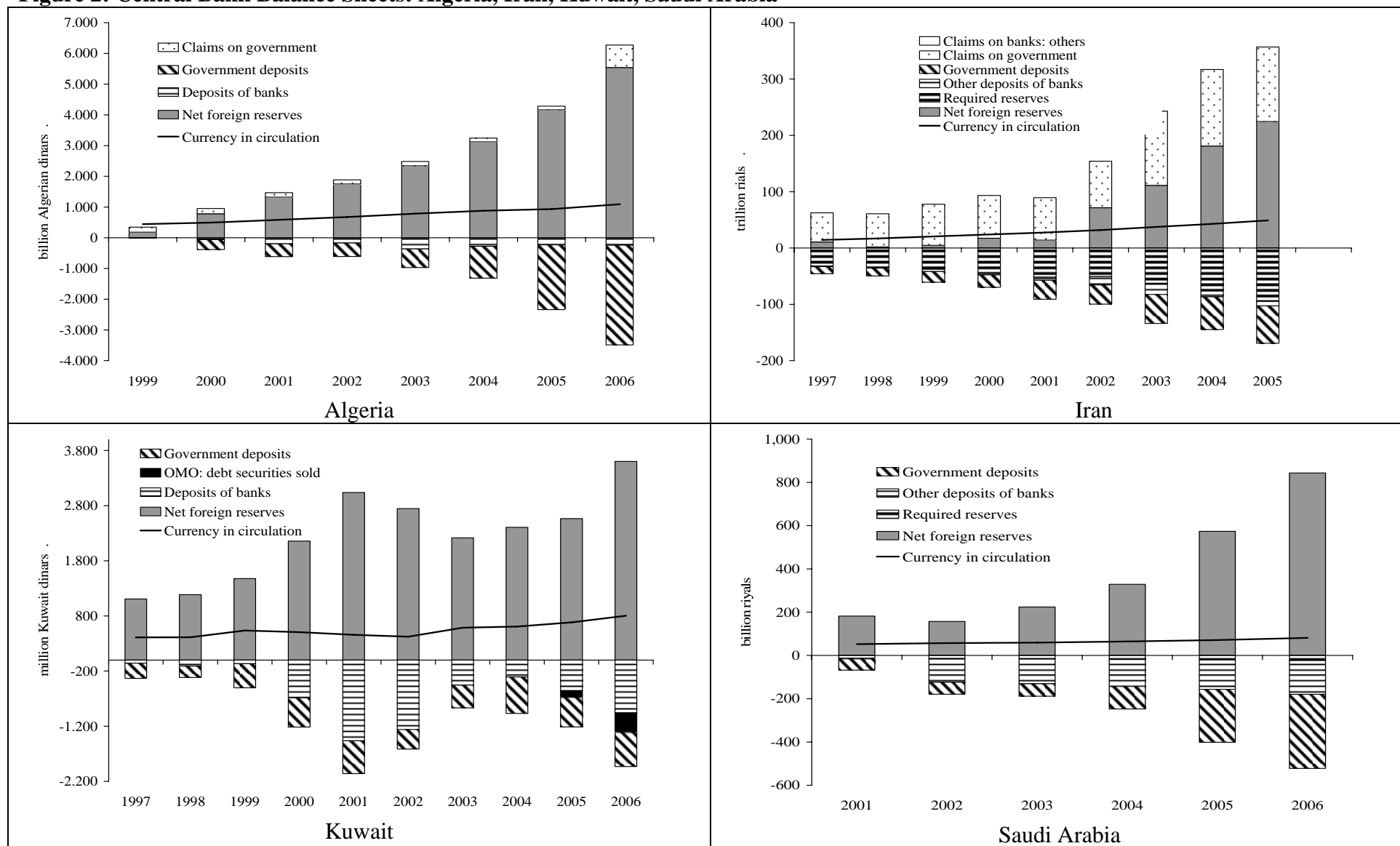
In Algeria, Iran and Saudi Arabia, net foreign assets significantly increase together with government deposits. Liquidity creation due to the inflow of oil-related foreign exchange revenues is restricted by “parking” these revenues on government deposits. In case of Algeria and Iran, government deposits reflect the working of the stabilization fund that exists in both countries since 2000 (Amuzegar, 2005). Saudi-Arabia has not yet officially announced a stabilization fund. Liquidity creation from oil-related foreign exchange revenues is nevertheless restricted as government deposits increase with net foreign assets. Kuwait also uses a stabilization fund, however, it is not held at the central bank. Therefore, the increase of net foreign assets at the central bank under-represents the increase of foreign reserves holding due to oil-related foreign exchange revenues.

