A COUNTRY'S DEMAND FOR OFFICIAL RESERVE ASSETS

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Abstract

The paper presents the reasons for holding official reserve assets, their determinants and methods used to estimate the demand for them. Basing on selected quantitative ratios it has been shown that in the years 1995-2006 the official reserve assets held by the National Bank of Poland guaranteed financial security of Polish economy.

Keywords: reserve assets.

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Introduction

In the literature on the subject, the term "reserve assets" is ambiguous. Also their structure is classified differently in individual countries[1]. Generally, reserve assets are understood as external claims (monetary assets) accumulated by monetary authorities of a given country (central bank)[2]. In order to define the need for reserve assets, first the reasons for their accumulation and the factors determining their amount need to be identified. Next, the methods should be characterised which can define the need for those assets from the viewpoint of the country's financial security policy. The aim of this study is to present theoretical and practical aspects of those problems in relation to the situation in Poland.

1. Reasons for Accumulating Reserve Assets

Monetary authorities accumulate reserve assets mainly in order to cover their external liabilities. Those liabilities can have various forms. They are reflected synthetically in the deficit in the current account of the balance of payments, which – unless it is balanced with inflow of foreign capital (as FDI, portfolio investment or credits and loans) – needs to be financed with reserve assets. The elimination of the imbalance (deficit) in the balance of payments leads automatically to reduction in reserve assets thus implying the need to replenish them. It is the basic function of reserve assets, called by some authors as absorption function[3].

An important reason for accumulating reserve assets is also the need to preserve the country's international creditworthiness. Creditworthiness improves along with the probability of repayment of the debt to non-residents, expressed both in foreign exchange and the national currency. The function of reserve assets in achievement of this goal (which can be called stabilisation) involves, on the one hand, holding a certain amount of reserve assets in relation to annual imports[4], and on the other – financing current payments in the balance of payments when inflows from exports are insufficient. Any deterioration in those relations can imply negative rating of the country thus raising the probability of difficulties in borrowing from non-residents.

Apart from that, monetary authorities are also forced to hold reserve assets to guarantee the convertibility of the national currency. In case of a drop in the amount of foreign exchange inflows related to an unexpected fall of exports, reserve assets supplement the foreign

exchange essential to achieve the goal in question, and this function can also be called as stabilisation.

Another reason for accumulating reserve assets is related to interventions in the foreign exchange market. They are undertaken by central banks to influence the exchange rate of the national currency or to neutralise the effects of currency speculations[5]. The latter is the case when there is a popular conviction about revaluation of a given currency. In practice, interventions involve the official selling or buying of foreign assets in the foreign exchange market in exchange for the national currency. Sometimes, it may lead to a situation when control over reserve assets or even the whole monetary base of the country is lost thus leading to a currency crisis[6]. The function of reserve assets within this goal can be called intervention.

Finally, reserve assets are accumulated for strategic purposes – to be used by monetary authorities in emergencies such as natural disaster or war. According to some authors, also political reasons have an impact on holding reserve assets[7]. In their opinions, the amount of reserve assets increases with the prestige of the country (because it is rich, economical, etc.).

In the literature on the subject, however, it is commonly believed that the amount of reserve assets should be neither too large nor too small since they are a specific form of capital export[8]. They are held in foreign banks as currency and deposits (mainly in current and savings accounts, as well as deposits and other liquid assets such as securities). Their profitability in relation to other forms of capital export (such as e.g. portfolio investment, or credits obtained) is not high since central banks concern themselves mainly with security and liquidity of their deposits. The above reasons indicate that too large an amount of reserve assets is unprofitable and as such it is not recommended, particularly to those countries which are large exporters of capital and incur high costs related to that export. Moreover, a large amount of reserve assets converted into national currency increases the supply of money in the national banking system thus driving inflation and leading to sterilisation of the monetary market which in turn impedes economic growth. For those reasons, they are not recommended.

Too small an amount of reserve assets, on the other hand, does not guarantee the achievement of the goals (reasons for accumulation) discussed above; in such a case the holdings of reserve assets do not ensure financial security i.e. the country fails to pay its external liabilities on time.

2. Determinants of Official Holdings of Reserve Assets

The amount of reserve assets is determined by a variety of factors[9]. The most important one is the present exchange rate regime. Under a flexible exchange rate regime there is less need for holding reserve assets since the monetary authorities are not forced to conduct interventions in the foreign exchange market. In countries with a fixed exchange rate regime, however, the more market exchange rates vary from the fixed exchange rate and the narrower the band of acceptable fluctuations, the more frequent the interventions of the central bank and the larger the amount of reserve assets required.

Another determinant of the amount of reserve assets is the openness of the economy. The more open the economy to the rest of the world, the more need for reserve assets, especially that high imports and significant changes of foreign exchange inflows tend to deepen the current account deficit. If the latter is not financed with an "injection" of foreign capital, with holdings of reserve assets being insufficient to absorb it, then the country is trapped in payment difficulties (debt trap).

