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Central Bank Finance and Debt Dynamics in Arab States



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Beirut

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Introduction

Central Banks have been financing the needs of government for centuries and the history of modern central banking starts from the contracts between state and Bank of England to finance the government needs over the longer term and at lower interest rate. However, the views of academics on the role of central banks in financing the governments are constantly changing. Over the years following the collapse of the Bretton Wood system and the decade of inflation in 1970s ended by recession caused by the huge interest rate hike (Voelcker disinflation), the central bank financing of governments remained a taboo. During the so called *the Great Moderation* in 1990s and early 2000s, the consensus emerged on the central role of the inflation targeting and central bank independence in maintaining macroeconomic stability. In this view, there is not much space for relying the governments on the central banks to finance their borrowing needs. However, the challenges brought in by the Global Financial crisis and COVID-19 pandemic as well as hitting zero lower bound in developed countries reignited the debate on the instruments that should be used by the central banks. Over the 2020, the new consensus emerged that in the wake of such events as COVID-19 pandemic, the central banks should assist the governments in restoring economic growth. However, as of 2022, the record-breaking inflation around the developed world is challenging these views and we may soon see the return to the good, old *independent central bank and inflation targeting* policy prescriptions.

The position of developing countries is different than the high-income countries. In the difficult times, they do not enjoy the trust of investors and cannot rely on the reserve currency status of the notes that they emit. In addition to that, catching up to the developed countries requires more resources and exerts greater pressure on the government finance. Weaker institutions also play some role – as politicians tend interfere more in the monetary policy, the sound legal arrangements are more important than in countries with better rule of law. On the other hand, the volatility of the international financial markets may push the policy makers towards the domestic financing which is more stable and less prone to changing appetite for risk among financial investors. This is, however, very risky – overreliance on central bank in financing government borrowing needs may lead to the inflation and crisis in the event of external shock, undermining the local currency and central bank mandate to stabilize inflation. Once the boundary is crossed, the wage-price spiral develops very quickly leading to serious turmoil in the country economy and collapse of the banking sector.

This paper aims to shed some light on the role of central bank in accommodating borrowing needs of the governments in the Arab countries. Central bank can use numerous instruments to help governments to raise funds for their borrowing needs. Buying the government bonds directly is one method, keeping artificially low interest rates or lowering the reserve requirements for commercial banks and encouraging them to buy government bonds are other examples. Nevertheless, all of them are similar in their macroeconomic consequences – they increase money supply to cover government expenditures. If used prudently and sparingly, they can support economic growth and macroeconomic stability, but it is very easy to overlook the boundary, causing inflation that is almost impossible to tame. This paper aims to show the risks associated with the central bank financing of government borrowing needs and show where Arab countries stands when it comes to the institutional arrangements and the role of government bonds in central banks balances. It starts with short introduction based on the need for coordination between debt management and other macroeconomic policies followed by the literature review describing the history of the approaches to central bank financing of government debt with particular focus on the developments following the Global Financial Crisis and COVID-19 pandemic. The next section is devoted to the institutional arrangements on central bank financing to the government among Arab countries based on the database by Romelli (2022). Fifth section describes the role of government securities in the balances of central banks in Arab countries and describes measures undertaken in the wake of COVID-19

pandemic. Section six describes the risks associated with the increase in money supply in the wake of external shocks highlighting their impact on inflation, exchange rates and output based on the structural VAR model estimated the data for Jordan and Egypt. The last section concludes and tries to derive some important policy implications.

1. Debt management and the broad macroeconomic framework

The last two decades and the ineffectiveness of central bank policy in raising inflation in developing countries as well as unprecedented fiscal stimulus following the COVID-19 pandemic and resultant surge in global demand and prices reminded policy makers around the world on the links between the fiscal policy, debt, inflation, and GDP growth. Given such developments, the debt management should be linked to the broader macroeconomic framework, including both supply-side policies and monetary actions taken by the central banks.

Figure 1. Debt management in the overall macroeconomic framework

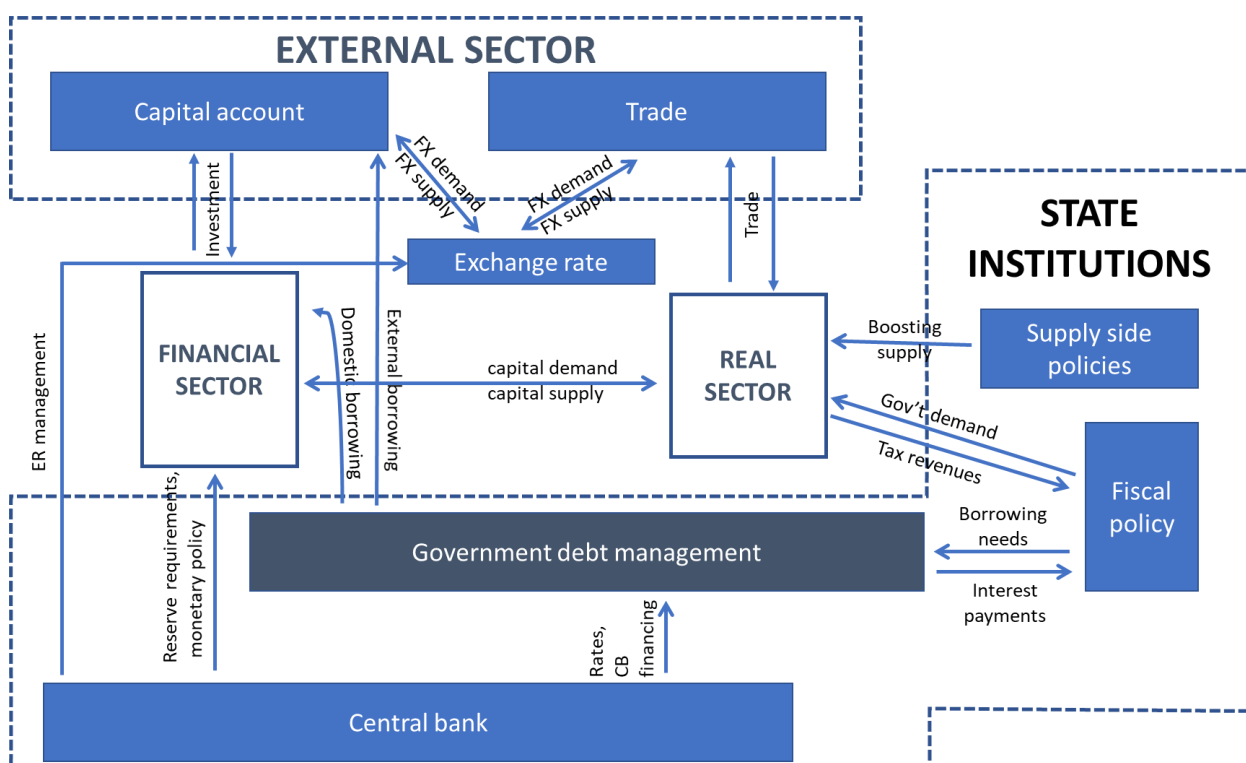


Figure 1 depicts the interconnections that link the debt management to the overall macroeconomic framework to illustrate the interdependencies, constraints and dilemmas that need to be faced by the governments and debt managers while designing the structure and maturity profile of government debt. The structure of debt affects indirectly and directly the whole economy, so it should be decided in coordination with other policies. For example, the issuance of bonds denominated in foreign currency amplifies the inflow of foreign currency leading to appreciation of national currency vs currency in which the bond is issued. It may contradict the need to keep the domestic currency weak to maintain international competitiveness and the efforts taken by the central bank to keep the national currency at the stable levels. On the domestic market, the supply of bonds affects the bond yields and the actions of the central banks (including bond buybacks or advances to the government) shapes the interest rates. In addition to that the scale of domestic issuance is linked to the development of local financial market and whether it will be able to absorb the bond supply. Furthermore, government liabilities may compete with enterprises' debt leading to crowding-out private investment. This may contradict supply-side policies. Summing up, the debt management policy must be swiftly integrated into overall fiscal and supply-side policies as well as in the central bank actions.

Traditionally, the debt management policies are viewed as distinct and subordinated to the goals of monetary and fiscal policies. This view led to the creation of the independent debt management offices in several developed countries that were supposed to manage the trade-off between the cost of debt and long-term maturity profile that is necessary to reduce risks for public finance. Such units were able to attract private sector professionals with the experience in the portfolio management that were unwilling to work as public servants in the Ministries of Finance and were not incentivized to minimize the costs of interest spending to finance expenditures. In the nineties of the 20th century, creation of such institutions was commonly viewed as the best practice. However, these views started to change in the early 2000s, where debt management policies started to be integrated within the broader Asset and Liabilities Management (ALM) framework. Within such arrangement, debt management policies were considered as a part of broader public policy framework with different goals, such as e.g., development of the financial markets. In addition to that, government debt is considered as a part of the broader balance sheet of the country and budgetary risks are identified considering their holistic impact on the government finances (Currie et al., 2003).

The link between the debt management and central bank policies is somewhat tricky. Over the centuries, the central banks were linked to the governments, providing them with funds for their wars and following recoveries. Around the 80s of the 20th century, after the Volcker disinflation and the need to increase interest rates to fight inflation, the new consensus on the independence of the central bank from the government emerged. This consensus lasted until the Global Financial Crisis and the following years when the inflation in the developed world stayed stubbornly low despite near-zero interest rates. As of 2022, central banks across the world are rapidly raising interest rates to fight inflation that was by and large caused by the fiscal stimulus during the COVID-19 pandemic. Nevertheless, it seems that the new consensus emerged on the need to coordinate the debt management policy with the actions of central banks (without the need to compromise central bank independence). More details on the history of these views are provided in the next section.

All these developments as well as the multitude of institutional arrangements of the debt management offices highlight the inevitable trade-offs between the risk management, costs of government financing and their impact on the economy as a whole. The relationship between debt management and central bank highlighted in this paper is only part of this puzzle – the other is the relationship between the debt management and fiscal policy and other policies aimed at the development of financial markets and investment support.

2. Central bank financing over the world

2.1 Brief history of approach to the central bank financing

Over the years, the role of central banks fluctuated around the two objectives – maintaining financial stability and economic growth, which, in the conventional meaning would mean increase in government expenditures in bad times to stabilize the business cycle.

The government borrowing understood as pretty standardized contract between the state rulers and private lenders started in the Middle Ages, between 1000 and 140 A.D. Initially, these debts were short-term and only after the fourteenth century states were able to borrow for the longer term. These sovereign debts were regarded by investors as safe, and liquid and it started to serve as the collateral for other credits. Such use of this asset became dominant by the end of the 18th century, facilitating the development of the financial markets which in turn contributed to the economic growth. The models of state borrowing differed between states (and cities/provinces) – e.g., Spain borrowed from syndicates of international bankers and Dutch provinces from impersonal markets outside the states. Another milestone is the chartering of the Bank of England in 1694 as a banker of the state that provided debt-for-equity swap and allowed the English government to borrow at 3 per cent – the lowest rate in Europe at that time (Eichengreen et al. 2019). The financial revolution of the seventeenth and eighteenth centuries followed by the Industrial Revolution and development of international financial markets accelerated the standardization of debt instruments and securities. The secondary markets rendered more liquid securities as collateral for further borrowing. Debt securities became more visible and publicly traded with prices and yields as a result of the two revolutions. Meanwhile, the secondary markets rendered more liquid as collateral for further borrowing. public indebtedness given the risk of mobilization of savings

for unproductive financing of the government. At the beginning of the 19th century, households held most sovereign bonds. With the progress of financial development, the banks significantly increased their share.

The development of money started from private institutions as well – first they were just notes backed by the gold amassed in the vaults of private institutions. When the rulers realized that multiplicity of these banknotes complicates exchange, they gradually introduced banknotes backed by state as a legal tender. Initially, these notes were covered by metals kept in the vaults of the Central Banks around the world and they could be on demand converted to these metals (usually gold). Therefore, the initial mandate of the central banks was to maintain the stability of money. In the 18th century, the additional task that was imposed on the central banks was to act as a lender of last resort for both commercial banks and the government. The so-called *Bagehot principle* proposed in 1873 by Walter Bagehot states that central banks should prioritize public interest of a banking system before its private interests and lend freely to commercial banks that could provide collateral, supplying additional liquidity to the market whenever it is required. In addition, central banks acted as a lender of last resort to the governments.

The role of central banks in financing the governments in advanced countries fluctuated over the years but was small on average – around 10 percent. It rose when times were difficult – in 1930s during the Great Depression and in the postwar period, when buying government debt by the central banks was part of the financial repression through which the debt ratios were reduced. This trend was reversed in 1970s, along with the globalization and development of the international financial markets allowing the governments of advanced countries to place their bonds effortlessly to the large groups of investors. Over the recent years, following the Global Financial Crisis and COVID-19 pandemic and the large asset purchase programs, this trend was reversed (Eichengreen et al. 2019). The 2010s have witnessed an unprecedented rise in public debt worldwide as well as in the Arab region. In 2020, global public debt reached a staggering 100 per cent of global gross domestic product (GDP), compared to 65 per cent of global GDP in 2008.¹

Despite the fact that the holding of government debt by the central bank is deeply rooted in the notion of central bank and these institutions held government debt since they were established, the monetary finance of government debt remained a taboo for long periods of time. This taboo was justified – from the onset of central banks, the suspension of the convertibility of the issued money was associated with higher inflation or even hyperinflation. This happened during the World War I, when prices in Austria rose on average annually by 84.6 per cent, in Italy by 42.2 per cent and in Great Britain by 23.1 per cent (Lopez and Mitchener, 2021), in the US following the suspension of dollar's convertibility into gold and in many different countries, where governments attempted to finance the expenditures through central banks. These inflationary processes could only be fought by very costly resumption of gold standard (as in case of Germany in 1923 or UK in 1925) or huge spike in interest rates followed by recession during the Voelcker rule between 1979 and 1982. These developments paved the way to the concept of independent central bank, whose goal is to stabilize inflation at the inflation target, which was prevalent during the period dubbed the Great Moderation in 1990s and early 2000s, when the volatility of output and inflation greatly decreased (Blanchard and Simon, 2001). Within such institutional framework, the size and scope of the purchases of government bonds by the central banks is determined by the need to keep inflation close to the target. The Global Financial Crisis showed however, that the independent central bank targeting inflation cannot prevent dangerous imbalances building in the economy.

2.2 Changing views on the central bank financing after the GFC and COVID-19 shock

Global Financial Crisis and COVID-19 shocks significantly affected the views that economist had on the functioning of central banks in advanced economies. It hit the economies so deep, that interest rates went to zero or even negative, but the effect on the economy was moderate. The need for the more support for the economies pushed central banks towards unconventional tools to provide more stimulus during deep recessions. In late 2008, the Fed launched the Quantitative Easing (QE) program of buying assets (long term U.S treasury securities and mortgage-backed securities) on the secondary market to lower longer term interest rates. In addition to that, Fed pursued also *forward guidance* on future levels of interest rates to assure investors that they will remain lower for some time (Bhar and Malliaris, 2021). Also in other developed economies, i.e.,

¹ ESCWA, 2021.