Kuwait is the only OPEC country in the sample that has actively used open market operations, i.e. the sale of Central Bank of Kuwait bonds, over the recent years in order to sterilize excess liquidity.¹³ In Iran the increase in net foreign assets is augmented by the increase of claims to the government. Despite high oil revenues, Iran continues to face budgetary pressures, which presumably have forced the central bank into financing the government.

¹² In Kuwait foreign reserves declined temporarily following the first gulf war.

¹³ A positive side effect of this sterilization operation is that such central bank bond sales contribute to develop a domestic money market.

Figure 2: Central Bank Balance Sheets: Algeria, Iran, Kuwait, Saudi Arabia



Source: National Central Banks, IMF.

Tunisia

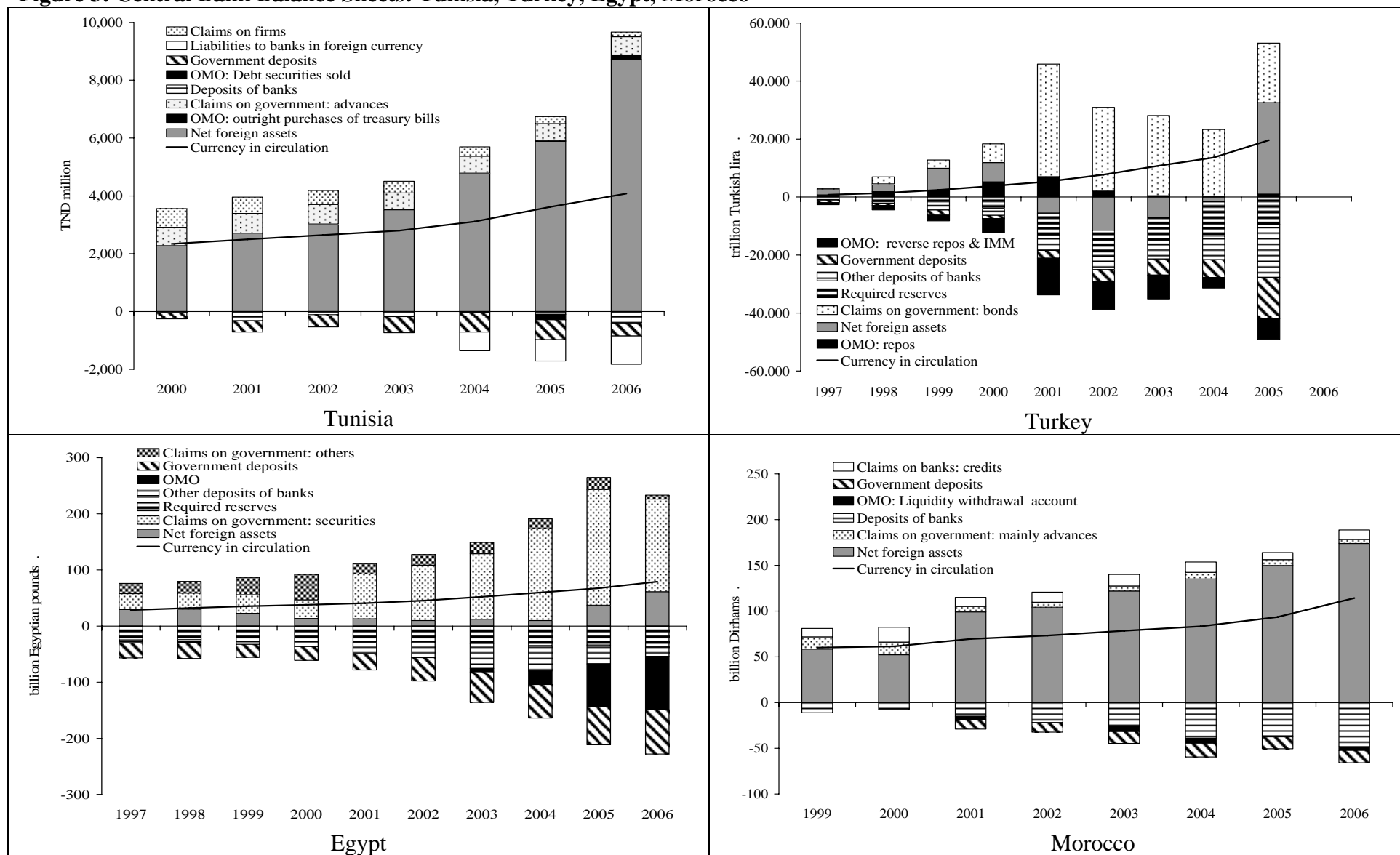
As shown in the upper left panel of Figure 3 the asset side of the balance sheet of the Central Bank of Tunisia is dominated by foreign assets which have increased substantially since 2001 and exceed currency in circulation. The Central Bank of Tunisia has only marginally embarked into sterilization operations. Open market operations have only emerged over the last years; they have a small volume and are liquidity providing, i.e. outright purchases of treasury bills, or liquidity absorbing operations, i.e. the sale of central banks debt securities. Thus, open market operations are not systematically used to absorb a structural liquidity surplus in the domestic banking sector.

