Reserve Requirements: Current Use, Motivations and Practical Considerations

OECD

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Note by the Secretariat

Context

This technical note was prepared in October 2018 by the OECD Secretariat as part of the discussions on the Review of the OECD Code of Liberalisation of Capital Movements ("the Code").

It presents an overview of the current use and motivations of reserve requirements as a financial policy tool, building on a survey sent to countries participating in meetings of the Advisory Task Force on the Codes ("ATFC").

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Introduction

As part of the Review of the OECD Code of Liberalisation of Capital Movements "the Code", the Advisory Task Force on the OECD Codes of Liberalisation (ATFC) discussed the treatment under the Code of reserve requirements (RRs) differentiated by currency or residency and considered clarifying the current understanding. Reserve requirements differentiated by currency had been already considered by the Task Force on a past occasion with regards to the specific case of Turkey which explained the motivations and mechanisms behind its new reserve requirements regime.

This technical note was written at the request of the Task Force to analyse the practical use and motivations of such tools among Task Force members. It builds on a survey sent to ATFC delegates on current use by ATFC members of differentiated reserve requirements.

RRs have been part of the monetary toolkit for a long time. Most central banks (or still) required deposit taking institutions to hold minimum reserves against their liabilities. These have been used as a complement to, if not a substitute for, monetary policy adjustment of the interest rates. In some countries they were a key component of a financially repressed economy (McKinnon 1973). There has since been a significant evolution over time regarding the role of reserve requirements – moving from a purely monetary policy instrument to a diverse set of uses including financial stability motivations. Furthermore their form has transformed – from single uniform reserve requirements ratios on deposits to differentiated ratios by currency, maturity, residency and type of liability.

While the main focus of the survey and this note is on (differentiated) reserve requirements applied to banks, the note also presents a broader overview of reserve requirements, including broad based reserve requirements on foreign currency capital inflows.

Section 1 presents the main motivations for using reserve requirements; Section 2 examines the main features and policy choices to be made in designing reserve requirements; Annex A includes a summary of survey responses and Annex B discusses selected country experiences with differentiated reserve requirements (DRR), as gathered from the survey.

I. Main motivations of reserve requirements

The various motivations for reserve requirements over time

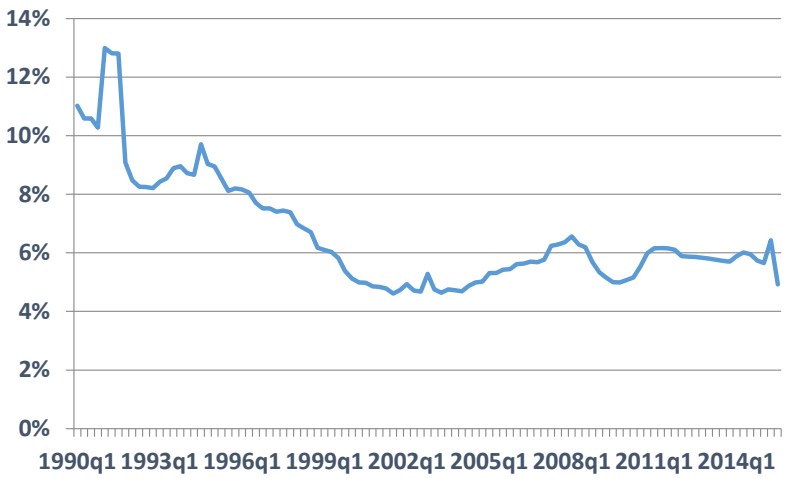
Three main motivations for traditional reserve requirements have been highlighted in the literature: a microprudential, a monetary control, and a liquidity management objective.

Reserve requirements were first used for micro-prudential regulation purposes. Initially, they were ensuring that banks held a certain proportion of liquid assets as a buffer. Some have argued that as a series of supervisory and regulatory initiatives have been taken over the years with the aim of increased liquidity buffers in the system, this prudential purpose may now be outdated (Gray 2011).