The liberalisation of exchange with foreign countries is the next factor affecting the amount of reserve assets in a given country. The fewer barriers in the exchange of goods and services, the more need for reserve assets. Provided that there is no state control, there is more threat of sudden changes in the amount and structure of imports and with insufficient tools to support exports (especially less manufactured goods), it constitutes a threat of a sudden fall in foreign exchange inflows because following the outflow of the so-called hot money the reserve assets plummet.

Other factors of importance include inflation rate, interest rate and exchange rate. High inflation rate over a long time reduces the purchasing power of reserve assets, which implies that relatively large amount of reserve assets should be held. If reserve assets have the form of securities paying high interest, their value decreases with the fall of the interest rate. A similar effect is observed for strong fluctuations of exchange rates in which reserve assets are held (especially in the case of their depreciation). It should encourage monetary authorities to hold their currency and deposits in those foreign currencies and securities which in the future will appreciate and pay high interest in the markets where they have been issued.

The variety of the above-mentioned factors makes it difficult to estimate the needs for reserve assets which would guarantee the achievement of all the above-mentioned goals. Nor

is there a single criterion to define their optimum amount. There exist, however, several detailed indicators which are used to evaluate a country's need for reserve assets.

3. Methods of Estimating the Need for Reserve Assets

In the literature on the subject, two types of methods estimating the need for reserve assets are distinguished: quantitative and qualitative[10]. Quantitative methods use the following statistical measures.

Ratio of reserve assets to monthly imports

The major advantage of this ratio is its simplicity, and its major flaw – partial analysis of reality (only with respect to imports, ignoring other transactions of the balance of payments) and separation from the impact of the existing exchange rate regime. The ratio is used mainly to estimate a safe amount of reserve assets when introducing convertibility of the currency. It is assumed that if a given country – according to IMF's requirements – legally guarantees general convertibility of its currency into foreign currencies and back, for both residents and non-residents, but only in relation to current account transactions in the balance of payments, it should hold reserve assets equivalent to six months worth of its imports[11]. In the case when the convertibility is full and unlimited (i.e. for both residents, and non-residents and related to all the transactions in the balance of payments) then the official reserve assets should total 12 months worth of imports. It seems, however, that for certain developed countries where the currency has been fully convertible for a long time, such a large amount of reserve assets is unprofitable, as those economies can boast stability and creditworthiness. In case of temporary payment difficulties, they can supplement their smaller amount of reserve assets with credits obtained abroad.

The indicator in question is used also in international rankings of countries. For this purpose, it is usually assumed that the reserve assets should be equivalent to at least three months worth of imports (of goods and services)[12]. For individual countries, however, the same level of this ratio can describe different creditworthiness. For instance, if emerging market economies hold reserve assets totalling 12 months worth of their imports, they can be given the highest A rating, if that level is equivalent to six months worth of imports – it corresponds to BBB rating, for reserve assets totalling three months worth of imports – to BB and below that – to the lowest, B rating.

Ratio of reserve assets to foreign debt

If this ratio in relation to short-term debt exceeds 100% then the amount of reserve assets is considered to be safe for the country[13], meaning that annual external liabilities can be balanced at the end of the year with the claims without the necessity to incur additional debt. The amount of reserve assets essential to pay the whole amount of foreign debt should be equal to half of that debt plus half of annual imports[14].

Ratio of reserve assets to national money supply – M3

It is assumed that if this ratio is higher than 30%, the reserve assets held by the central bank assure external security of the economy. If the value falls below 10%, it is a signal that the threat of devaluation of the national currency increases, which might even lead to a currency crisis.

The above-discussed ratios used to estimate a safe amount of reserve assets are relatively easily interpretable, mainly due to their clearly defined limits. There are measures among quantitative methods, however, whose interpretation is ambiguous or their calculation requires much more effort. The most popular indicators here include those described below.

Ratio of average annual amount of reserve assets to current account deficit

Even though estimation of this ratio is not complicated, there are no clear rules regarding the minimum period of financing the current account deficit with reserve assets. To find out if the country's payment situation is safe, it needs to be evaluated only against peer economies. It is important since developed countries – as already mentioned – have an easy access to financial resources in international markets and may hold a relatively small amount of reserve assets. Less developed countries, however, need much more reserve assets; in case of payment problems it would be much more difficult for them to apply for foreign exchange in the global market to supplement their insufficient reserve assets, and the cost of obtaining those resources would be relatively higher.

Ratio of current liabilities to annual exports

Those liabilities in the balance of payments originate in the imports of goods and services, costs of holding current accounts and deposits as well as debt service. Calculation of this ratio is relatively simple; nonetheless its interpretation is ambiguous. It cannot be precisely defined what amount of reserve assets should be held as safe under given circum-

stances. Some banks use, however, the debt service ratio, i.e. total debt service as a percentage of exports, to find the country's rating. If this ratio – for example among emerging market economies – reaches up to 20%, the country receives the highest A rating group, for 20-30% it is given the BBB group, for 30-40% – BB and for less than 40% – the lowest group, B.