In particular in the year 2006 liquidity creation by increases in net foreign assets due to the sale of state shares in *Tunisie Telecom* is restricted by increasing a special government account. The foreign currency revenues were deposited on a pending account of the government that is reported as an adjustment item on the liability side of the central bank balance sheet not shown in Figure 3. Furthermore, the item liabilities to banks that emerged since 2004 includes foreign currency-denominated borrowing of the Central Bank of Tunisia in the money market and sight deposits of Tunisian authorized financial intermediaries. It restricts liquidity growth due to increasing net foreign assets.

Fiscal and quasi-fiscal operations are reflected in the items “claims to the government” and “claims to firms”. Claims to the government mainly include direct advances to the state.¹⁴ Claims to government-related firms, namely claims on the National Oil Board and Cereal Board, were purchased from the National Agricultural Bank in 1996 and have continuously lost value.

¹⁴ The major share of direct advances is an advance to the state for Tunisia’s capital subscription at the International Monetary Fund and the Arab Monetary Fund. A small part of the direct advances is restructured old public debt, on which the state pays preferential interest rates.

Figure 3: Central Bank Balance Sheets: Tunisia, Turkey, Egypt, Morocco



Source: National Central Banks, IMF.

Turkey

The central bank balance sheet of Turkey as shown in the upper right panel of Figure 3 shows that claims on the government play a dominant role on the asset side. During the 2000/ 2001 financial crisis, net foreign assets became negative and the central bank supported the financial system with exceptional financing based on liquidity providing open market operations and substantial purchases of government bonds, which can be mainly regarded as fiscal operations.¹⁵ Thus, both net foreign assets and claims to the government are major autonomous factors on the asset side, which exceed currency in circulation and thereby put the Central Bank of Turkey into a debtor position.

On the liability side remunerated required reserves, reverse repos and interbank money market (IMM) transactions have been used as liquidity absorbing instruments. The size of these sterilization instruments has increased considerably since 2000. During the crisis, however, the central bank provided and absorbed liquidity by conducting both types of open market operations, which signals the malfunctioning of the interbank market during this time period.

Egypt

The balance sheet structure of the Central Bank of Egypt is shown in the lower left panel of Figure 3. Although on the asset side foreign reserves have increased substantially the dominating liquidity creating items are claims to the government, in particular in form of government security holdings. Part of the large stock of government securities held on the central banks' balance sheets is due to outright purchases of the central bank on the primary market and can therefore be regarded as fiscal financing.¹⁶

The substantial increase of assets is matched by a substantial rise of liquidity absorbing items on the liability side of the balance sheet. Required reserves and other central bank deposits of commercial banks have been traditionally the most important liquidity absorbing instruments, but the relative size has decreased over time. Since 2003, sterilization is increasingly conducted by OMOs, e.g. outright sales of bonds, deposit-taking auctions and – since 2005 – by selling debt instruments (CDs

¹⁵ At the Central Bank of Turkey direct advances to the government were already banned in 1997. However, a major part of the position “claims on government: bonds” consists of restructured public financing during the crisis (Schobert 2006b). This portfolio largely bears returns below market rates.