Euro area, United Kingdom and Japan, central banks engaged in liquidity support for banks and large-scale assets purchases (LSAP). European Central Bank admittedly engaged in purchased of sovereign bonds of Greece, Ireland and Portugal in 2010, but began its own LSAP only in 2014. The response of the central bank of UK was by and large similar to the actions taken by Fed and included large-scale purchases of government debt. Bank of Japan have much more experience and less policy space as it experienced the period of low growth and interest rates since Japan financial crisis in 1990s, but it also adopted a wide program of purchases public and private securities. In general, these policies achieved their objectives – they mitigated the crisis on the financial markets and had positive impact on GDP growth (Dell’Ariccia et al., 2018).

Even more than in case of earlier Global Financial Crisis, the central banks around the world stood at the forefront of fight with the recession caused by the outbreak of COVID-19 pandemic in 2020. As the room for the conventional monetary policy – reduction of interest rates – was significantly limited by its level as of 2020, unconventional monetary policy played much more significant role. Broad set of instruments was used in addition to interest rates cuts – including expanded lending to private sector and asset purchase programs (UN DESA, 2022). This time the nature of the shock was different – it was purely exogenous, not driven by the accumulation of imbalances in the economies. Therefore, the governments and central banks coordinated fiscal and monetary policies to help economies survive the recession. In addition to cutting the interest rates to the levels close to zero, central banks around the world resorted to other tools such as domestic lending operations, asset purchase programs, adjustment of reserve requirements and intervention on foreign exchange markets (Tsatsaronis et al., 2022).

The reaction of economic literature to these actions is mixed. Such scale of stimulus is unprecedented, so the data on the past impact to evaluate its impact on macroeconomic variables is limited. Nevertheless, e.g., Agur et al. (2022) assess the link between the inflation and money growth and conclude that unless the inflation is high, central bank is not independent or the government deficit is large, the inflation risk is moderate. However, they claim that the link between money growth and inflation is non-linear and if the risk of fiscal dominance (i.e., subordination of monetary policy to fiscal policy) is significant, the inflation can run out of control. In addition, the announcements of the unconventional monetary policy programs in emerging economies did not translate into increase of inflation expectations (measured by real-time forecasts from Consensus Economics and WEO). Aßhoff, Belke and Osowski (2021) employ Qual VAR model to show that unanticipated shocks to the unconventional monetary policy rise inflation expectations (measured through ECB’s Survey of Professional Forecasters) in the short run, but not in the medium term. Also, such papers as Hofmann and Zhu (2013) or Moessner (2015) argue that large scale asset purchases had only moderate effect on inflation expectations, as measured with economic forecasts and inflation rates implied by inflation swap contracts respectively.

In general, at the beginning of the pandemic, scholars tend to believe that this time, the intervention of the central bank is justified as long as they maintain they price stability mandate (Kapoor and Buiters (2020), Blanchard and Pisani-Ferry (2020), Galí (2020), De Grauwe (2020)). These opinions were supported by past evidence on the moderate impact of these kind of policies on both inflation expectations and price stability. These opinions however applied to the European Union where institutions are strong and where there are no doubts on the central bank independence. The next section explores the interdependence between strong institutions and applicability of debt financing without the negative impact on inflation expectations.

2.3 The role of sound institutions and central bank independence

While the evidence shows moderate influence of unconventional monetary policy on inflation and inflation expectations, this is largely due to the fact that these policies were perceived as justified and necessary by investors. In general, in developed economies, the purchases of securities (including those emitted by the government) became usual part of policy aimed to restore economic growth and push inflation back to the target level from subdued growth. Nevertheless, after the Global Financial Crisis and, especially, during the COVID-19 pandemic, these actions seemed to be understandable and investors in the EU and US, did not perceive them as subjugation of central banks to the government.

The examples of the rise of government debt holdings by the central banks following the quantitative easing programs shows that it does not automatically translate into higher inflation and deterioration of trust of foreign

investors. The theoretical underpinning for this is that once wages are set, the governments may be tempted to boost demand and employment in the short run at the cost of higher inflation to achieve electoral success. In such settings, the central bank independence should contribute to keeping the inflation within bounds as it theoretically eliminates the incentives faced by politicians to boost short term growth at the expense of inflation.

Central Bank Independence is relatively new idea that proliferated across the developed world in 1990s and 2000s – previously central banks were more or less departments of finance ministries (Arnone et al., 2006). Cukierman (2008) argues that the rise of the central bank independence over the nineties is associated with prevailing view that high inflation slows down economic growth and the fear of legislators of prolonged periods of high inflation following the poor performance of some countries during the high inflation periods in 1970s and 1980s. In addition to that, globalization led to the difficulties in controlling the capital flows as well as to the broadening of international capital markets, which demanded price stability. In such world, commitment to the central bank independence is clear signal to stakeholders on the credibility of macroeconomic policy. According to Maxfield (1998), this argument was particularly important for developing countries where domestic financial markets were not deep enough to accommodate rising financing needs of governments. This view was reinforced by the IMF, who promoted central bank independence as a responsible policy choice.

One can differentiate the *de facto* and *de jure* independence. This distinction is especially important in developing countries where law enforcement tend to be relatively lax. *De facto* central bank independence depends on the political ties of the central bank governor as well as on the exchange rate setting or legal bounds (and mandate) of the central banks actions. *De jure* independence is reflected in institutional arrangements and can be quantified using the legal acts – one example of such quantification from Romelli (2022) is presented below. The quantification of *de jure* independence is much more difficult – it is not possible to review laws and regulations to define proper indicators. In the literature, there are several ideas – one is turnover of the central bank governors (Cukierman et al., 1992) and the other is questionnaire survey conducted among the monetary policy experts (Ivanović, 2014). Both these measures are very rough and suffer different problems. Subservient governors may stay in the office for long terms and governments may have other than changing governor means to affect monetary policy (Hayo and Voigt, 2008). Surveys may suffer from limited sample and by construction are subjective (Cargill, 2013). In one attempt to overcome this problem, Cukierman and Webb (1995) calculate the probability of changing the governor within the six months of entering the new government into office. Hueng (2012) proposes a measure based on the estimated coefficients of the Taylor rule and concludes that countries with more *de jure* independent central banks react to inflation quicker and stronger, indicating that the estimated Taylor rule coefficient may serve as a proxy for the *de facto* central bank independence.

The link between central banks independence and inflation is hard to observe. Nevertheless, Alesina and Summers (1993) argue that for developed economies, CBI index and both the average and variance of inflation are negatively correlated, but its impact on real macroeconomic performance is rather limited. Cukierman and Webb (1995) argue that relationship between legal central bank independence indices and inflation and GDP growth is not observed in developing countries due to the fact that within this country group *de iure* independence has little to do with *de facto* situation. With behavioural index linking the change of central bank governor with political events, they show that countries where central banks governors are more vulnerable to changes in the government experience higher and more volatile inflation as well as lower economic growth. On the other hand, Dreher et al. (2007) argue that the direction of causality is from higher inflation to increased turnover of central banks governor. More recent evidence by Garriga and Rodriguez (2020) use panel model and show that central bank independence helped to curb inflation in developing countries with all four examined dimensions of CBI contributing to this outcome. In addition, they claim that though the effect is stronger in democratic countries, it is also visible in non-democratic states. Dall’Orto Mas et al. (2020) summarize the evolution of central bank independence following the Global Financial Crisis and argue that the *de facto* independence of central banks in developed economies deteriorated following the GFC despite no change in *de jure* indicators. Nevertheless, this change was induced by broadening the mandate of the central banks to take into account the economic growth and macroprudential indicators in addition to maintaining

price stability. Furthermore, central bank independence is still vital for maintaining the financial and economic stability.

Another macroeconomic policy that can boost stability and curb inflation is fixing the exchange rate. This, however, comes at a cost of a need to maintain higher foreign reserves to support the rate in case of the outflow of capital. Furthermore, fixed exchange rate contributes to the current account imbalances and increases the costs of adjustment in case of exogenous shocks (Gervais et al., 2016). With globalized economies, where it is almost impossible to block free capital flows, fixing the exchange rate deprives the country from independent monetary policy in line with well-established monetary policy “trilemma” (Mundell, 1963). In addition, fixed exchange rate regime magnifies the response of domestic markets to external shock as the exchange rate stabilizer mitigates the impact of global shock on domestic credit growth, real estate prices and financial sector. That translates into stronger impact on overall business cycle in fixed exchange rate regimes (Obstfeld et al., 2017). The evidence on the overall impact of exchange rate regime on growth is mixed. For instance, Reinhart and Rogoff (2004) argue that freely floating regimes, if classified properly (i.e., excluding the dual exchange rates and parallel markets), correlate with lower inflation and higher GDP growth than pegged regimes. Nevertheless, there is no causal analysis there and they distinguish *freely falling* regime with huge currency depreciation and clearly the worst macroeconomic outcomes. Rose (2011) finds no plausible evidence on the correlation between the exchange rate regime and growth or inflation. Moreover, he summarizes literature and came to the conclusion that there is no evidence on the impact of exchange rate on real sphere, even if institutions or level of development are taken into account. Also, the *de facto* and *de jure* exchange rate regimes frequently differ with central banks of countries with floating exchange rate intervening on the currency market and parallel markets or adjusting baskets in countries with fixed regime. Frankel et al. (2019) construct the continuous measure of exchange rate flexibility and conclude that fixed *de facto* exchange rate regime supports GDP growth, and the effect is even stronger for countries from lower income groups. In general, the choice of the *de jure* exchange rate regime seems a matter of preference and other factors such as economic stability, quality of institutions, human capital or affect GDP growth and inflation much more than the legal exchange rate regime. Nevertheless, the relative stability of domestic currency (irrespective of *de jure* arrangements) supports GDP growth and mitigates inflationary pressures.

2.4 Central bank balance sheet and macroeconomic outcomes – empirical evidence

A priori, GDP growth, inflation and the size of the central bank debt holdings should be unrelated as the government should not interfere with the central bank mandate to keep prices stable. Nevertheless, there are several studies aiming at the assessment of how central bank balances affect macroeconomic output. In general, studies are showing the positive effect of expansion of central bank balance sheets on output Fabo et al. (2020) construct the database of 54 studies analyzing the effects of QE policies on GDP and inflation and conclude that cumulative peak impact on output of 1% of GDP QE program is 0.24%, while the influence on price level is equal to 0.19%.² Average influence for both GDP and prices is equal to about 60% of peak impact. In addition to that, QE was the most efficient in the US, followed by the euro area and UK. As similar programs in developing economies were introduced only after the COVID-19 shock, the Fabo et al. (2020) paper summarizes influence only for the developed economies. In addition to that, they report significant heterogeneity of the results with findings depending on the affiliation of researchers and methodological choices. Authors affiliated with central banks find more significant impact on both GDP and inflation. Also, their works report results that are more statistically significant, and the tone of the report is more optimistic in the assessment of the macroeconomic effects of the central banks policies. Overall, this study concludes that the studies aimed at the assessment of the influence of QE programs on output and inflation may be driven by the career concerns of researchers and some skepticism is advised while analyzing the results.

Essentially, there are two kinds of tools that are used to assess the impact of quantitative easing on the economy – vector autoregression (VAR) and dynamic stochastic general equilibrium models (DSGE). VAR is used primarily by academics, while DSGE by central bankers (Fabo et al., 2020). These techniques reflect different approaches to the modelling – VAR is atheoretical and it just reflects the interdependencies that were observed

² Average here means averaged across all studies.

in the past in data, while DSGE models has underlying theoretical structure that allows for better tracking of economic mechanisms behind the impact.

The first strand of research employs VAR models to assess the macroeconomic effects of quantitative easing (QE). As Fabo et al. (2021) point out, VAR models are more likely to be used by the academics. For instance, Baumeister and Benati (2013) use time-varying parameter VAR with short-term nominal interest rate, spread between 10-years T-Bill rate and the policy rate, GDP deflator and real GDP growth to show that QE programs in UK and US helped to avoid output loss and inflation similar to those experienced during the Great Depression. Similar methodology led Zabala and Prats (2020) to like results for the Eurozone. Chen et al (2017) use global vector error-correction model (GVECM) to compare the impact of unconventional monetary policy in the US and the EU and show that US program was more efficient in increasing inflation and GDP and there are noticeable spillovers of these policies to other regions of the world. Also, Dahlhaus et al. (2018) show that US quantitative easing program boosted output in Canada. Dahlhaus et al. (2018) also observes spillovers across countries, report similar results for Eurozone and the US and argue that the type of instrument is of secondary importance. Dahlhaus et al. (2018) use Qual VAR with *explicit* information of QE announcements to show that such intervention decreases interest rates and raises stock prices, real output and inflation. Neuenkirch (2020) uses entropy balancing to create counterfactual scenario without QE and concludes that the QE program pursued by the Bank of England raised GDP growth by 0.7 percentage points and inflation by 0.8-0.9 percentage points after 30 months. Neuenkirch (2020) use shadow rate term structure model and show that Fed behavior between 2009 and 2013 lowered the unemployment rate by 1% in 2013, which is 0.13% more than in the counterfactual with historical Taylor rule.

On the other hand, Balatti et al. (2017) add stock prices indices to the VAR model and do not find statistically significant impact of large-scale asset purchase programs (LSAP) on inflation and GDP growth. Also, Hesse et al. (2018) use Bayesian VAR to analyze the effects of large asset purchases on the economy and find out that first such interventions had significant macroeconomic effects, but the following ones exerted much smaller impact, primarily due to the expectations – the following rounds were anticipated by the agents who adjusted their behavior. In addition to that, they show that LSAP significantly and persistently inflate asset prices. Lyonnet and Werner (2012) estimate simple nominal GDP growth model and argue that the growth of assets held by Bank of England did not contribute to the elevation of GDP growth in the UK.

Other strand of literature relies on the dynamic stochastic general equilibrium (DSGE) models, that allow for the explicit consideration of the economic processes and behavioral relationships. While the direction of impact is *a priori* unknown in the VAR models (and its variations), in DSGE it depends on the specification of equations, so it should be in line with theoretical justification for LSAP operations. Using such tool, Burlon et al. (2019) show that open-ended asset purchase programs are efficient in raising inflation and sustaining GDP growth while currency depreciates only in the short run. Similar results are obtained by other researchers such as Cahn et al. (2017) with estimated DSGE model. Del Negro et al. (2017) argue that the US 2008 financial crisis was caused by the liquidity shock and that the provision of liquidity by Fed prevented output loss at a scale comparable to the Great Depression. In the similar vein, Gertler and Karadi (2013) model the LSAP as central bank intermediation activity that overcomes the limits to arbitrage in private intermediation. Falagiarda (2015) shows that even though the LSAP have positive impact on both inflation and output, the size of the effect is heavily dependent on the exit strategy. Hohberger et al. (2019) estimate DSGE model with Bayesian techniques and show that the QE program of the European Central Bank added 0.3 percentage points to the GDP growth and 0.5 percentage points to inflation over the 2015-2018 with the maximum impact in 2016. Kühl (2018) argues that the main channel through which the government bond purchases affect the output and inflation is the borrowing constraint of the non-financial firms, so the outcome of intervention would depend on the share of market finance of the firms in the considered economy and Sahuc (2016) stresses the role of forward guidance. Overall, the increases of central banks' balance sheets contribute to the GDP growth but are associated with increased risk of inflation.