Reserve requirements can also be used for monetary control purposes and adjusted, similarly to monetary policy, along the business cycle, e.g. to offset below trend output growth (Federico, Vegh and Vuletin 2013). The channel works through controlling reserves to affect credit growth, and amounts indirectly to a change in interest rates. Some countries have used RRs in this way to avoid capital inflows that might fuel credit booms. Compared to central bank policy rate adjustments, raising reserve requirements is less likely to attract capital inflows if they incentivise banks to raise lending rates without raising deposit rates (Montoro and Moreno 2011). Recent research found evidence of reserve requirements leading to higher lending rates while raising policy rates lead to both higher lending and deposit rates, hence potentially attracting capital inflows by increasing carry trade opportunities (Brei and Montoro 2018).

Finally, reserve requirements are also used for liquidity regulation purposes, whereby the central bank attempts to affect banking system liquidity to reduce pressure on inflation, exchange rates, and interest rates. In reducing interest rate volatility, the central bank can support interbank trading and encourage capital market development. Furthermore, RR can help central banks to sterilise surplus reserve balances.

Figure 1 – ATFC members average reserve requirements (1990-2015)



Source: Federico, Vegh, and Vuletin, (2014), "Reserve Requirement Policy over the Business Cycle," NBER Working Paper No 20612.

Note: Simple average of reserve requirement ratios. This database only looks at undifferentiated reserve requirements, as well as maturity and currency differentiated reserve requirements. The sample comprises: Argentina, Australia, Brazil, Canada, Chile, China, Colombia, Costa Rica, Czech Republic, Denmark, France, Germany, Hungary, India, Indonesia, Israel, Japan, Latvia, Lithuania, Mexico, New Zealand, Norway, Peru, Poland, Portugal, Romania, South Africa, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States.

Figure 1 illustrates the declining use of traditional reserve requirements over time. Their use has tended to wane as countries developed. More recently however reserve requirements have started to be used with new objectives, especially as authorities started to differentiate the rates along several dimensions.

In some cases, the introduction and adjustments of differentiated reserve requirements are motivated by financial stability and macroprudential considerations. They have indeed been an important part of the policy instruments used to lean against the wind in recent years, notably in Latin America (Terrier et al, 2011). Authorities used these tools when trying to mitigate a credit boom, to lengthen the maturity of banks' liabilities (in differentiating rates depending on the maturity of the liabilities), to change the composition of the liabilities away from non-core liabilities, or to limit currency mismatches (in charging a higher rate on foreign currency (FX) liabilities). Reserve requirements differentiated by currency have also been used to reduce the dollarisation of the financial system.

Finally, reserve requirements differentiated by FX or residency have been used as capital flow management tools explicitly in the context of a surge in capital inflows.

Alternatives to reserve requirements with prudential intent (or a lack thereof?)

While RRs effectively act as a tax on the financial sector (with differentiation imposing further disadvantages to specific operations),may move the activity and potential risk to non-regulated financial institutions, and may lead to financial disintermediation if calibrated excessively, whether RRs are the most appropriate tool or whether more cost-effective alternatives exist often depends on country circumstances, institutional or economic.

Within the macroprudential toolkit, credit growth can be mitigated with tools such as countercyclical capital buffers, sectoral capital requirements, or borrower based tools such as loan to value and debt service ratio to income caps.

Reserve requirements differentiated by maturity and currency also address issues of excessive maturity and currency mismatches. Limits on the overall net open FX position of banks may tackle this latter issue. Liquidity ratios like the Basel III type NSFR and LCR, differentiated by currency when appropriate, are alternative tools addressing the same issues: they increase the stability of the funding base and the stock of liquid assets to cover sudden outflows. LCRs, however, may sometimes be more difficult to implement in less developed financial systems without liquid securities markets.