¹⁶ The central bank finances for example, cash deficits on government accounts at the central bank (Annual Report of the Central Bank of Egypt, 2002-2003, 32).

and Central Bank of Egypt notes) to domestic banks.¹⁷ Also the size of government deposits at the central bank has increased over time.

Morocco

The balance sheet of the Central Bank of Morocco is shown in the lower right panel of Figure 3. Given tight exchange rate stabilization based on a currency basket and vivid foreign exchange inflows net foreign reserves have increased substantially since the year 2000 and are the main liquidity providing autonomous factor.

The liquidity created by foreign reserve accumulation has been partially sterilized by small-scale OMOs, i.e. deposit-taking operations placed on so called liquidity withdrawal accounts as well as required reserves included in the item “banks deposits”. Despite an aggregate liquidity surplus some banks conduct bilateral credit operations with the Bank of Morocco. Claims on the government mainly consist of advances although the size is even smaller than claims to banks.

Jordan

Given a tight dollar peg and vivid foreign exchange inflows Jordan has accumulated a large stock of foreign reserves on the asset side of the central bank balance sheet. Net foreign assets are therefore the main liquidity providing autonomous factor on the asset side and exceed currency in circulation.¹⁸

In contrast to other central banks in the region, a large part of liquidity-absorbing transactions take place in open market operations for instance by the sale of Certificates of Deposits (CDs). In addition required reserves have absorbed liquidity from the domestic money markets. Despite a liquidity surplus in the total domestic banking system, some banks conduct bilateral credit operations with the Central Bank of Jordan (a major share of claims to banks are reported as bail-out operations).

¹⁷ Since June 2005 the central bank has also implemented an interest rate corridor for the interbank market which has considerably stabilized money market rates (see Annual Report of the Central Bank of Egypt, 2005-2006).

¹⁸ In comparison to the foreign reserves, other liquidity providing items of the asset side of the balance sheet such as claims on the government and commercial banks are small and have hardly changed during the observation period. Claims to banks consist of advances and a special government bond. This non-interest bearing bond was issued by the Ministry of Finance to the order of the central bank in accordance to a special law in 1992 that deals with the settlement of extraordinary advances (Annual report of the Bank of Jordan 2005, 122).

Syria

The Central Bank of Syria discloses little information on its balance sheet positions which are shown in the upper right panel of Figure 4. Since 1998 liquidity has been mainly created by the accumulation of foreign reserves. Together with net foreign assets, claims to the government and to commercial bank can be regarded as autonomous factors on the asset side, however, they have not changed substantially. Furthermore, claims on the government on the asset side are matched by government deposits of similar size on the liability side. Sterilization mainly takes place by minimum reserve holdings, which have increased over the sample period.