3. Central bank financing in the Arab countries - institutional agreements

This section describes *de jure* institutional arrangement of central banks in the Arab countries and is based on extensive database by Romelli (2022) as well as on the national legislation. The detailed excerpts from relevant legislation on the Central Banks in selected Arab countries is collated in the annex I. The aim of this part is to review how central banks can support the government in Arab countries, which will lay ground for further analysis of the central bank financing of government debt in section 4 and its macroeconomic implications in section 5.

3.1 Advances to government

First way of financing the government by the central bank is providing advances. As central bank act as a banker of the state, it can provide advances to finance the government expenditures. If regulations on these advances are lax, the governments can abuse this facility to finance their needs.

Figure 2. The share of countries with different range of limitations of central bank advances to the government (2017)

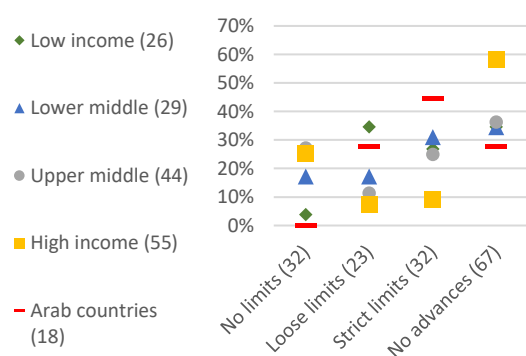
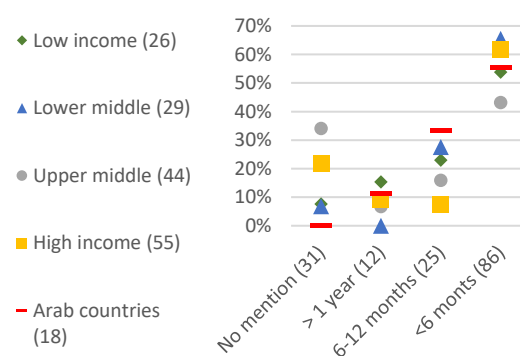


Figure 3. The share of countries with arrangements on maturity of the central bank advances to the state (2017)



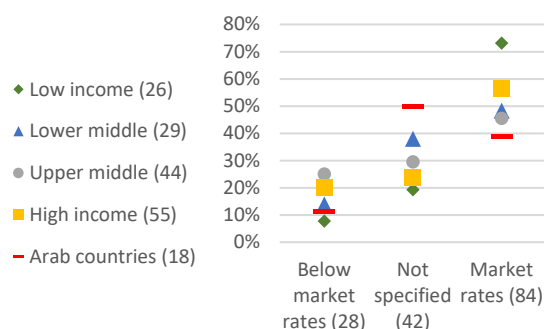
Source: Romelli (2022) and own elaboration

Note: The numbers in parentheses denote the number of countries within each group

Overall strictness of the regulation in the Arab countries is at the level similar to high income countries, though the legislation differs in detail – high income countries either have no limits on CBs advances to the state or they have no advances at all, while majority of central banks within the Arab countries permits some type of advances, but with limits. Jordan, Iraq, Saudi Arabia, Mauritania and Tunisia do not allow for advances in any form. Egypt and Lebanon allow for advances at the maximum 10 per cent of total revenues in 3 previous years and Oman limits them at 10% of budgeted revenues. Five (UAE, Yemen, Bahrain, Libya and Comoros) imposed looser bounds. In line with legislation adopted in high income economies, the advances in Arab countries have short maturity – in ten out of eighteen cases, this is below 6 months and in sixteen below one year. The Banking law of the Central Bank of Oman states that any advance made should be entirely repaid within 90 days, while in Egypt they have to be repaid within one year.³

Figure 4. The share of countries with different agreements on the interest rate on central bank advances to the government (2017)

³ Central Bank of Oman, n.d.



Source: Romelli (2022) and own elaboration

Note: The numbers in parentheses denote the number of countries within each group

On the negative side, in contrary to the high-income economies, the interest rates on advances are not specified in nine out of eighteen countries in the sample – as pricing the advances at market rates is best practice, it should be considered to prevent government borrowing from the central bank, while it is possible to borrow on the market. Only in Morocco and Somalia, the interest rates on advances are market rates. Based on the structural liquidity position of banks, the Central Bank of Morocco mainly named as Bank Al-Maghrib constantly adjusts its interventions in the market. These interventions are mainly carried out through the main operations of the bank: seven-day advances and liquidity withdrawals. The main reason behind these interventions is to keep inflation with the objective of price stability especially when the country faces decrease in oil revenues.⁴ In Egypt, the interest rates are determined by the bank in agreement with the Ministry of Finance.

3.2 Lending to government

The majority (72 per cent) of Arab central banks as studied by Romelli (2022) allowed some kind of central bank lending to the government, though all of them did so with some limits. Twelve out of eighteen analyzed central banks permitted borrowing directly from the central bank – on the primary market, which is in stark contrast to the regulations in high income economies, where the central bank lending to the government on the primary market is not allowed in 60 per cent of cases. Jordan, Iraq, Saudi Arabia, Mauritania and Tunisia does not allow for government lending at all, while Morocco and Somalia allow to do so only on the secondary market with strict limit. Other countries allow for both primary and secondary market borrowing, though with some limits. They are specified either as absolute amount or as a percentage of government revenues which are considered stricter than limits expressed as a percentage of government expenditures. In Djibouti, the Central Bank may issue bonds denominated in francs, but they must be subscribed and paid for in US dollars or in a foreign currency convertible into US dollars. The total amount issued should never exceed 30 percent of the central bank capital. The bonds should be freely negotiable at the market price.⁵ In Lebanon, the Central Bank can buy from the public holding public Bonds issued by the State or guaranteed by the State, at a discounted price or buy such Bonds through the "pension" system, on condition that their maturity is lower than 180 days. The Bank may also discount or accept as collateral to advances, government bonds or bonds guaranteed by the government, the maturity of which does not exceed five years, if such bonds are intended to implement constructive projects, provided that the interest rate is no less than the original interest rate increased by two points.⁶

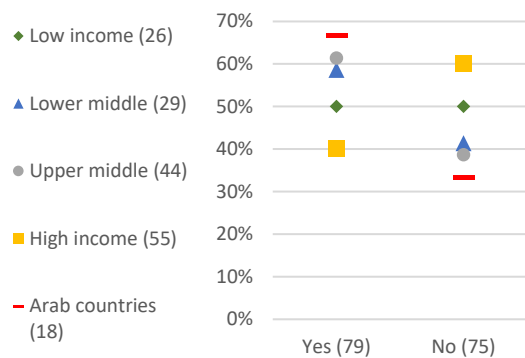
Figure 5. The share of countries with different agreements on the permission on the primary market borrowing (2017)

Figure 6. The share of countries with different range of limitations of central bank lending to the government (2017)

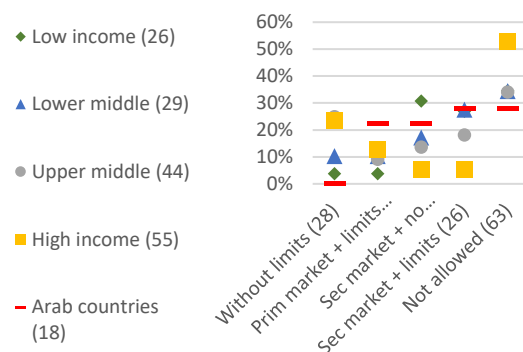
⁴ AMF, Background paper on monetary policy in the Kingdom of Morocco

⁵ Central Bank of Djibouti, n.d.

⁶ Banque du Liban, n.d.

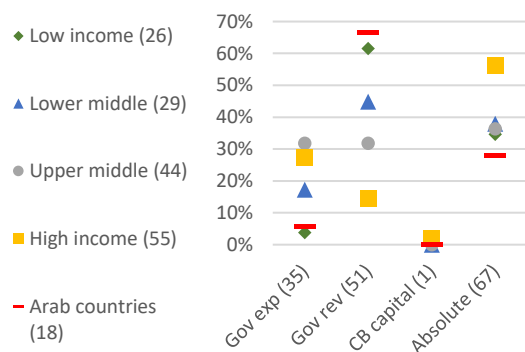


Source: Romelli (2022) and own elaboration



Source: Romelli (2022) and own elaboration

Figure 7. The share of countries with arrangements on the limits of central bank lending to the government (2017)



Source: Romelli (2022) and own elaboration

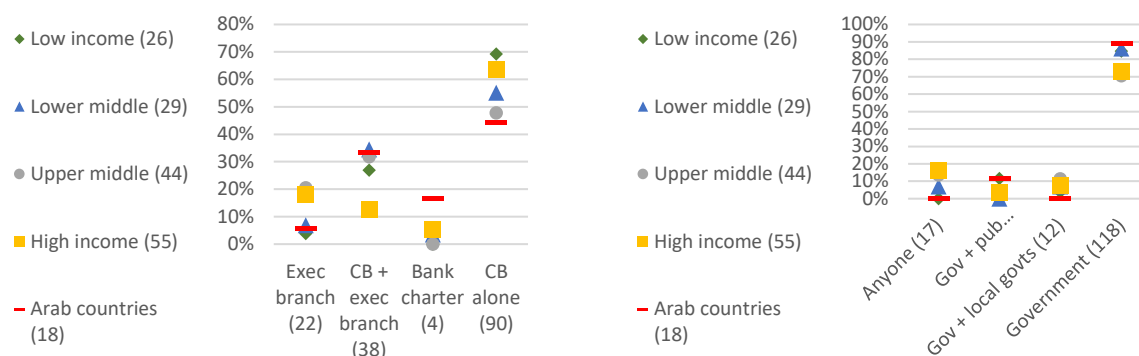
Note: The numbers in parentheses denote the number of countries within each group.

3.3 Agreements on financing conditions and potential borrowers

In sixteen out of eighteen Arab countries analyzed by Romelli (2022), the only entity which is entitled to borrow from the central bank is the government, while in Kuwait and Bahrain all public entities are allowed to do so. Such institutional agreement is prevalent around the world and is independent on the level of income – by definition usually central bank acts a banker of the central government and even local governments are not allowed to borrow let alone public or private entities. Also, usually the central bank alone decides on the financing conditions, though in Arab countries, more often than in case of high income or upper middle-income countries these conditions must be agreed on with executive branch. Nevertheless, the regulations on both financing conditions and who can borrow from the central bank in Arab countries do not differ significantly to institutional arrangements in other parts of the world

Figure 8. The share of countries with arrangements on who can borrow from the central bank (2017)

Figure 9. The share of countries with different range of regulations on how conditions of government borrowing from the central banks are determined (2017)



Source: Romelli (2022) and own elaboration

Note: The numbers in parentheses denote the number of countries within each group.

In some countries there are, however, some loopholes in these regulations. In Lebanon, public sector organizations other than the State may not apply for Central Bank loans, except in circumstances of unusual seriousness or in cases of absolute necessity, where no substitute solutions such as an external credit or new fiscal resources and the Government is pressing the application of such lending, the Central Bank of Lebanon can grant the requested loan to the public entity.⁷ The Central Bank of Tunisia is prohibited from granting any advances to the government, but, this is not applicable to financial assistance operations granted by the central bank, under the conditions provided for by the law of the statute of the Central Bank, for the benefit of banks and financial institutions in the capital of which the state directly or indirectly holds a participation.

3.4 Central bank profits

Another way of financing the government needs by the central bank is transferring profits. If the allocation of central bank profits is left to the discretion of government, it may be tempted to direct all the gains to finance government needs. In the overwhelming majority of the Arab countries (15 out of 18), the allocation of central bank profits is predetermined by law – the central bank statute or charter. In Oman and Egypt this is decided by the central bank and only in Saudi Arabia the allocation of the profits of central bank is left to the discretion of the government. As per the Statute of the Central Bank of Egypt, the net profit of the Bank shall be transferred to the Public Treasury of the State, after deducting the workers’ profit share as determined by the Board of Directors of the Bank, and the reserves it determines to form.⁸ The statute of the Central Bank of Oman doesn’t allow for transferring any profit to the benefit of the State - The Central Bank shall establish a General reserve Fund and the annual net profit accruing at the end of the year shall be transferred into this fund until its balance of sheet equals not less than 25% of the value of currency in circulation or greater amount as the Board of Directors may determine.⁹ This is in line with regulations observed in high income and upper middle income countries and prevents usage of central bank profits to finance government expenditures. In Mauritania, after deducting all the allocations deemed necessary by the Board of Directors to the legal reserve and all other general or special reserves, the balance is transferred to the Public Treasury.¹⁰ Similarly, in Tunisia, the Board of directors transfers the deemed allocations to all general or specialized reserves, and the remaining balance of profits is paid into the general state treasury.¹¹ In Jordan, the Central Bank shall maintain a general reserve, into which 20 per cent of the net profits realized by the Central Bank during each financial year shall be paid. The remaining amount (namely 80 per cent) of the annual net profits shall be paid to the

⁷ Banque du Liban, n.d.

⁸ Central Bank of Egypt, n.d.

⁹ Central Bank of Oman, n.d.

¹⁰ Central Bank of Mauritania, n.d.

¹¹ Central Bank of Tunisia, n.d.

Government. However, if the amount of the general reserve exceeds twice the amount of the capital, all the net profits can be paid to the government.¹²

Figure 10. The share of countries with different arrangements on who decides on the allocation of central banks' profits (2017)

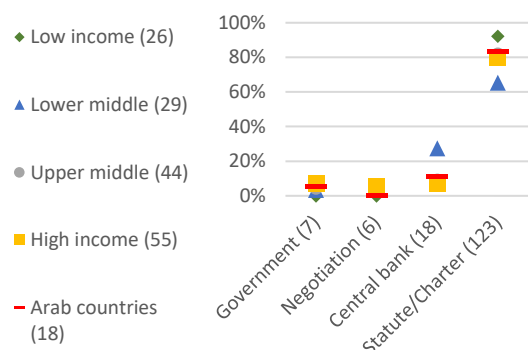
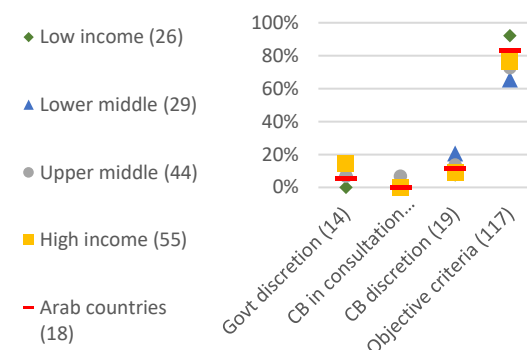


Figure 11. The share of countries with arrangements on how the allocation of central bank profits is determined (2017)



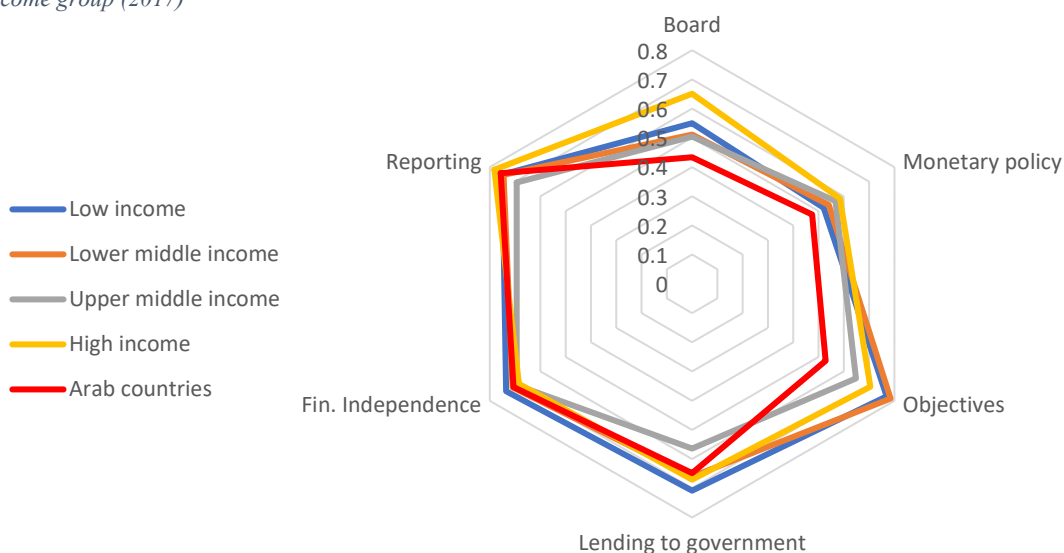
Source: Romelli (2022) and own elaboration

Note: The numbers in parentheses denote the number of countries within each group.