For dollarized economies, it was found that beyond prudential tools, what may be effective in protecting an economy against FX risk are measures promoting the development of specialised foreign exchange hedges, notably forwards and options[1] (Avalos and Moreno 2013).

Finally, institutional characteristics may influence the likelihood of the use of RR for financial stability purposes: with few exceptions, of the countries surveyed, reserve requirements are within the competence of central banks. In countries where banking supervision and regulation are hosted in another institution, or where there is no legislative framework allowing the use of certain macroprudential tools, reserve requirements may be the only tool that central banks would be able to use in this regard (Montoro and Moreno 2011).

II. Main features of reserve requirements

The diversity of reserve requirements originates from the various policy choices made when setting such tools, such as the uniformity or differentiation of the reserve requirements along several dimensions, the remuneration of the reserves, the currency of maintenance of the reserves, or the eligible reserve assets.

An obvious factor to analyse beyond the above-listed dimensions is the level of the reserve ratios. A simple observation coming out of the survey is the wide range of rates being applied, with drastically different impact on the targeted variables. While some countries have set reserve ratios at 0.2%, others have ratios of 50%. The economic significance of the measure will thus vary significantly.

Another important aspect in the analysis of reserve requirements is the effective average reserve requirement ratio. If a country imposes different rates across liabilities, the effective average ratio is calculated by averaging the different rates, weighted by the amount of corresponding liabilities of the bank. Banks that rely heavily on demand deposits, for example, will tend to have a higher effective average reserve requirement ratio than banks with more long-term liabilities, as reserve requirement ratios are usually higher on demand deposits. The effective average ratio can thus provide further indication of the potential disincentive on cross border capital movements.

[1] The scope for derivative transactions is, however, limited in countries with low levels of financial development, and the development of an FX derivatives market can take time.

While the precise design of reserve requirements differ from one country to another (see Annex B for detail), a rough overview of the use of reserve requirements within the Task Force looks as follows[2]: out of the 49 ATFC participant countries, 41 maintain some kind of reserve requirement, Five countries have single undifferentiated reserve requirements, 35 simply differentiate by maturity, nine differentiate by currency (with two of those currently maintaining equal rates for FX and local currency liabilities and one maintaining generally lower rates)[3], and seven differentiate by residency (with four of them currently maintaining lower or equal rates for liabilities to non-residents)[4]. Many countries set reserve requirements ratios at close to zero.

As further described below, some countries have special RRs specifically on FX inflows, either activated (Iceland) or currently not active/set at zero, but provided for in legislation.

Differentiation of reserve requirements

- **Differentiation by maturity**

Countries can apply differentiated reserve requirements by maturity of the liabilities: e.g. if the reserve requirement applies to deposits, a country may impose a higher reserve requirement on demand deposits (short term) than on savings or term deposits. Similarly if the reserve requirements apply to a broader set of liabilities, imposing a higher reserve requirement on short term liabilities will incentivise banks to lengthen the maturity of their liabilities.

- **Differentiation by type of liability**

Countries may also differentiate reserve requirements depending on the nature of the liabilities, e.g. differentiating between core or non-core liabilities[5] - imposing a higher requirement on bonds or on liabilities to non-banks than on deposits. Countries may also exempt some liabilities from reserve requirements: e.g. government deposits, acting therefore as a subsidy for that particular type of liabilities.

- **Differentiation by currency denomination of liabilities**

Central banks may impose higher reserve requirements on FX liabilities than those in domestic currency. This may be aimed at discouraging the use of FX in the economy, e.g. fighting dollarization, reducing currency risk in banks' balance sheets, and/or for the purpose of managing capital flows.

Reserve requirements can also be set at lower level for FX liabilities than for domestic currency liabilities. This may help the banking sector attract foreign currency deposits, whether to support the capital account in general or the exporting sectors.