Lebanon

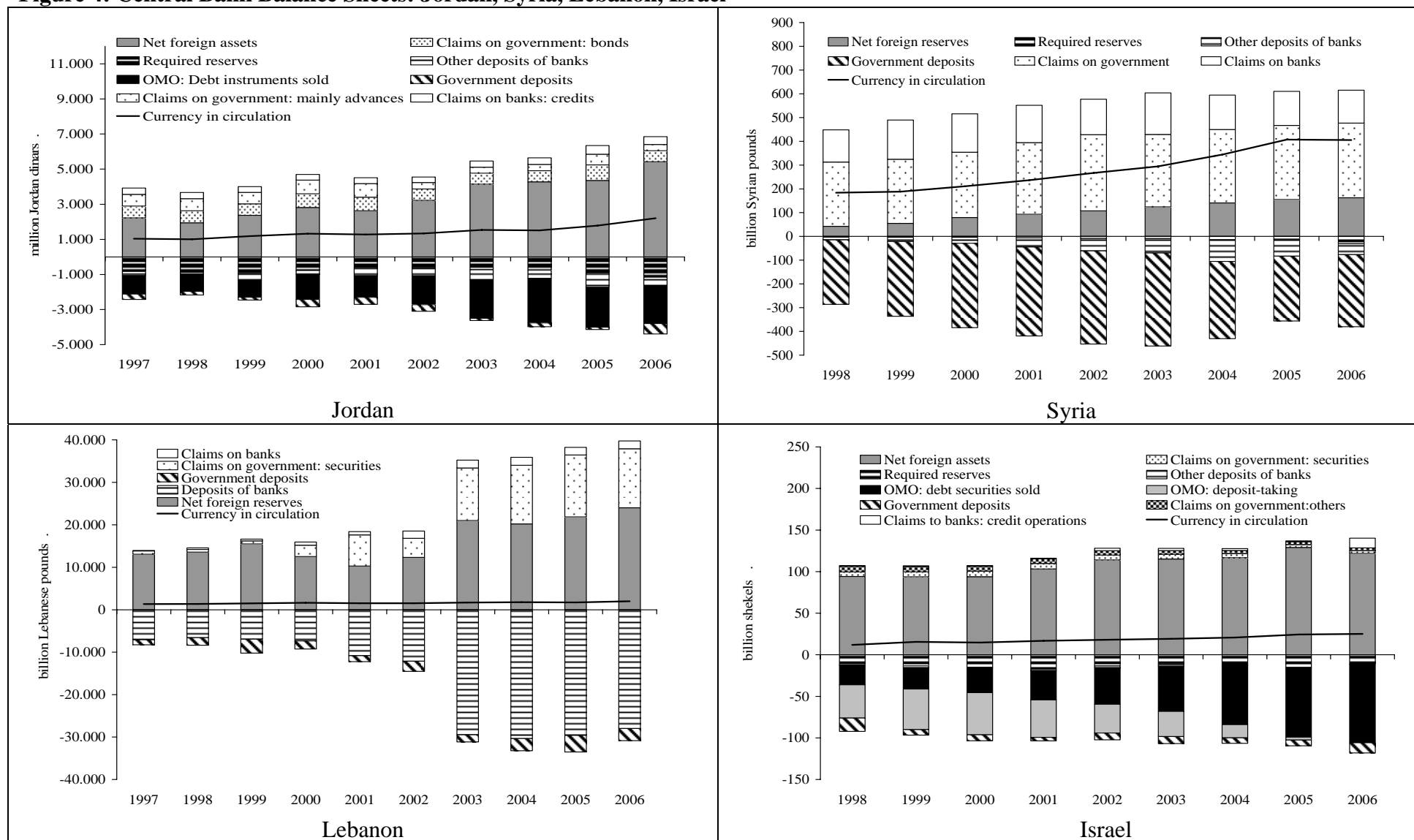
As shown in the lower left panel of Figure 4, the Banque du Liban reports an extremely large stock of foreign reserves in relation to currency in circulation. Due to a high degree of dollarization the demand for domestic currency is comparatively low. Liquidity creation either by the accumulation of foreign reserves or by purchases of government securities as the two most important autonomous factors on the asset side increase the liquidity surplus in the domestic banking system.

In 2003, the increase of net foreign assets and government securities reflects the impact of the Paris II conference. The objective of Paris II was to seek support of the international community to alleviate the burden of the public debt and to reverse the macroeconomic and fiscal imbalances of the Lebanese economy. According to the Ministry of Finance the conference resulted in 10.1 billion dollars of grants and loans for the Lebanese government. 2.4 billion dollars were provided by seven lending countries, 3.6 billion dollars by commercial banks operating in Lebanon and 4.1 billion dollars from a Central Bank scheme¹⁹, which is reflected in the increase of government securities on the asset side of the central bank balance sheet.

In addition to large official inflows related to Paris II, private capital inflows surged in 2003 which contributed to the increase in net foreign assets on the central banks' balance sheet. Liquidity absorbing items are included in the item bank deposits, of which the structure is not further disclosed. They include reserve requirements and presumably also certificates of deposits which the Banque du Liban uses to sterilize excess liquidity.