3.5 Overall central bank independence

Even though in terms of lending to the government, *de jure* independence of Arab central banks is relatively high, this is not the case in other dimensions. In particular, according to Romelli (2022), the objectives of the central banks are different – less focused on price stability and more on stability of financial system and economic growth. In addition to that, the values of the central bank independence index are lower when it comes to the appointment of the board, what means that the board of the central bank may be shaped such that it conducts policy that is favorable for the government and monetary policy dimension which indicates that the role of the central bank in policy formulation is less pronounced than in other regions of the world. On another note, the central banks in Arab countries are financially independent, the regulations on the reporting are sound and the lending to governments is limited.

Figure 12. Different components of *de jure* central bank independence index in Arab countries versus the level of index by income group (2017)



Source: Romelli (2022)

¹² Central Bank of Jordan, n.d.

Summing up, *de jure* central bank independence in Arab countries is relatively limited, what may affect monetary policy in negative way. Nevertheless, as the regulations on lending to the government in Arab countries are relatively strict, the monetary policy can be subjugated to governments through other channels (e.g. setting more favorable interest rates). This structure of regulations affected the reactions of the central banks in Arab countries to the crisis spurred by the outbreak of COVID-19 pandemic – most of them supported businesses and government through facilities other than the direct lending to the government (or asset purchase programs). Consequently, while analyzing the interplay between the government debts and central banks in the Arab countries, it is crucial not to focus on the direct lending, but rather adopt broader approach taking into account all the possible ways of supporting the governments by the central banks.

3.6 Exchange rate management in the Arab countries

The exchange rate regime significantly affects the ability of the central bank to conduct independent monetary policy in the globalized world where blocking financial flows between countries is virtually impossible. In this context, fixing the exchange rate in developing countries can act as a signal to investors that the central bank is determined to conduct sound monetary policy and will not subjugate monetary policy to the needs of governments. Fixed exchange rate regime is relatively popular across Arab countries – according to the IMF's AREAER database on the exchange rate regimes, out of 22 Arab countries, only Tunisia, Egypt and Mauritania had *de jure* floating exchange rates. Somalia and Yemen had floating agreement, mainly because of the lack official exchange and inability of the central banks to act on the foreign exchange markets. Out of the remaining countries, 10 had conventional peg, 4 had stabilized arrangement, which usually means that the currency interventions are not disclosed by the central bank. The remaining countries had different forms or managed arrangements and Palestine does not have official currency. The precise definition of the exchange rate regimes in some countries is very difficult as there are parallel markets with different exchange rates and banks do not provide means for the official exchange – such as in Syria or Lebanon or Arab low developed countries.

Even though the exchange rate regimes in most of the Arab countries are some types of pegged regimes, the inability of governments to sustain peg for prolonged time in many Arab countries highlights the dangers associated with such agreements – during the difficult times and in the wake of internal and external shocks, the central banks tend to suspend the currency convertibility what can lead to *bank runs* and deepen the financial crisis. Notable exceptions are Djibouti and Comoros, where the pegged exchange rates are backed by foreign reserves (fully covering currency in circulation) and government agreements respectively.

Ilzetzki, Reinhart and Rogoff (2021) shed some light on the development of currency regimes over years and argue that the unprecedented rise of foreign reserves held by central banks in the first two decades of 21st century is modern substitute of capital controls as a mean of assuring the stability of exchange rates across the world. After the collapse of Bretton Woods agreement in seventies, the exchange rates were extremely volatile until the beginning of 21st century when this volatility significantly declined. In parallel, the accumulation of safe, dollar denominated assets is partly owed to the struggle of the central banks around the world to maintain exchange rate stability in the presence of international capital flows. Consequently, even though *de jure* exchange rate regime may be flexible, the central bank may opt to keep the exchange rate stable (as in Lebanon until October 2019) and otherwise – with *de jure* pegged regimes, the existence of parallel market may mean that the currency is in fact floating. This is the case of Syria. Nevertheless, in Ilzetzki, Reinhart and Rogoff (2021) classification, at the end of 2019, out of 19 analyzed Arab countries, 12 had *de facto* pegged regime, 4 crawling peg and Sudan, Yemen and Syria had *freely fallen* regime what essentially means that the central bank has no power to maintain the value of domestic currency. No Arab country had truly *floating* regime (either managed or free).

4. Central bank financing in Arab countries – overview

4.1 The composition of debt in the Arab countries

Government debt definition

Definition of the government debt requires clear understanding of the concept of government and the concept of debt. Government units are legal entities established by political processes which have legislative, judicial, or executive authority over other institutional units within a given area. Following the General Financial Statistics Yearbooks of the IMF, the Government consists of five increasingly broad sets of public institutions, each of which can be considered a definition of government: Budgetary Central Government, Central Government, General Government, Nonfinancial Public Sector, and Financial Public Sector. For a better reporting of data and debt rules, a broader definition of the government must be applied. In the Arab region, government sectors, public institutions, and entities differ among countries which result in different tools and definitions in reporting and recording debt data. For instance, the Budgetary Central Government in Jordan owned around 86% of the gross domestic debt in 2019, and the Own-budget Government Agencies accounted for the remaining 14% of gross domestic debt.¹³ Meanwhile, the government in Egypt consists of three definitions: the Government which can be called budgetary central government as defined by the GFS manual of the IMF in 2014, the public sector and holding companies, and Economic Agencies.

Given a definition of the government, the next issue is to define debt. First concerns the consideration of the public debt may be defined as either gross or net. Gross public debt is mainly designated by public debt which is the total commitments of the government that cover the deficit according to the figures available and easily disseminated. However, net debt, more accurately, reflects the total volume of canceled deficits in the past which represents net borrowing by general government as it includes the financial assets of the government. Therefore, the most effective method to understand the difference between the two concepts of debt is to examine the nature of the public sector's financial assets, since they constitute the difference between the gross public debt and the net public debt.

One important characteristic of the public debt is the nature of borrowing. High-income countries generally resort to borrowing by issuing debt securities such as treasury bills and bonds, so the majority of debt is marketable. These instruments are very liquid and are traded on the international financial markets. Small economies without such deep capital markets usually resort to commercial banks or global financial institutions such as the World Bank and International Monetary Fund. Public debt includes both domestic and external debt: the first is owned by residents of the issuing government; the second is held by foreign lenders. This should not be confused with currency of debt as it can be issued in the national currency of borrower or foreign currency (usually USD or euro). The latter facilitates lending and lowers borrowing costs in case of instable or irreputable currency but increases risk of default in case of unexpected changes to the exchange rates.

In this paper, the main concept used is gross public debt, owned by the general government. However, as examination of data shows, the precise definition of the debt coverage is necessary to assure cross-country comparability and to provide sound policy recommendations.

Composition of debt in the Arab countries

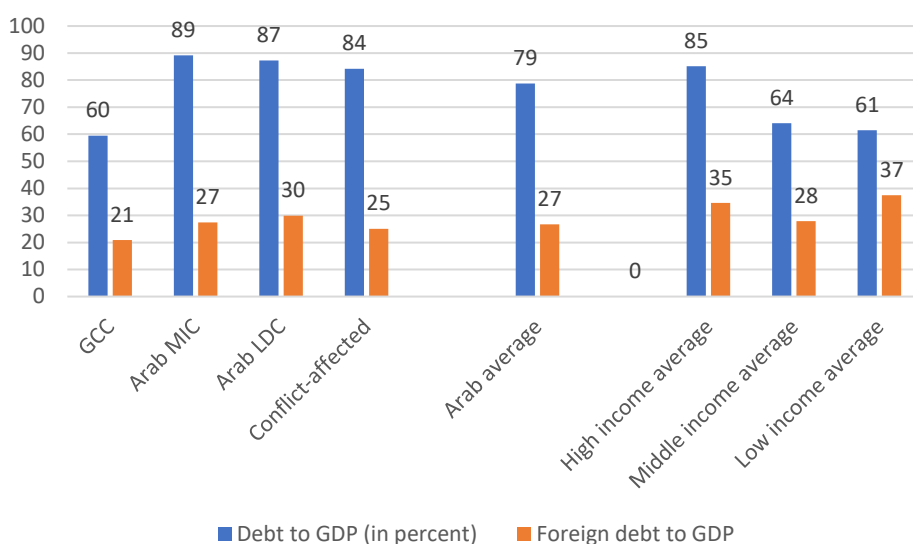
Average public debt in Arab countries is relatively high – in 2020 it equaled 74 per cent of GDP, higher than average for middle-income countries (64 per cent of GDP) and low-income countries (61 per cent of GDP), but lower than high income countries (85 per cent of GDP). This number masks however, significant intra-regional heterogeneity – while the standing of Gulf Cooperation Council is good with just 60 per cent of GDP debt on average, Arab Middle Income and especially Arab Least Developed states struggle with debt levels of 81 and 87 per cent of GDP respectively. These numbers may be detrimental for economic growth, as they cannot rely on such low interest rates as high-income economies and significant levels of debt translates into higher interests' costs that deteriorate state budgets.

¹³ Jordan, MoF, 2022.

The deeper look into the composition of debt in the Arab countries reveals some additional insights. In particular, high average public debt in the Arab Least Developed countries is attributed to enormous 273 per cent of GDP debt in Sudan, which is domestic non-bank. Other Arab LDCs exhibit lower debt than other countries in the world at the similar level of development and are almost fully reliant on official foreign loans amounting to about 40 per cent of GDP with the exception of Comoros and Sudan, where this share is equal to about 20 per cent of GDP. Shallow domestic market and lack of access to the international financial markets force them to turn to the official loans to satisfy their budget needs.

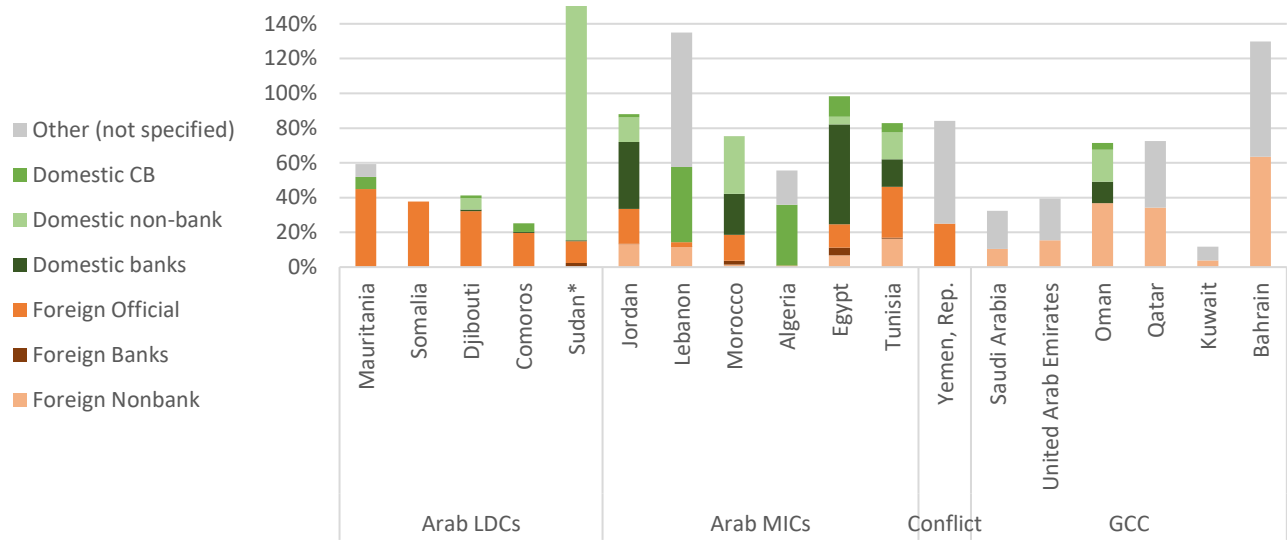
Arab Middle-Income Countries present the diversity of solutions in their debt management using both domestic and external sources. In Jordan, Morocco, Egypt and Tunisia, foreign official loans are still significant but the foreign non-bank creditors also come to play, as these countries starts to benefit from the access to international financial markets. Also, in contrary to Arab LDCs, the domestic sources are important in almost all MICs countries. In Jordan, Morocco and Egypt, these were domestic banks (government debt in these institutions equaled to 28, 24 and 57 per cent of GDP respectively) and in Lebanon and Algeria central bank (43 and 35 per cent of GDP respectively). The development of the middle class in these countries resulted in some share of domestic non-banks creditors, especially in Morocco (33 per cent of GDP) and Tunisia (16 per cent of GDP). Nevertheless, this picture is somehow blurred by the share of debt that cannot be attributed to any of the categories, especially in Lebanon (77 per cent of GDP) and Algeria (20 per cent of GDP). This shows that lack of proper public debt reporting is still significant problem in the Arab countries.

Figure 13. The unweighted average debt to GDP ratio and foreign debt to GDP among income groups (2020)



Source: Own elaboration based on the IMF data

Figure 14. The composition of debt in the Arab countries in 2020



Source: IMF database

Note: Sudan has debt of 273 per cent of GDP, out of which 248 per cent was domestic non-banks.

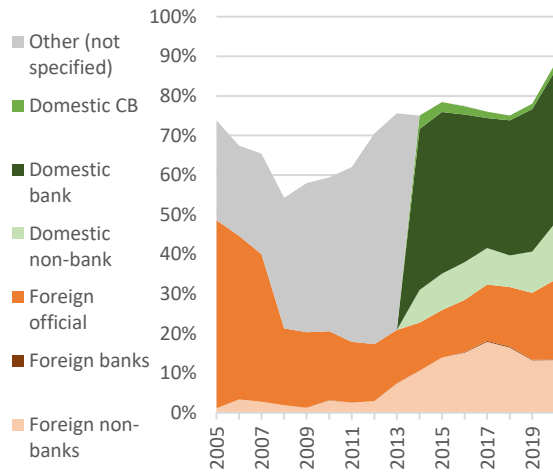
In case of GCC countries, the main source of financing are international markets and official loans are non-existent. Oman relies to some extent on domestic borrowing (35 per cent of GDP) out of which most (18 per cent) are domestic non-banks creditors. However, the reporting of debt in GCC countries does not allow to see the full picture of debt composition in these states (except for Oman).