Differentiation by currency may act as a disincentive to conduct an operation covered by the Codes insofar as cross border capital movements are usually denominated in foreign currency. A higher RR on FX liabilities

[2] Replies to the Survey were complemented by publicly available information, notably the Federico et al (2014) database. Countries for which survey replies were not received are welcome to provide updated information as soon as possible.

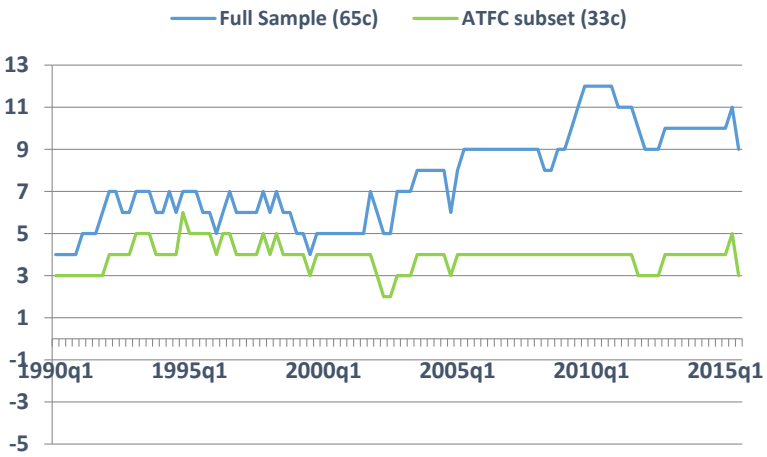
[3] Argentina, Peru, Romania, Russia and Turkey currently apply higher rates for FX liabilities; while Costa Rica and Korea currently charge equal rates and Japan applies lower rates to FX liabilities than for most local currency liabilities. Indonesia is updating its reserve requirement framework with a plan to extend it to foreign currency reserve requirements.

[4] Peru and Russia charge a higher rate for some liabilities to non-residents; Korea and Bulgaria charge a lower rate for liabilities to non-residents than to residents; Japan also charges a lower rate than for some liabilities to residents. Poland charges an equal rate. Turkey classifies deposits from non-resident banks as non-core liabilities, together with other liabilities such as loans and securities; and charges a RR generally higher across the maturity spectrum than for other deposits (See Annex B).

[5] Core liabilities are usually defined as traditional retail deposits. Non-core liabilities are other funding sources.

is effectively a marginal tax on the use of foreign currency in such transactions. As part of the Review, the Task Force is currently analysing the treatment under the Codes of measures which differentiate by currency.

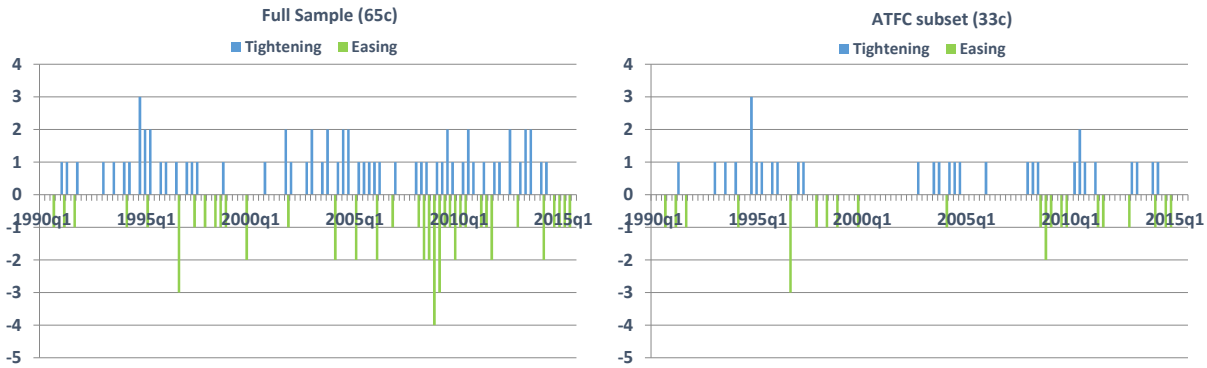
Figure 2 – Number of countries with RR differentiated by currency



Source: Source: Federico, Vegh, and Vuletin, (2014), "Reserve Requirement Policy over the Business Cycle," NBER Working Paper No 20612.