¹⁹ See www.forlebanon.net/bio.htm.

Figure 4: Central Bank Balance Sheets: Jordan, Syria, Lebanon, Israel



Source: National Central Banks, IMF.

Israel

Due to the fact that the Bank of Israel has not intervened in the foreign exchange market since 1997, the level of net foreign assets has remained broadly unchanged. Nevertheless, foreign reserves remain the dominating autonomous factor on the asset side of the balance sheet as shown in the lower right panel of Figure 4. Similar to Lebanon, foreign reserves are very high compared to currency in circulation due to a high degree of dollarization. The constantly low demand for domestic currency prevents the central bank to escape from its debtor situation, even though it does not create additional liquidity by foreign exchange intervention and only to a limited extent by credit operations with banks.²⁰

Liquidity-absorbing open market operations consist of required reserves, deposit-taking auctions and debt securities sold, so called *makam*. Debt security sales have become the dominating sterilization instrument over the last years. According to the Short-Term Loan Law 5744–1984 the government is authorized to issue bonds to be sold only to the Bank of Israel. Theoretically the Bank of Israel buys and sells these bonds from and to the public to regulate liquidity. In practice, *makam* have been mainly used for soaking up excess liquidity.²¹

The government is obligated to deposit the entire proceeds of these bonds sales in the Bank of Israel and may not use the proceeds for anything apart from repaying the loan or paying the interest on it. The balance of *makam* shown in the balance sheet reflects the redemption value of bills held by the public *less* the balance of the discount not yet amortized (Bank of Israel, Financial Statements 2005).

4. Conclusions

The asymmetric incentive for exchange rate stabilization in anchor currency countries and in emerging market countries is reflected in both the balance sheets of central banks and in monetary policy operations in both groups of countries. While the European Central Bank and the Federal Reserve as creditor central banks provide liquidity based on different kinds of open market operations the central banks of emerging market economies mainly supply liquidity by purchasing for-

²⁰ The small size of direct lending to banks also includes bail-out operations. Claims on the government mainly include a portfolio of tradable securities and long-term advances that were made until 1988.

²¹ On 28 Feb 2007 the Bank of Israel announced to use *makam* as an active monetary tool: After more than a decade of gradually expanding the quantity of *makam* in order to establish it as a monetary instrument, the Bank of Israel will begin using *makam* for restoring or soaking up liquidity according to circumstances (Bank of Israel 2007, Recent Economic Developments, 117)

eign assets and sometimes by increasing claims to the government due to fiscal financing. As the liquidity resulting from foreign exchange interventions (and fiscal operations) tends to be excessive to maintain price and / or financial stability, debtor central banks partly absorb liquidity by sterilization. This implies an asymmetric causality in monetary policy making. In the balance sheet of a typical debtor central bank net foreign assets increase in the face of high foreign exchange inflows while on the liability side sterilization instruments such as required reserves and liquidity absorbing open market operations increase.

In the group of MENA countries the central banks are typical debtors to the domestic banking system. This is most evident in the central bank balance sheets of Jordan and Morocco. The central banks in oil exporting countries such as Algeria, Iran and Saudi Arabia as well as the central bank of Tunisia can be seen as another type of debtor central bank as they restrict liquidity increases due to foreign exchange inflows by placing these inflows on government deposits at the central bank. This kind of sterilization requires a close cooperation of the central bank and the government with respect to monetary policy targets. In Kuwait the sterilization of oil revenues partly takes place via a sterilization fund outside the central bank. In addition the central bank uses open market operations as sterilization instruments.

Egypt, Iran, Lebanon, Syria and Turkey represent countries, in which – in addition to reserve accumulation - fiscal operations have contributed to surplus liquidity which can be linked to sterilization operations. Additionally, in Lebanon and Israel, the debtor position of the central bank is further enhanced due to high dollarization and a correspondingly low demand for domestic currency. Even without creating additional liquidity by increasing autonomous factors on the asset side, it will therefore be difficult for these central banks to change their debtor position into a creditor position.

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