Dynamics of debt composition in selected Arab countries

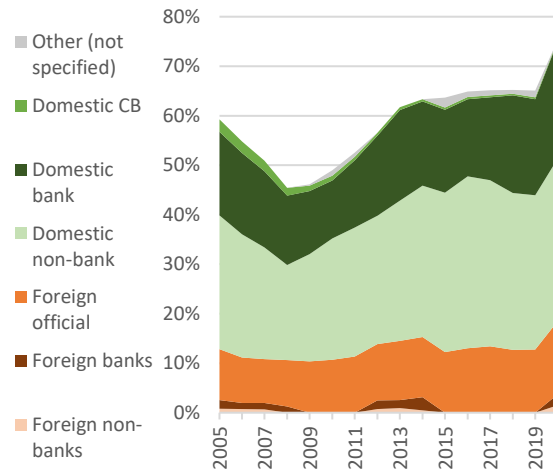
The analysis of the dynamics of the debt composition in Arab countries shows some regularities in the recent developments of debt buildup in Arab countries. In all Arab middle-income economies, the significant buildup of public debt was noticed in the last decade, between 26 (Morocco) and 45 (Algeria) percentage points of GDP. Most of the countries started to use international financial markets to satisfy their borrowing needs – especially Jordan, Tunisia and Lebanon, where debt to foreign non-bank creditors exceeded 10 per cent of GDP. Also, the reliance on domestic banking sector increased in Tunisia and Egypt, while in Morocco, the growing borrowing needs of the government were satisfied by the domestic-non-banks creditors and to some extent by banks. In this case, the debt of the government owed to domestic banks rose from 12 per cent of GDP in 2010 to 24 per cent of GDP in 2020. The reliance on domestic central bank is decreasing in Egypt and very small in other Arab middle-income countries with the exception of Lebanon where the debt held by the domestic central bank rose from 28 per cent of GDP in 2010 to 43 per cent of GDP in 2020 (it was 57 per cent of GDP in 2019, but 86 per cent inflation in Lebanon in 2020 wiped out large part of domestic debt).

Figure 15. The changes in the composition of debt in the Arab countries 2005-2020.

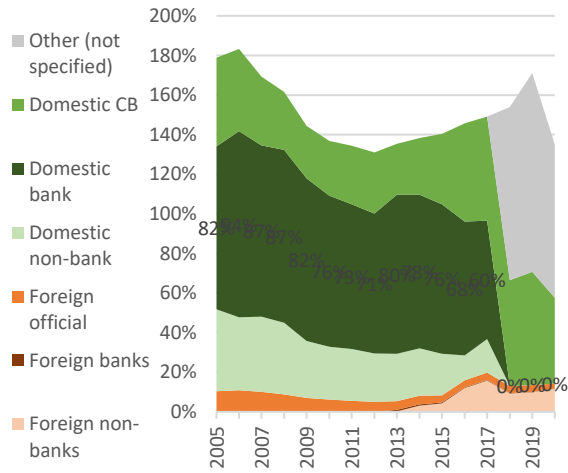
Jordan



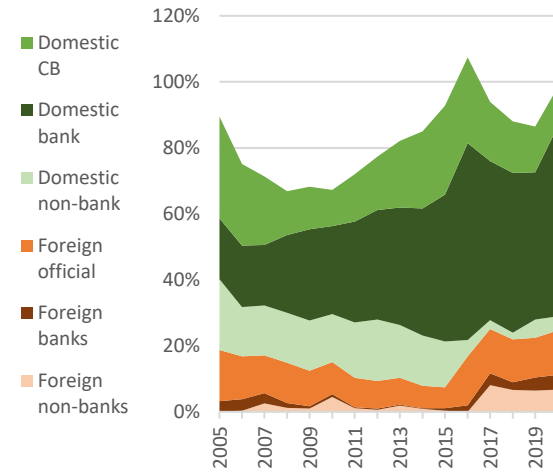
Morocco



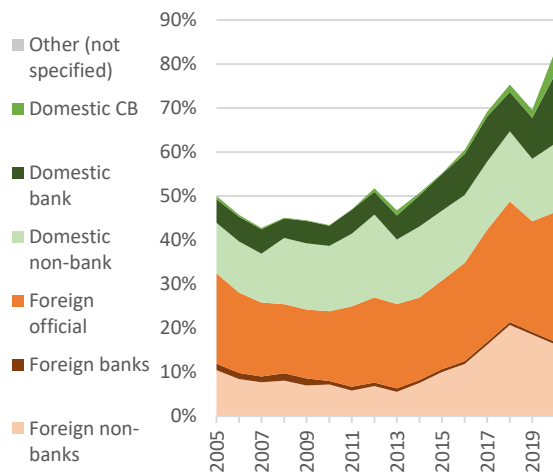
Lebanon



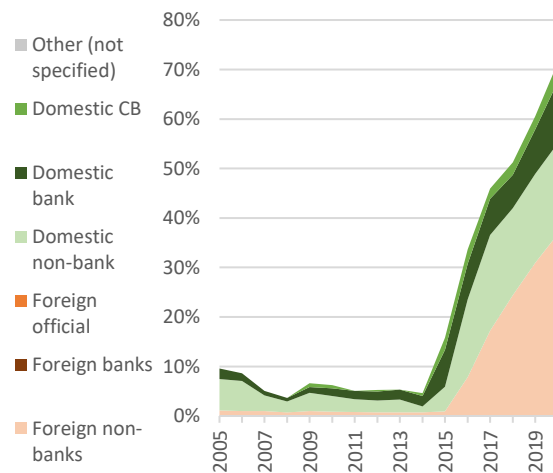
Egypt, Arab Rep.

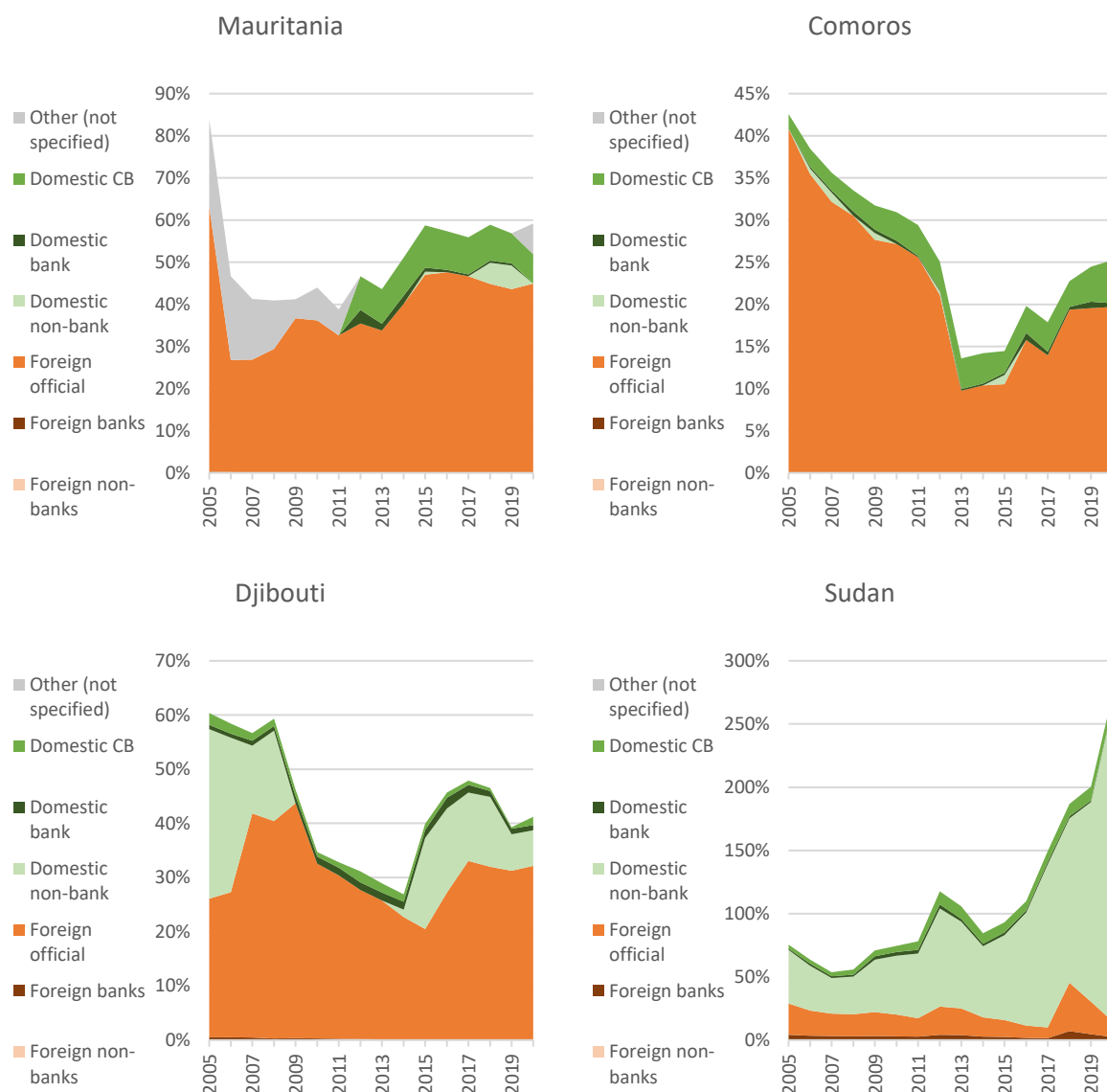


Tunisia



Oman





Source: IMF database

Oman is the only GCC country, for which sufficient data is available and it is interesting case of huge debt buildup between 2014 and 2020 (from 5 per cent of GDP in 2014 to 71 per cent of GDP in 2020), out of which half can be attributed to increase in borrowing from foreign non-bank creditors and another half from domestic ones.

As the data are too scarce to analyze conflict-affected countries, another group is Arab least developed states. With the exception of Sudan, they almost entirely rely on foreign official loans given the shallow domestic markets. In Mauritania and Comoros, the central bank lends to the government stable 7-10 per cent and 3-4 per cent of GDP respectively, while in Djibouti the role of domestic non-bank creditors is non-negligible with their debt falling from 17 per cent of GDP in 2015 to 7 per cent of GDP in 2020. In Sudan, almost entire debt builds up from 93 per cent of GDP in 2015 to 273 per cent of GDP in 2020 can be attributed in surge to the liabilities to domestic non-bank creditors, though the official external loans still constituted significant part of Sudanese foreign debt at 12 per cent of GDP in 2020.

4.2 The scale of the central bank financing in the Arab countries

The expansion of the balance sheets of central banks in six analyzed Arab countries for which data were collected,¹⁴ shows that there was no expansion similar to that observed in the developed countries. Nevertheless, in 2020 all analyzed central banks' balance sheets contain some portion of government securities, varying from 3 per cent of GDP in Jordan to more than 71 per cent of GDP in Lebanon.

Balance sheet of Jordan central bank looks safe and show no signs of monetary financing. The total assets in the balance sheet of the Central Bank of Jordan increased by JOD 2316.1 million (16.9%) at the end of 2020 to reach 16 billion dinars, compared to 13.7 billion dinars at the end of 2019. This is mostly due to an increase in foreign assets by 9.5%, coming from an increase in gold by 1127 million dinars, going up from 4.8% of GDP in 2019 to 8.5% of GDP in 2020. In addition to the increase in Cash, Balances & Deposits item by 697.1 million dinars (11.9%) and special drawing rights by 2.1 million dinars (17.9%). In total, foreign assets increased from 37% of GDP to 41.2% of GDP from 2019 to 2020 (figure 12.a). The role of state securities in the balance sheet of Central Bank of Jordan between 2010 and 2020 steadily decreased from 5.7 per cent of GDP. However, between 2019 and 2020, the contribution of state securities to total assets increased by 0.5 per cent of GDP from 2.6 to 3.1, which is, however, justified due to the loss of GDP and the need to support state during the COVID-19 pandemic.

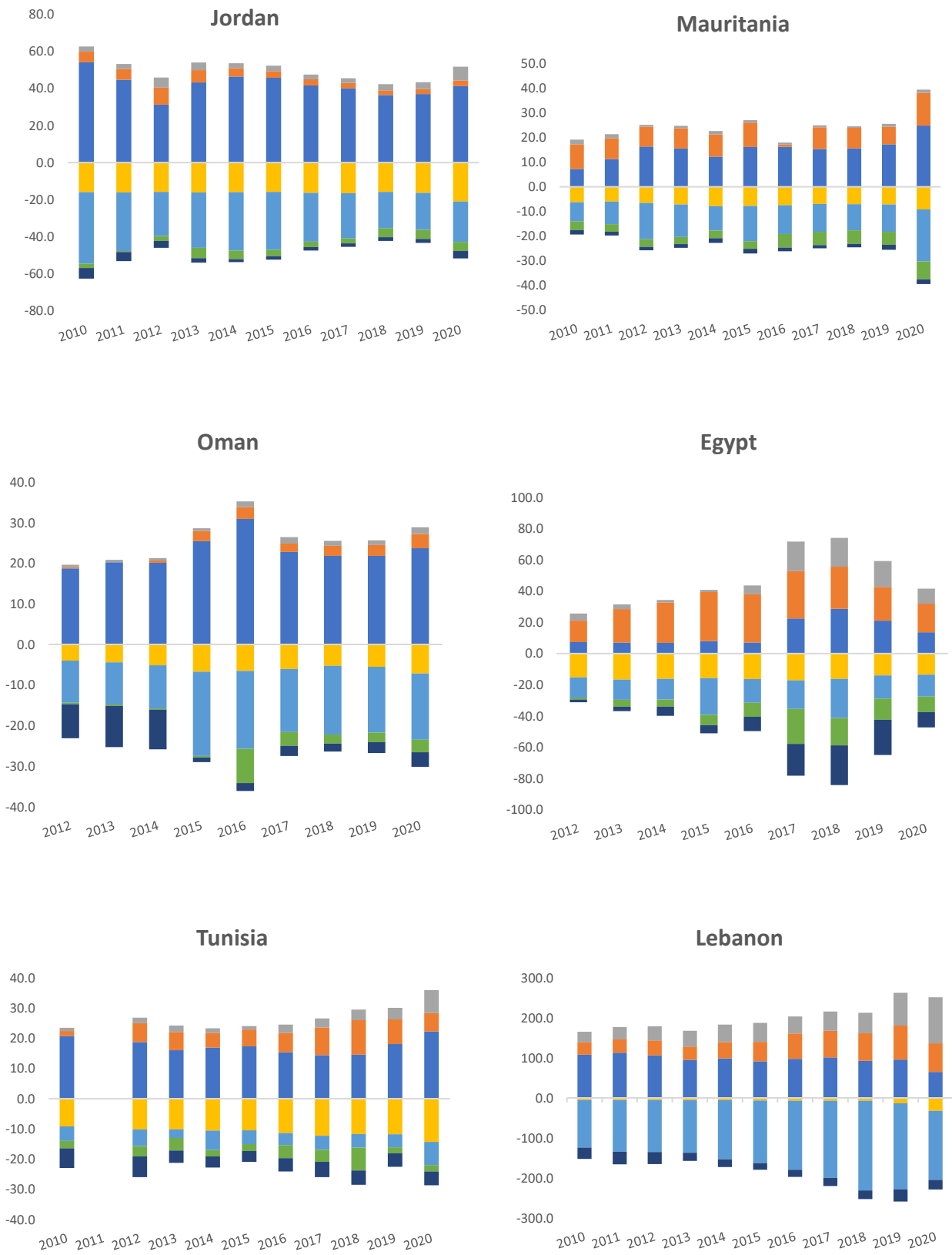
At the end of the 2020 financial year, the total of the balance sheet of the Central Bank of Mauritania reached MRU 116.2 billion (around US\$3.2 billion) compared to MRU 74 billion (around US\$2 billion) in 2019, which is equal to an increase of MRU 42.2 billion. This means 57 per cent increase compared to the previous financial year. At the asset level, this rise is attributed to the increase claims on the State, assets in foreign currency and gold from 17% of GDP in 2019 to 25% of GDP in 2020 as shown in the figure 12.b. The total balance sheet of Central Bank of Mauritania equaled almost 40 per cent of GDP, out of which 13.4 per cent were claims on government. On the liabilities side, the largest increases were recorded in the balances of current accounts and deposits as well as liabilities to the IMF and currency in circulation. Such change of structure in 2020 may indicate increase in monetary financing and the further development of balance sheet in this direction can indicate potential problems with debt sustainability.