Note: Federico et al (2014) comprises 65 countries, the subset of ATFC countries comprises 33 countries. Differentiated reserve requirements by currency are only counted as such in the chart when the rate on FX liabilities is higher than the rate on domestic currency liabilities. Among countries which are not part of Federico et al (2014) sample and to which the long time series is not available, please refer to the Survey responses in Annex A and analysis of country experiences in Box 1.

Figure 3 – Quarterly adjustment of the FX DRR over time



Source: Source: Federico, Vegh, and Vuletin, (2014), "Reserve Requirement Policy over the Business Cycle," NBER Working Paper No 20612.

Note: Federico et al (2014) sample comprises 65 countries; the subset of ATFC countries comprises 33 countries. A value of +1 implies a tightening action by one country during the quarter. A value of -1 implies a loosening action by one country during the quarter.

- **Differentiation by residency of the counterpart**

Countries sometimes impose higher reserve requirements on liabilities to non-residents than liabilities to residents. If the rate of reserve requirements is higher for liabilities to non-residents than to residents for the same class of liabilities (e.g. deposits), the higher RR is effectively a marginal tax on foreign liabilities and serves the goal of discouraging capital inflows. [6] In some cases, countries have charged lower rates for liabilities to non-residents, in order to attract foreign funding.

A specific case concerns broad-based reserve requirements on FX capital inflows. These differ from other RR insofar as they apply to flows of foreign exchange coming into the country and not to the stock of liabilities on bank balance sheets (Gray 2011). They have been usually set at high rates during periods of financial disturbance and are normally considered as traditional capital flow management tools. The typical example is the Chilean *encaje* implemented during the 1990's (see i.e. De Gregorio et al 2000, Cowan and De Gregorio 2007, Edwards and Rigobon 2009). Colombia also maintained a URR on in the mid 90's, which was reactivated briefly in 2007/2008. Iceland similarly maintains a special reserve requirement on FX inflows into the country, with a reserve ratio of 40% and a holding period with the Central Bank of one year. The stated objective is to temper and affect the composition of capital flows and limit the incentives for carry trades.

Further practical considerations

- **Remuneration**

Most countries do not remunerate RRs. The few that do usually remunerate below the policy rate and in any case below the market rate. Reserve requirements are thus *de facto* a tax on the banking sector. While the reserves could have been put to different uses yielding higher returns, full remuneration of the reserves would negatively affect the profitability of the central bank.

- **Eligible reserve assets**

Reserves usually take the form of deposits at the central bank. A number of central banks deem vault cash as eligible reserve assets to meet the RRs. A small number of countries also count holdings of central bank or T- bills as eligible assets.

- **Currency of maintenance of the reserves**

The currency denomination of the reserves depends on the criteria discussed above. If the reserve requirement is differentiated by currency, a choice needs to be made whether all reserves should be in local currency or whether the reserves related to FX liabilities need to be separately held in FX. Requiring all reserves to be denominated in local currency simplifies liquidity management and administration of reserves.

However, currency differentiated reserve requirements involve exchange rate risk, whereby the amount of reserves to deposit at the central bank may be drastically revalued in case of significant volatility of the exchange rate. Policy issues with regards to the choice of the currency of denomination are well described in Kovanen (2002) and Gray (2011).

- **Remaining issues**

[6] Reserve requirements on non-resident liabilities have been treated as restrictions under the Code. On several occasions, the Investment Committee concluded that for such measures, starting from the case of Czech Republic in 1994 [DAFFE/INV/IME(95)3/REV1], appropriate reservations under the Code need to be lodged, or the derogation clause invoked in case the country is not in the process of adherence and the RRs impact List A operations.

Yet other policy considerations pertain to the choice of timing for the reserve requirements calculation – whether they should be lagged or contemporaneous, the averaging of the reserve requirements, or to the coverage of the measure.

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Annex A. Summary of Survey Responses[7]

Countries	Reply	Currency Differentiation	Residency Differentiation
Argentina			
Australia	X	No	No
Austria	(EA)	No	No
Belgium	(EA)	No	No
Brazil	X	No	No
Bulgaria	X	No	Yes (lower rate)
Canada			
Chile	X	No	No
China			
Colombia	X	No	No
Costa Rica	X	(same rate)	No
Czech Republic			
Denmark			
Estonia	(EA)	No	No
EU	X	No (EA)	No (EA)
Finland	(EA)	No	No
France	(EA)	No	No
Germany	X	No	No
Greece	(EA)	No	No
Hungary	X	No	No
Iceland	X	No	[No]*
India	X	No	No
Indonesia			
Ireland	(EA)	No	No
Israel	X	No	No
Italy	(EA)	No	No
Japan	X	Yes	Yes (usually lower rate)
Latvia	X	No	No
Lithuania	(EA)	No	No
Luxembourg	(EA)	No	No
Mexico			
Netherlands	(EA)	No	No
New Zealand			
Norway			
Peru	X	Yes	Yes (higher rate)
Poland	X	No	(same rate)
Portugal	(EA)	No	No
Romania	X	Yes	No
Russia	X	Yes	Yes (higher rate)
Slovakia	(EA)	No	No
Slovenia	(EA)	No	No
South Africa			
South Korea	X	(same rate)	Yes (lower rate)
Spain	(EA)	No	No
Sweden	X	No	No
Switzerland	X	No	No
Turkey	X	Yes	[No]**
United Kingdom			
United States	X	No	No

[7] Note: EA= Euro Area. Grey shaded rows indicate no reply from countries. Countries with missing information are welcome to provide their inputs as soon as possible so that the ATFC can benefit from having the full picture of the use of RRs within the Task Force. The table indicates reserve requirements currently applied in the various countries, with no indication on past use.

* As mentioned in the Note, Iceland maintains a specific capital flow management tool, imposing a special reserve requirement on capital inflows.

Annex B. Selected country experiences with differentiated reserve requirements by currency or residency

Bulgaria maintains, since 2009, reserve requirements that are lower for liabilities to non-residents (currently set at 5%) than for the same type of liabilities to residents (currently set at 10%). This differentiation is aimed at attracting foreign funding. Reserves are currently unremunerated and applied to both domestic banks as well as foreign branches in the country. Banks may decide to hold reserves in local and/or foreign currency. Before 2009, Bulgaria imposed reserve requirements that were further differentiated by maturity.

Japan maintains reserve requirements differentiated by currency (FX v. local currency), maturity/type of liabilities (time deposits v. other), outstanding value of the liabilities, and residency. All reserve requirements are unremunerated and have to be maintained in local currency. The reserve ratios on non-resident FX deposits are currently set at lower levels than for residents, and RR on non-resident yen deposits are lower than the average effective reserve ratio and lower than rates for resident deposits above 1.2 Trillion yen – hence not dis-incentivising banks to hold deposits from non-residents.

Latvia imposed reserve requirements on liabilities to non-resident banks from 2005 to 2014, with a higher rate on liabilities of less than 2 years maturity than longer term liabilities. These reserve requirements were removed as Latvia joined the euro area. The reserve requirements were remunerated below the policy rate and had to be maintained in local currency. Latvia indicated that the reserve requirements on non-resident liabilities were introduced due to large inflows from foreign banks which caused credit expansion and economic overheating.