Total assets of the Central Bank of Oman continued their declining trend in 2020 – decrease of 6.4 percent in 2020 compared to a decrease of 4 percent in 2019.¹⁵ Foreign assets decreased from RO 6,407 million in 2019 to about RO 5,771 million in 2020 but increased as percentage of GDP from 21.8 to 23.7 between 2019 and 2020 (figure 12.c). Similarly, due from government increased by 11.8 percent. All other assets remained stable and experienced minor changes during 2020. Consequently, similarly to Jordan, there was some increase in the monetary financing over the 2020, though the scale of this change is moderate.

¹⁴ Data were collected from the central banks' websites of respective countries. Balance sheets historical data for the previous 10 years were mainly available for Jordan, Mauritania, Egypt, Lebanon, Tunisia, and Oman.

¹⁵ Central Bank of Oman, 2020.

Figure 16. Central banks' balance sheets composition in the Arab countries (% GDP)





Source: Own calculation based on data from respective central banks of countries and IMF (2022).

Note: Data for Oman and Egypt in 2010 and 2011, and for Tunisia 2011 are not available.

Between 2019 and 2020 financial year, the net domestic assets of the Central Bank of Egypt grew by LE 279.3 billion (around US\$14.8 billion) to LE 699.0 billion (US\$ 37 billion). That increase can be attributed to the increase in the net claims of the government (LE 68 billion) and open market operations (LE 358 billion) indicating the significant increase in the domestic lending at the expense of foreign reserves. Nevertheless, due to the GDP growth between 2019 and 2020 the claims on government as percentage of GDP decreased between the two years and so did the total assets of the Egyptian Central Bank.

The Balance sheet of the Central Bank of Tunisia grew as a percentage of GDP between 2019 and 2020 by almost 6 percentage points. This can be attributed to some extent to fall in GDP – the nominal value of the balance sheet of Central Bank of Tunisia increased by 15 per cent. This surge is attributed mostly to the increase in foreign assets as percentage of GDP, from 18.1 in 2019 to 22.3 in 2020 (figure 12.e), which is mainly explained by the evolution of the price of an ounce of fine gold and due to important external resources mobilized during 2020.¹⁶ The claims on government increased from 3.8 per cent of GDP to 7.6. due the increase in facilities granted exceptionally to the State as per provisions of Article 5 of the amending finance law for the year 2020¹⁷, in order to finance part of the budget deficit caused by fallout from the COVID-19 crisis.

Lebanon in 2020 underwent the unprecedented economic and financial crisis. This is visible in the Banque du Liban balance sheet - at the end of 2020, the balance sheet of the Central Bank shows a decrease in foreign assets, going down from 95.6 to 65.2 (figure 12.f) per cent of GDP. In details, this account mainly includes Eurobonds held by BDL, and reserves that BDL possesses with foreign correspondents and other short-term instruments. As of 2020, out of this number, 5 billion USD (26 per cent of GDP of Lebanon in 2020) are Lebanese Eurobonds which are unlikely to be paid out in full. Securities portfolio refers mainly to the Central Bank of Lebanon holding of Treasury Bills and loans to Government in local currency. Since 2010, this item is increased in nominal value and as percentage of GDP reaching 72% of 2020 GDP, mainly because the debt denominated in local currency in Lebanon was inflated out (inflation in Lebanon in 2020 equaled 85 per cent).

Summing up, the response of Arab countries central banks' balance sheet to COVID 19 pandemic in 2020 was nowhere near the response of the developed countries. In some countries there are symptoms of overreliance of governments on central banks – especially problematic here is Mauritania and Lebanon. Other governments also increased the holding of the government securities, but the scale of these upticks seems to be manageable and within the safe boundaries.

4.3 Unconventional monetary policy following the GFC and COVID-19 pandemic

Following the outbreak of COVID-19 pandemic, massive fiscal response was announced and implemented by governments all around the world aiming at supporting the loss of revenues among businesses and households. Meanwhile, central banks in the Arab region aggressively cut policy rates during the early stages of the pandemic. In contrary to the central banks in developed countries, their policy rates did not hit zero lower bound, so they were able to further loosen their policies. Beyond rate cuts, central banks provided short term liquidity to the commercial banks aiming at supporting the economy and private sector. Taking advantage of lower interest rates, buying bond programmes have become one of the best measures to lower the cost of borrowing and stimulate the investment and economic growth. In addition, central banks encouraged

¹⁶ Central Bank of Tunisia, 2020.

¹⁷ Ibid.

commercial banks to provide soft loans and credit support to households and SMEs, mainly mortgage to support housing sector during the pandemic, and soft loans to support SMEs hardly hit by the outbreak.

Asset Purchase Programs during COVID-19

Major central banks in developed countries have used large-scale asset purchases extensively to provide monetary stimulus when the short-term policy rate has reached the effective zero lower bound. The first country that engaged with this type of instruments was Japan in 2001, one week after the announcement in the Japanese government's monthly economic report that the nation's economy was in "mild deflation"¹⁸. Following the 2008 financial crisis, central banks in developed countries, the U.S. Federal Reserve, and the Bank of England, established asset purchase programmes aiming at improving financial conditions, revive credit flows and stimulate economic activity.¹⁹ This instrument provides lending to commercial banks at interest rates close to zero, or even at negative rates for long-term refinancing operations. In 2015, the European Central Bank expanded purchases to include bonds issued by euro area central governments.²⁰ Due to zero lower bound, central banks with asset purchase programmes relied on expanding these facilities since they were not able to cut interest rates.

Using this type of instrument, the central bank is giving a signal to the investors and the financial markets that the interest rates will be at lower bound for an extended period which reduces the uncertainty and the volatility in the long term.²¹ This practice has been enforced with the outbreak of the virus when conventional monetary policy measures were not efficient to tackle the impact of COVID-19.

As of mid-December 2020, 18 Emerging Markets and Developing Economies (EMDEs) had announced or implemented asset purchase programs. Asset purchases have been mainly focused on local currency-denominated government bonds. The size of asset purchases has varied from less than 1 to 6 percent of GDP, significantly smaller than the programs launched in advanced economies.²² March 2020, Chile established a bank bond purchase program for an amount equivalent of up to US\$4 billion. Subsequently extended the program and eliminated the maturity constraints on the eligible Instruments.²³ A special asset purchase programme was announced in April 2020 and implemented in the amount of US\$16 billion over 6 months. Same in Colombia, early 2020, Authorized the central bank to purchase government bonds (COP 2 trillion) and private Instruments (COP 10 trillion) Issued by credit Institutions with remaining maturities of less than or equal to three years.²⁴ In the Arab region, only Egypt was engaged in this instrument with the outbreak of the virus. Like other monetary authorities around the world, the Central Bank of Egypt (CBE) took aggressive expansionary measures to help the financial system absorb the shocks of COVID-19: to boost government spending in response to the pandemic, the Central Bank of Egypt allocated EGP 10 billion (around \$530 million) for the purchase of non-financial assets in addition to buying EGP 20 billion (around \$1 billion) worth of equities —about 5% of the EGX 100's market capitalization — to support asset prices amid uncontained market volatility.

Other COVID-19 policy responses in the Arab region

In modern economic crisis management, monetary policy has become a key to mitigate the impact of unexpected shocks, and the pandemic has been no exception. Several central banks announced reduction in the reserve requirement ratio, cut in interest and repo rates. In another move to increase the funds available to lend to customers needing access to debt to finance their operations in these challenging times, banks were allowed to seek the approval of the central bank to temporarily operate below the required liquidity coverage ratio in some of the GCCs.

¹⁸ Bank of Thailand et al., 2011

¹⁹ Meaning, 2011.

²⁰ ECB, 2015

²¹ UN DESA, 2022.

²² World Bank, 2021.

²³ Central Bank of Chile, 2020.

²⁴ World Bank, 2021

In low-income countries, support has been mainly targeting SMEs. In Somalia, the Central Bank released funding-for-lending amounting to around \$2.9 million to support medium and small enterprises through commercial banks.²⁵ One of the main measures implemented by central banks in middle-income countries were interest rates cuts. Most middle-income countries agreed on postponing credit repayments for individuals including consumer loans and mortgages. In parallel, measures were taken for the benefit of companies and governments. The Central Bank of Jordan announced several measures to mitigate the impact of COVID-19, mainly postponing the credit facilities installments granted to the economic sectors clients, companies, and individuals affected by the spread of the virus. Aiming at refinancing operations, middle-income countries urged on lowering risk weights of certain assets and collateral requirements. After two months of the outbreak in Algeria, the Central Bank announced cutting its main policy rate from 3.25 to 3.00 percent, lowering its reserve requirement ratio from 8 percent to 6 percent, and lowering haircuts on government securities used in refinancing operations. Central banks in the Arab region innovated in creating new facilities to provide liquidity support to businesses: In Morocco, the Central Bank created a new banking credit line finance businesses' operational expense, which was guaranteed by the Central Guarantee Fund²⁶. In high-income countries, measures varied aiming at supporting individuals, households, SMEs, and non-SMEs. Specific measures were implemented to protect employees who lost jobs due to the pandemic. The Central Bank of Oman directed commercial banks postpone all loans installment to laid-off employees or those whose salaries have been reduced. To provide a temporary exemption to individual clients from principal and interest on existing loans, the Central Bank of the United Arab Emirates waived all fees which it charges for the payment services provided to banks operating in the country through its payment and settlement systems. The Saudi Arabian Monetary Authority unveiled around \$13 billion package to support the private sector, particularly SMEs, by providing funding to banks to allow them to defer payments on existing loans and increase lending to businesses. To support Government's efforts in combating the impact of COVID-19, the Central Bank of Kuwait set up around \$32 million fund financed by Kuwaiti banks to support impacted businesses in the country.

Despite the efforts of central banks in the Arab region to ease the burdens of the outbreak on economic sectors and individuals, high debt level and different type of exchange rates have been imposing limits to having an efficient monetary policy. The countries with fixed exchange rates are not being able to use the monetary policy effectively, adding to this, the impact of oil prices shocks with beginning of the pandemic; meanwhile, the governments with flexible exchange rates and limited fiscal space relied more on conventional monetary policy taking into consideration only the short-term impact of the outbreak on the economy and the financial market. With limited fiscal space, governments in the region focused on loans and credit guarantees, as well on postponement of installments for SMEs and individuals.

To safeguard economic and financial stability, Arab countries have pursued a policy of prudential flexibility in dealing with the COVID-19 crisis. The majority of policy response measures in this field are in the form of capital and liquidity buffer relief for banks to maintain lending. Table 1 summarizes all policy measures announced by central banks of the Arab countries to mitigate the impact of COVID-19 and help the commercial banks to maintain lending into the real economy.

Table 1. Financial Policy measures announced/implemented by the different central banks of the Arab

	Cash reserve ratio reduction	Creation/expansion of a fund	ICT and digital solutions	Interest rate reduction	Interest/principal deferment for individual loans	Liquidity support	Loans and interest deferment for SMEs/non-SMEs business	Lowering risk weights of certain assets/collateral requirements	Soft loans & credit support
Algeria	✓			✓		✓	✓	✓	

²⁵ United Nations, n.d.

²⁶ This fund covered the costs of upgrading medical facilities and support businesses and households impacted by the pandemic. The fund collected financing resources for companies with a deteriorated cash flow due to the decline or suspension of their activity.

Iraq	✓	✓	✓				✓		
Jordan	✓		✓	✓	✓	✓	✓	✓	✓
Mauritania	✓			✓					
Oman	✓			✓	✓	✓	✓	✓	✓
United Arab Emirates	✓			✓		✓	✓		✓
Egypt		✓	✓	✓	✓	✓	✓	✓	✓
Kuwait		✓	✓	✓	✓	✓			✓
Qatar			✓	✓			✓		✓
Saudi Arabia			✓	✓		✓	✓		
State of Palestine			✓			✓	✓	✓	✓
Bahrain				✓	✓	✓	✓	✓	
Morocco				✓		✓	✓	✓	
Tunisia				✓	✓	✓	✓		✓
Comoros					✓	✓	✓		
Lebanon									✓
Somalia									✓

Source: United Nations, n.d.

5. Macroeconomic implications of central bank financing

5.1 Methodology

Central bank financing of government debt can take different forms – beside direct purchases of government bonds by the central bank, it can artificially lower the interest rates to maintain low interest on the government debt or transfer its profits to the state coffers. Therefore, the main danger associated with the excessive reliance of governments on central banks in financing the state debt is the temptation to subordinate central bank policies to short-term government goals which are often in conflict with long run interest of the societies. This is especially dangerous in countries with weak institutions where it is easier for the politicians to control the central bank governors. In contrary, in countries with strong democratic culture and greater accountability of ruling elites, the *de jure* central bank independence is not that important, because it will pursue optimal policy regardless of the potential short-run benefits for the government and central bank governors are likely to be more interested in the interests of state than in the short-run benefits of their political acolytes.

Most of the model-based analysis of the recent large-scale asset purchase programs in advanced economies rely on argument that these interventions were meant to provide additional liquidity when the interest rates reached zero lower bound. In such environment, these interventions were justified and provided boost to GDP growth (raising inflation at the same time though). However, this is not the case for developing Arab countries – their did not reach the zero-lower bounds, so they have still room for relaxing their monetary policy. Consequently, in case of developing Arab countries, the analysis should focus on the central bank independence and what are the consequences of loose monetary policy to the baseline, when central bank is mandated to keep inflation close to the target.

Adrian et al. (2021) explicitly enlists the conditions that must be satisfied by the central bank to assure that this policy is efficient. First, it should have operational independence to set policy rate in order to achieve its inflation targets. Secondly, it should make asset purchases on its own initiative and at market prices. Thirdly, the scale of purchases should be adjusted to the goals of the central bank and preference should be given to secondary market. Fiscal dominance, understood as the prevalence of fiscal goals over the central bank mandate to keep prices under control may lead to expansion of the central bank's balance sheets and thus to inflation and exchange rate depreciation. These actions can take a form of direct financing, when central banks

are pressured to buy government bonds in the primary market at a subsidized rate, maintaining overdraft facility or simply keeping policy rates at low levels to facilitate repayment of the government debt. This form is of secondary importance as they lead to similar results - increase in money supply and uncontrolled inflation and exchange rate depreciation. In extreme cases, this can even lead to hyperinflation. Consequently, the main risk associated with relying on central bank to provide funds to the government is its deprivation from independence, leading to financial instability, surge of inflation and potential collapse of the national currency, as happened e.g., in Weimar republic between 2021-2023 and recently in Lebanon.

To illustrate these risks, we use the standard structural VAR model with several fiscal and macroeconomic variables. The model was estimated based on Jordan (example of country with fixed exchange rate) and Egypt (to show the impact on exchange rate in country with floating exchange regime) annual time series data. In this illustration, the examples of Egypt and Jordan will be used to show how macroeconomic aggregates of Jordan and Egypt behaved in the context of loose and tighter monetary policy as a response to external shock – decrease in the world output and increase in the global prices. This kind of shock is roughly similar to what was observed in the first half of 2022 following the Russian invasion on Ukraine – the surge in the prices of food supplies and decrease in supply affected economies of the Arab countries to huge extent. In the wake of such shocks, the central banks can either try to stabilize inflation through tightening of the monetary policy (this includes increase in the interest rates, but also surge in the reserve requirements for commercial banks or selling government bonds it holds) or it can help the government over the short run and keep interest rates low (or buy treasury bonds). These policy options yield different results in pegged regime (where additional foreign reserves are needed to stabilize the exchange rate – this policy is not sustainable over the long run, because reserves are eventually depleted) and in the floating exchange regime. The following paragraphs present the impact of such shock on inflation, exchange rates and GDP in the context of the economy with floating exchange rate – Jordan and fixed – Egypt.

5.2 Data

The models were estimated based on annual data from various sources. The annual data was chosen as quarterly data on government debt were not available in series long enough to be used in the VAR model. The following variables were used in the VAR model:

- Government debt (GDEBT) and private debt (PRIVDEBT) (% of GDP) – this was sourced from the IMF’s Global Debt Database.²⁷ The long-time coverage allowed to extend the sample back to 1970, which gives roughly 50 years of observations and allow for the estimation of the SVAR model.
- Real GDP growth (GDPG), Exchange Rate (ER), Broad Money Growth (MONG) and Exchange rate (ER) were all taken from the World Bank World Development Indicators database.
- Interest rates (IR) are from the IMF International Financial Statistics (IFS) database.

In the SVAR framework, government and private debt (% of GDP), inflation, GDP growth, and broad money growth are all treated as endogenous. Exchange rate is endogenous in case of Egypt and exogenous in case of Jordan. Policy rate is exogenous variable used to reflect the monetary policy and US inflation (INFL_UD) and US interest rates (IR_US) are proxies for global prices and global monetary conditions that affect the economies in the region. They are also exogenous, as situation in either Egypt or Jordan does not significantly impact US inflation or interest rates. They are also used to introduce shocks to the model. In total, both for Egypt and Jordan there are about 50 observations.

Table 2. The VAR model for Egypt.

	D(GDEBT)	GDPG	INFL	MONG	D(PRIVDEBT)	DLOG(ER)
D(GDEBT(-1))	-0.004057			0.125332	-0.047445	

²⁷ Source: Mbaye, Moreno-Badia, and Chae, 2018.

	(0.13797)			(0.10771)	(0.05663)	
	[-0.02940]			[1.16360]	[-0.83781]	
GDPG(-1)	0.000000	0.328284	0.013190	0.294524	0.000000	0.000900
	---	(0.13224)	(0.30456)	(0.42844)	---	(0.00896)
		[2.48248]	[0.04331]	[0.68744]		[0.10048]
INFL(-1)	-0.039863	0.000000	0.613548	0.170909	-0.142413	0.004451
	(0.26479)	---	(0.14275)	(0.19559)	(0.08509)	(0.00456)
	[-0.15055]		[4.29810]	[0.87382]	[-1.67373]	[0.97533]
MONG(-1)	0.000000	0.000000	0.000000	0.050919	0.000000	0.000000
	---	---	---	(0.12885)	---	---
				[0.39517]		
D(PRIVDEBT(-1))	0.006208	0.095395	0.393850	0.120197	-0.005052	0.007368
	(0.44290)	(0.08736)	(0.21264)	(0.29222)	(0.15026)	(0.00741)
	[0.01402]	[1.09204]	[1.85216]	[0.41132]	[-0.03362]	[0.99444]
DLOG(ER(-1))	24.18786	1.341086	6.553058	9.418276	-1.626111	0.389892
	(10.2449)	(1.78768)	(4.49190)	(7.31676)	(3.38691)	(0.15442)
	[2.36097]	[0.75018]	[1.45886]	[1.28722]	[-0.48012]	[2.52482]
C	13.13901	3.672205	4.927845	15.51915	0.366184	0.049714
	(4.97868)	(1.16880)	(3.19773)	(4.27904)	(1.09758)	(0.10804)
	[2.63905]	[3.14185]	[1.54104]	[3.62678]	[0.33363]	[0.46013]
INFL_US	0.000000	0.000000	0.143108	1.130671	-0.094699	0.001824
	---	---	(0.27105)	(0.50356)	(0.21413)	(0.00821)
			[0.52798]	[2.24537]	[-0.44226]	[0.22224]
IR(-1)	-1.380859	-0.120462	-0.155207	-0.692389	0.000000	-0.006188
	(0.44421)	(0.08248)	(0.24937)	(0.33820)	---	(0.00856)
	[-3.10860]	[-1.46044]	[-0.62240]	[-2.04725]		[-0.72253]
IR_US(-1)	0.372828	0.217816	0.000000	0.341618	0.431195	0.000000
	(0.41903)	(0.10329)	---	(0.44241)	(0.21090)	---
	[0.88973]	[2.10876]		[0.77218]	[2.04459]	
R-squared	0.210716	0.373524	0.428738	0.575006	0.196278	0.159355
Sum sq. resids	4100.111	183.9517	1017.382	1607.701	446.9719	1.272994
Mean dependent	0.793966	5.217648	11.32967	19.05569	0.325458	0.073272
S.D. dependent	10.40305	2.473313	6.091212	8.877497	3.403820	0.177618
Determinant resid covariance	67966.75					
Log likelihood	-656.2199					
Akaike information criterion	28.58040					
Schwarz criterion	30.27918					
Number of coefficients	44					
Number of restrictions	16					

Source: Own estimations

Tables **Error! Reference source not found.** and **Error! Reference source not found.** present the SVAR models used for the validity checks for Egypt and Jordan. Due to the small size of the samples only one lag is used, which does not seem to be very constraining given that annual data is used. In terms of fitness, to the data, Jordan model is slightly better, but in all cases the coefficients are in line with economic theory and most of them are statistically significant.

Table 3. The VAR model for Jordan.

	D(GDEBT)	GDPG	INFL	MONG	D(PRIVDEBT)
D(GDEBT(-1))	0.470007 (0.13683) [3.43505]	-0.124926 (0.04924) [-2.53730]	0.000000 --- ---	0.064091 (0.08012) [0.79997]	-0.062482 (0.04207) [-1.48512]
GDPG(-1)	0.355456 (0.28673) [1.23971]	-0.117524 (0.12632) [-0.93034]	-0.003862 (0.07778) [-0.04965]	0.369659 (0.18730) [1.97366]	0.000000 ---
INFL(-1)	-0.492143 (0.27307) [-1.80227]	0.000000 ---	0.246032 (0.09796) [2.51162]	0.217678 (0.20177) [1.07887]	0.000000 ---
MONG(-1)	0.000000 ---	0.279199 (0.07234) [3.85972]	0.000000 ---	0.352504 (0.11933) [2.95391]	0.000000 ---
D(PRIVDEBT(-1))	-0.405089 (0.33744) [-1.20048]	0.007966 (0.13131) [0.06066]	0.162654 (0.11350) [1.43313]	-0.442117 (0.21674) [-2.03981]	-0.049419 (0.14550) [-0.33964]
C	11.71877 (5.67776) [2.06398]	0.145578 (2.29436) [0.06345]	2.081740 (1.84458) [1.12857]	4.869418 (3.75646) [1.29628]	2.192020 (2.52684) [0.86750]
INFL_US	0.000000 ---	0.727976 (0.23529) [3.09390]	0.840344 (0.22307) [3.76722]	0.525037 (0.47241) [1.11140]	0.462264 (0.27323) [1.69182]
IR(-1)	-2.139463 (0.96692) [-2.21265]	-0.024941 (0.33937) [-0.07349]	-0.277996 (0.27854) [-0.99806]	-0.768213 (0.62642) [-1.22636]	-0.472605 (0.42345) [-1.11609]
DLOG(ER)	106.0837 (19.9212) [5.32517]	-28.25628 (7.82471) [-3.61116]	33.74808 (6.01795) [5.60791]	-10.58900 (11.9817) [-0.88376]	6.505216 (8.49998) [0.76532]
IR_US(-1)	0.420692 (0.53346) [0.78860]	0.000000 ---	0.000000 ---	0.632762 (0.38727) [1.63391]	0.010249 (0.27501) [0.03727]
R-squared	0.615585	0.612651	0.710579	0.638598	0.145578
Sum sq. resids	4119.122	632.8273	433.6178	1479.585	761.4887
Mean dependent	1.288098	5.163647	5.773771	12.24582	1.158399
S.D. dependent	14.78782	5.774223	5.529561	9.140643	4.264787

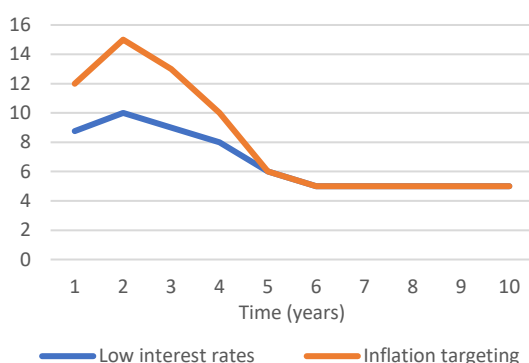
Determinant resid covariance	6336431.
Log likelihood	-718.3873
Akaike information criterion	30.33549
Schwarz criterion	31.86511
Number of coefficients	40
Number of restrictions	10

Source: Own estimations

5.3 Shocks

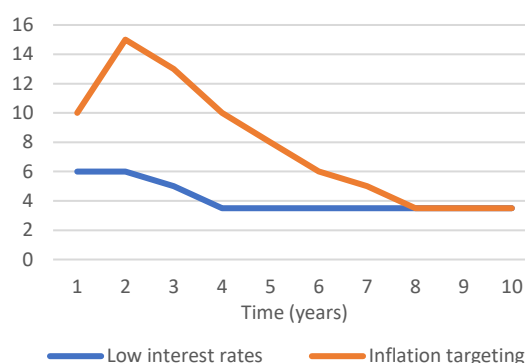
In this example, the shock to external (global prices) is modelled. US inflation was assumed to proxy global price changes. As there is no variable that would reflect the global demand, it could not be shocked, but the international financial conditions (expressed by the US interest rates) serve as a proxy for the limitations of global supply.

Figure 17. The modelled trajectory of interest rates in Egypt in reaction to the world price shock



Source: Own calculations

Figure 18. The modelled trajectory of interest rates in Jordan to the world price shock



Source: Own calculations

Figure 17 and Figure 18 presents the modelled response to the changes in external conditions in Egypt and Jordan. Both in Egypt and Jordan, the interest rates are expected to achieve its peak in the second period after the shock and then gradually decrease. In Egypt, in the low interest rate scenario, the hike is limited to 10 per cent after which they gradually decline to the equilibrium value of 5 per cent. In contrary, in the inflation targeting scenario, the external shock is treated faster and the central bank increases the interest rate to 15 per cent. In the following years, they gradually decline. In Jordan, the interest rates in *low interest rates* scenario are kept at the relatively low level of 6 per cent before receding back to 3.5 per cent after 3 years of the initial shock. In the *inflation targeting* scenario, they are also elevated to 15 per cent one year after the shock and then they recede to the baseline after 7 years from the initial shock. Consequently, the difference between the *inflation targeting* and *low interest rates* scenarios is much bigger in case of Jordan, as flexible exchange rate does not provide additional cushion to mitigate the negative impact of shock to the prices of commodities (imported goods) on the GDP and inflation.

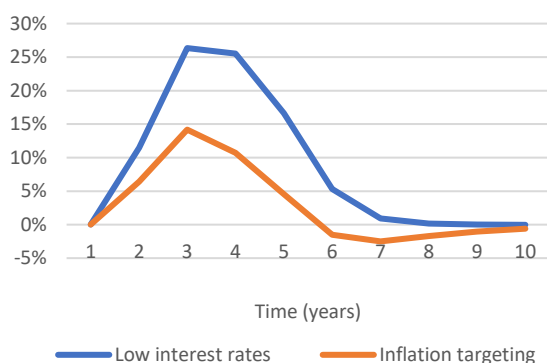
5.4 Results

Inflation

As predicted by the economic theory, increase in global prices spurs domestic inflation in both Jordan and Egypt. If this is not counteracted by the domestic interest rates, the hike in prices is longer and much more significant than in case of inflation targeting policy. Furthermore, price-wage spiral and lost of trust of international investors as a result of financial crisis is also not taken into account here. De-anchoring of inflation expectations may, however, invalidate the parameters of the applied econometric model making it

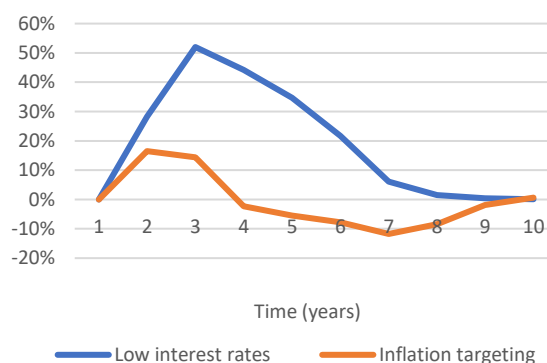
unusable for the policy analysis. Consequently, very high inflation is dangerous for policy makers because in such case, the economy is precipitated from the equilibrium and previously applied tools lose their validity.

Figure 19. The modelled impact of the world price shock on inflation in Egypt (deviation from baseline)



Source: Own calculations

Figure 20. The modelled impact of the world price shock on inflation in Jordan (deviation from baseline)

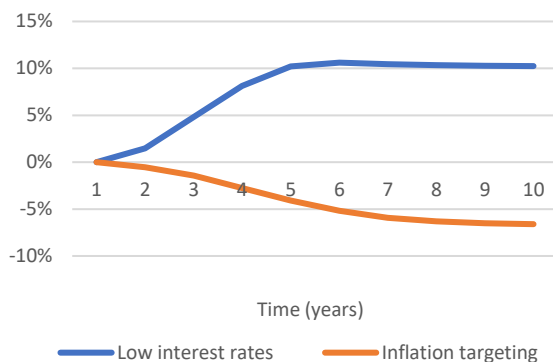


Source: Own calculations

In the simulation, the impact of external shock on inflation in the *low interest rates* scenario is way bigger in Jordan than in Egypt and reaches 50 per cent of the initial level in comparison to 26 per cent in the latter. Nevertheless, the interest hikes in the *inflation targeting* scenario do not manage to bring inflation to the baseline level in either case – in Egypt case it increases by 15 per cent two years after the shock and in Jordan by 16 per cent in the year following the shock. However, in this scenario the impact on inflation is much shorter lived – in Egypt the inflation falls below the baseline level five years after the shock and in Jordan this process takes three years. Consequently, the inflation targeting policy is efficient in bringing inflation back to the target, though it does not prevent slight increases in inflation immediately after the shock.