Peru imposes several reserve requirements differentiating by liabilities (e.g. derivatives, loans), maturity (short v. long term), currency and residency. It imposes for example a 50% RR rate on short term FX liabilities to non-residents. In the past, Peru had RRs on long term FX liabilities to non-residents and on local currency deposits by non-residents. Reserve requirements are aimed at i) helping banks to internalize dollarization risks; ii) preventing the impact of shocks from spreading across the economy; and iii) enhancing the financial system's capacity to absorb shocks (Castillo et al 2016). Specific RRs on non-residents were introduced in the aftermath of the global financial crisis. The maintenance of the reserves on local currency liabilities has to be in local currency while for FX liabilities it is in FX.

Romania has a history of high reserve requirements for both local and foreign currency liabilities. These were used to consolidate traditional monetary transmission channels in a context of economic overheating and large capital inflows. As a result, FX reserve requirements reached 40% in 2008, before being progressively eased in recent years. The current FX reserve requirements only apply to FX liabilities with a remaining maturity of less than 2 years. Since 2014, the NBR accelerated the easing process given the lasting decline in FX lending, and to bring the Romanian reserve requirement framework closer into line with Eurozone practices, lowering the FX reserve requirements on short term liabilities to 8% in 2017. Reserves are remunerated, and the currency denomination of the reserve has to match the type of liabilities. Requirements also apply to foreign branches in the country.

** As explained in Annex B, Turkey distinguishes between core and non-core liabilities, with non-core liabilities - including loans, securities, as well as deposits from non-resident banks – being charged a higher rate than other deposits.

Russia maintains reserve requirements differentiated by currency (FX v. local currency), nature of counterpart (individuals v. legal entities), nature of the resident bank (small v. large banks), maturity (more or less than 3 year maturity) and residency. The RR cover all liabilities. All reserve requirements are unremunerated and have to be maintained in local currency. FX liabilities have been usually applied a higher reserve requirement than rouble liabilities. The Russian authorities have indicated that higher reserve requirements on FX liabilities are aimed at countering dollarization in the banking sector and decreasing its exposure to currency risks. Only in the case of small banks liabilities in rouble RR are applied at different rates between liabilities of non-residents and residents. The authorities indicated that this is aimed at encouraging resident legal entities to deposit roubles with these banks.

Turkey maintains reserve requirements differentiated by currency (FX v. local currency), maturity, and type of liabilities. Liabilities to Central Bank, the Treasury, domestic banks and headquarters and branches of banks established in Turkey by international agreements are excluded from the liabilities subject to the reserve requirements. Turkey sets separate RR on 'core' (deposits and participation funds) v. 'non-core' (other) liabilities. All reserve requirements are remunerated below the policy rate and adjusted in line with developments in reference interest rates in international markets. RRs on FX liabilities are significantly higher than lira liabilities, especially for short term liabilities. Turkey defines deposits and participation funds from non-residents banks as non-core liabilities, together with other liabilities such as loans and securities; and charges a RR generally higher across the various maturity split than for other deposits and participation funds, as these deposits are considered by the authorities more likely to be withdrawn during stress periods.

Reserves must be maintained in FX for RR on FX liabilities and in Turkish lira for RR on lira liabilities, with an option to voluntarily maintain up to 55% of the reserves in USD under the Reserve Options Mechanism (ROM). The Turkish authorities indicated that the DRR are used as a macroprudential tool to reduce currency and maturity mismatches in the balance sheets of banks. In addition, they noted that the ROM allows for bank flexibility in terms of asset-liability management by providing the opportunity to use FX to cover reserves on lira liabilities.

Some countries do maintain DRR but the rates have been recently set, for the same class of liabilities, at the same level for local and foreign currency (**Korea**) or the same rate for liabilities to residents and non-residents (**Poland**). In the case of **Korea**, specific reserve requirements on FX liabilities to non-residents are maintained and set at a lower rate than any other reserve requirements.

Find the OECD Code of Liberalisation of Capital Movements online at
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