As no data is available on the reserves holdings by the central bank, this paragraph shows the impact of external shock and counteracting measures on the exchange rate in Egypt. In *low interest rates* scenario, the depreciation of the currency is gradual and reaches 11% five years after the initial shock to global prices. In contrary, tightening of the monetary policy leads to small appreciation of the currency, suggesting that the international capital flows would be large enough to counterbalance the worsening terms of trade. Even though there is no foreign reserves in the SVAR model for Jordan, it can be easily predicted that in the event of pressure on the depreciation of domestic currency (what happens in *low interest rates* policy environment), they will be needed to maintain the peg. In contrary, if high interest rates will lure foreign capital to the country, these reserves would not be needed.

Figure 21. The modelled impact of the world price shock on exchange rate (domestic currency per unit of foreign currency) in Egypt



Source: Own calculations

Output

As expected, the loss in output is more significant. For Egypt, the output will fall and this change would be greater in *inflation targeting scenario* (which is in line with economic intuition – temporarily lower output is the cost of financial stability and low inflation). The difference is persistent and does not vanish even in 10 years horizon, what can be attributed to high inertia embedded in the VAR model.

For Jordan, the results are different – the fixed exchange rate embedded in the model seems to allow the country to benefit from the surge in global prices. This is essentially due to the direct effect of global inflation observed in the past – the coefficient for the US inflation in the model of Jordan GDP growth is positive and highly statistically significant. The channels of this impact cannot be derived from such simple tool and require further research, though the hike in interest rates affect GDP growth to minimal extent. Consequently, based on this model, it can be concluded that the economic costs of interest rate hike are more significant in Egypt than in Jordan – in the latter case, they may be even negative.

Figure 22. The modelled impact of the world price shock on output growth in Egypt (deviation from steady state)

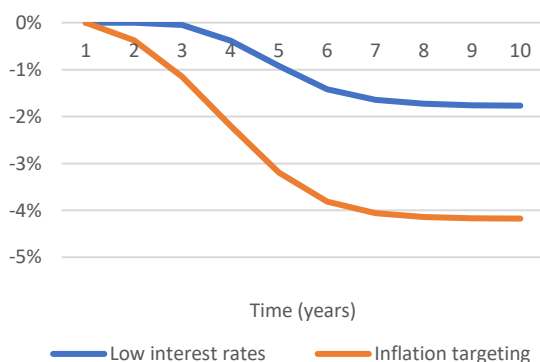
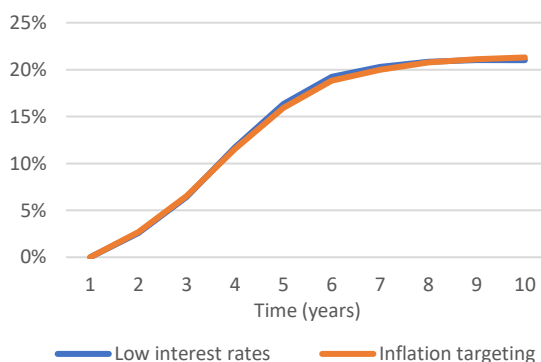


Figure 23. The modelled impact of the world price shock on output growth in Jordan (deviation from steady state)



Source: Own calculations

Source: Own calculations

6. Summary and policy implications

Analysis of the central bank financing of government borrowing needs is difficult task given the diversity and multiplicity of the instruments that can be used to support the government in the difficult times. The government securities do not necessarily need to show up in the officially published balances of the central banks to negatively affect inflation and macroeconomic stability – they can be bought by the commercial banks or existing papers can be rolled over using the artificially low interest rates. These instruments have, however, similar economic consequences – they all increase money supply to avail more funds to the government.

De jure central bank independence in the Arab countries is at the relatively high level – all Arab countries imposed some limits on the central bank lending to the state and minority of them permits the borrowing on the primary market. This is also visible in the balance sheets of the central banks as described in the fourth

section – out of six analyzed countries only Mauritania and Lebanon experienced significant changes to their balance sheets in the wake of the COVID-19 pandemic indicating vulnerability of these countries to the external shock (in case of Lebanon this was preceded by internal shock of huge protests and government collapse in October 2019). However, it must be kept in mind that the full effects of the support to the governments during the outbreak will be visible in the central bank's balance sheets only in the future and may not yet be apparent in the available data.

Section six shows how excessive money supply in the wake of external shock to global prices and output affects the macroeconomic stability. If the central bank is not determined enough to tighten monetary policy, it will spur significant inflation and pressure on the foreign exchange rate, what would mean devaluation in case of flexible currency regime and depletion of reserves if central bank want to stabilize the exchange rate. Given the *de facto* fixed regime in the vast majority of the Arab countries, such policy is not sustainable over the medium and long run and will cause bank run and banking sector collapse similar to this experienced in Lebanon in 2019 and 2020. Switching to the *floating* regime in countries without constant inflow of the foreign currency (i.e., hydrocarbon exporters) may provide some flexibility in monetary policy as exchange rate acts as automatic stabilizer leading to improve in competitiveness of domestic goods in the times of economic downturns.

Summing up, *de jure* arrangements on the central bank independence and limits of the central banks' lending to the governments in the Arab countries do not deviate from the world average. What is really important is the *de facto* independence of the central bank – consequently with the exception of huge, rare and unexpected external shocks (the COVID-19 pandemic is the example, but recent uptick in global prices of wheat following the Russian invasion on Ukraine is not) the governments should not rely on central banks to finance their needs. That does not mean that central banks cannot accumulate the state securities if this is necessary – they can, if they think that this would bring them closer to the inflation target and macroeconomic stability. Nevertheless, by no means, politicians should be involved in the process given the short electoral cycle and different time horizon then the society as a whole. Consequently, government officials should stay away of the central banks and institutional arrangements should be crafted such that they reinforce the central bank independence. Recent collapse of the banking system in Lebanon and devaluation of Egyptian pound shows that this still remains the challenge for the Arab countries.

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Annex I. Legislation on the central bank lending to the government in the Arab countries

Country	Document	Advances characteristics	Lending	Conditions	Profit	Seignorage
Egypt	<ul style="list-style-type: none"> • CBE statute • Law no. 88 of 2003 	<p>Article 39</p> <ul style="list-style-type: none"> • maximum 10% of total revenues in 3 previous years • Maturity: maximum 1 year • Interest: determined by the Bank in agreement with MoF 	<p>Secondary market</p> <p>Article 10 The Bank may, through purchase or sale in the open market, deal in Egyptian government securities, government-guaranteed securities, as well as in the securities it issues, and the bonds specified by its Board of Directors.</p>	<p>Article: 27 from the Law Determined upon agreement between the Ministry of Finance and the Bank, according to the prevailing credit and monetary conditions</p>	<p>Article 36 from the statute The net profit of the Bank shall be transferred to the Public Treasury of the State, after deducting the workers' profit share as determined by the Board of Directors of the Bank, and the reserves it determines to form.</p>	<p>Article 8 from the statute The banknotes that are issued by the Bank shall always be covered by a balance of equivalent value formed of gold, foreign exchange, foreign securities, Egyptian government bonds and bills, and of any other Egyptian bonds guaranteed by the government.</p>
Oman	<p>The Banking Law Royal Decree 114/2000</p>	<p>Article 26 Official Bank of the Government</p> <ul style="list-style-type: none"> • The total amount of the advances and the face value of treasury 	<p>Article 26 Official Bank of the Government</p> <p>Pursuant to regulations established by Board of Governors, the Central Bank may</p>		<p>Article 34 General Reserve Fund The CB shall establish a General reserve Fund and annual net profit</p>	<p>Article 43 Right of Issue The CB shall have the sole right to issue currency notes and coins to be</p>

		<p>bills should not exceed 10% of the budgeted recurrent revenues of the Government during the fiscal year in which these advances are provided.</p> <ul style="list-style-type: none"> • Maturity: 90 days • No further advances until the amount due on the outstanding is fully paid 	<p>issue and/or manage treasury bills, bonds, commercial paper and any other debts of the Government of the Sultanate or any Ministry, institution or corporation thereof if they are guaranteed by the Government of the Sultanate.</p>		<p>accruing at the end of the year shall be transferred into the general reserve fund until the balance of sheet of such fund equals not less than 25% of the value of currency in circulation or greater amount as the Board of Directors may determine.</p>	<p>circulated at legal tender.</p> <p>Article 46: Special Issues Subject to approval of his Majesty the Sultan.</p>
Mauritania	Law 2018 – 034 on the statute of the Central Bank of Mauritania	<p>Article 88: The Central Bank may not grant, directly or indirectly, overdrafts to the State, to public establishments or local authorities, except intraday credit openings in to ensure the proper functioning of the payment system, if they are reimbursed on same day.</p>	<p>Article 88 ... It can only subscribe to public debt securities on the secondary market in the framework of its operations Paragraph 1 of this article does not apply to public establishments which carry out bank activities and financial institutions</p>	<p>Article 88 The total duration of such facilities may not exceed three hundred (300) days, consecutive or not, during a calendar year. An agreement drawn up between the Ministry of Finance and the Central Bank determines the amount, the market interest rate, the term as well as all</p>	<p>Article 107 After deducting all the allocations deemed necessary by the Board of Directors to all other general or special reserves, the balance is transferred to the Public Treasury.</p>	<p>Article 34 The central bank alone exercises the privilege of issuing coins or banknotes.</p>

			<p>which, within the framework of the provision of liquidity by the Central Bank, enjoy the same treatment as private credit institutions. By way of derogation from paragraph 1 and only in exceptional circumstances, the Central Bank may grant the Treasury and local authorities' overdrafts in current accounts that cannot, under any circumstances, moment exceed 5% of the ordinary revenue of the State or local authorities observed during of the previous fiscal year.</p>	<p>other terms of such overdrafts. These overdrafts must strictly be reimbursed under the terms prescribed in the agreement.</p>		
Tunisia	Law 2016-35 on the statute of the	<p>Article 25 4) the Central Bank may not grant facilities to the general treasury of the</p>	<p>This prohibition is not applicable to financial assistance</p>		<p>Article 78 3- the board transfers the necessary allocations to all other</p>	<p>Article 13 the Central Bank executes, on behalf of the</p>

	Central Bank	State in the form of overdrafts or loans, nor directly acquire securities issued by the State.	operations granted by the central bank, under the conditions provided for by this law, for the benefit of banks and financial institutions in the capital of which the State directly or indirectly holds a participation.		general or specialized reserves. The remaining balance of profits is paid into the general state treasury.	State, the exclusive privilege of issuing banknotes and coins in Tunisia Article 15 the creation and issue of banknotes and coins of the Central Bank as well as their withdrawal or exchange are carried out under the conditions determined by Article 65 of this law.
Jordan	Law No. 23 of 1971	Article 51 The Central Bank shall not extend credit facilities to the Government or public institutions, whether directly or indirectly, save within the limits prescribed under this Law.			Article 9 (a) The Central Bank shall maintain a general reserve, into which 20% (twenty per centum) of the net profits realized by the Central Bank during each financial year shall be paid The	Article 27 The Central Bank alone has the right to issue banknotes and coins in the Kingdom Papers and coins alone are the legal currency to pay any amount whatsoever .

					<p>remaining amount (namely eighty per centum) of the annual net profits shall be paid to the Government</p> <p>.</p> <p>(b) All the net profits shall be paid to the Government when the amount of the general reserve exceeds twice the amount of the capital.</p>	
Lebanon	CODE OF MONEY AND CREDIT	<p>Article 88 The Bank is authorised to grant the Treasury, upon the request of the Minister of Finance, cash facilities the amount of which shall not exceed ten per cent of the State ordinary average budgetary revenue of the last three financial years ended. The duration of these facilities shall not exceed four months.</p>		<p>Article 91 However, in circumstances of unusual seriousness or in cases of absolute necessity, should the Government consider resorting to a Central Bank loan, it shall inform the Governor of the Bank accordingly. The Bank shall study with the Government the possibility of substituting its assistance by other</p>	<p>Article 113 Excess receipts over overheads, charges, amortization and diverse provisions, constitute the net profit. Fifty per cent of this net profit shall be carried into an account "General Reserve Fund" of the Central Bank and the other 50% shall be paid into the Treasury.</p>	<p>Article 10 The issue of money is the exclusive privilege of the State. However, the State may vest this privilege in the Central Bank it creates.</p>

				<p>means such as the floating of an internal loan, an external credit, an economy squeeze under other headings of expenditures, new fiscal resources, etc...</p> <p>It is only in cases when it has been established that no substitute solutions are available and if, notwithstanding this, the Government presses its application, that the Central Bank can grant the requested loan.</p> <p>The Bank shall then propose to the Government, if necessary, measures likely to limit the harmful economic consequence of its loan and, notably, its effects, in the prevailing circumstances, on the internal and external</p>	<p>When the amount of the "General Reserve Fund" has reached fifty per cent of the Bank's capital, the net product shall be distributed in the proportion of 20% to this "Fund" and 80% to the Treasury.</p> <p>If the outcome of a financial year has been adverse, the loss shall be covered by drawing on the "General Reserve Fund" and, if unavailable or short, by a compensatory payment from the Treasury.</p> <p>When as a result of a drawing by virtue of the preceding subparagraph the balance of the</p>	
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				purchasing power of the money.	account "General Reserve Fund" falls to under fifty per cent of the capital, the distribution of excesses shall be resumed on a 50-50 basis between this account and the Treasury, until this account rises again to half the amount of the capital.	
Iraq	Central Bank of Iraq Law, Law No. 64 of 1976	Article 26 1.The CBI shall not grant any direct or indirect credits to the Government or any other agency or State-owned entity, except that the CBI may provide liquidity assistance under Article 30 to government-owned commercial banks that are subject to the supervision of the CBI, provided that such assistance	Article 26 2.The CBI may purchase government securities provided such purchases are only in the secondary market and are only made in connection with market operations.		Article 8 Distribution of net profits a.80% of any net profits available for distribution shall be transferred to the general reserve account until such time as the general reserve account of the CBI reaches a 10% of the total assets of the CBI b. any remaining net profits	Article 32 1.The CBI shall have the exclusive right to issue banknotes and coins intended for circulation in Iraq.

		is granted on the same terms and conditions as would be extended for the benefit of privately-owned commercial banks.			available for distribution shall be transferred to any other reserve account that may be established by the CBI. No distribution shall be made to the treasury	
Djibouti	Law 118/11 on the change of the statute of the CB	<p>Article 22 Overdraft and credit to the National Treasury</p> <p>The Central Bank cannot grant overdrafts or grant any other type of credit to the National Treasury.</p>	<p>Article 27 The Central Bank may issue bonds denominated in francs, but which must be subscribed and paid for in US dollars or in a foreign currency convertible into US dollars, without the capital represented by this issue ever exceeding thirty percent of that of the central bank. The bonds will be freely negotiable.</p>			<p>Article 10 Issue Privilege The central bank alone exercises the privilege of issuing banknotes and metallic coins in francs</p>