Ratio of reserve assets to average amount and structure of inward and outward foreign investment

The most important issue here is to estimate the ratio taking into account the capital in the form of short-term securities, which – as commonly known – is much more variable than imports. The ratio of reserve assets to the capital invested in long-term securities cannot be ignored either, as under present conditions the latter can be easily sold in the market at any time. None of those ratios is difficult to estimate, yet there are no limit values which would point to a safe amount of reserve assets for a given country. While interpreting those ratios, the following factors should be therefore taken into consideration: firstly, to what group of countries they refer, and secondly, what the basic macroeconomic indicators are in those countries. If those indicators are unfavourable (e.g. high inflation rate or unfavourable interest rate), even a large amount of reserve assets will not prevent speculative inflow and outflow of foreign capital in form of securities.

Input and output method

In this method, the adaptation costs, which the economy would have to incur if its holdings of reserve assets were insufficient (e.g. national income falling as a result of strict monetary policy – high interest rates, devaluation of national currency, etc.), are related to opportunity costs associated with a large amount of reserve assets as deposits paying low interest (instead of investing into highly profitable ventures). When using this method, one can, theoretically, estimate the optimum amount of reserve assets, which is found at the point where marginal opportunity cost of holding a large amount of reserve assets equals marginal adaptation costs incurred when the reserve assets are not held in a sufficient amount. In practice, however, to estimate that optimum amount of reserve assets, individual elements of adaptation costs and opportunity costs should be precisely defined. Next, an appropriate macroeconomic model should be constructed, which is neither a simple nor an easy task.

International investment position

It is a balance sheet of the country's foreign assets, equity and liabilities. Basing on it, we can estimate the accumulated amount of external claims and liabilities to the rest of the world, and observe the tendencies for those figures. Even though this category takes into account all financial transactions with foreign countries, it is impossible to estimate here a safe level of a country's international investment position, much less a safe amount of reserve assets. In other words, there are no clear rules defining the desired amount of reserve assets in the economy to assure stabilisation of international investment position without imposing any threat to the monetary policy of the country (its destabilisation) or economic growth[15].

Apart from the above-discussed quantitative methods defining the amount of reserve assets in a country, a qualitative method is used additionally. It is a **symptoms analysis** as the amount of reserve assets in the economy is defined mainly on the basis of observations. The following factors are taken into account: inflation or deflation pressure, restrictive character of the trade policy, level of interest rates, devaluation or revaluation of national currency, control of capital flows, etc. Conclusions about the desired amount of reserve assets reached after the analysis of tendencies are, however, biased with a big error due to a large amount of data and contradictions between some of them.

4. Official Holdings of Reserve Assets and Financial Security of Polish Economy

Taking into account the above-presented partial ratios, we should estimate now their values for Poland and find out whether the official holdings of reserve assets accumulated by the National Bank of Poland guarantee financial security of our economy. Only those ratios will be analysed which are based on easily accessible and comparable statistical data, and whose interpretation is not ambiguous due to clear limit values.

At the end of 2006, Poland's reserve assets were estimated at USD 48.5 billion, which means they had more than tripled since the end of 1995 (see Table 1). Annual increases of reserve assets peaked in 1995-1998. The need to accumulate as large an amount of reserve assets as possible was related to the existing fixed rate regime, which – as such – required central bank's interventions in the foreign exchange market to shape the desired level of the exchange rate. The fact of preparations for external convertibility of Polish zloty (introduced in January 1999) should not be ignored, either[16].

Table 1. Official holdings of reserve assets in Poland

Year[a]	Total [USD billions]	In relation to:					
		Monthly imports	Current account deficit	Foreign debt		M3 money supply	Total foreign assets (claims)
				Short-term	Total		
1995	14,693	6.2	.	404.4	28.5	.	.
1996	18,220	6.6	5.6	366.7	38.3	37.3	63.3
1997	21,403	6.4	3.7	419.2	43.1	.	67.1
1998	28,275	.	4.1	336.1	47.8	.	73.6
1999	27,314	.	2.2	243.5	41.7	.	68.1
2000	27,466	6.7	2.8	287.6	39.5	37.8	61.3
2001	26,564	6.3	4.9	238.5	36.9	.	53.8
2002	29,794	6.5	5.9	214.7	35.1	36.5	57.6
2003	34,783	6.0	7.4	174.1	31.9	37.6	58.4
2004	36,783	5.0	3.4	151.5	28.4	.	46.9
2005	42,571	4.5	8.3	163.7	32.1	33.7	46.2
2006	48,484	4.1	6.1	144.6	29.1	.	40.5

[a] – as of 31 December

Source: own calculations based on the data published by the National Bank of Poland (www.nbp.pl) and Central Statistical Office (www.stat.gov.pl).

Over the next few years, not only smaller increases but even annual declines of reserve assets were reported. The worst years in this respect were 1999-2001 when either stabilisation or absolute fall of the reserve assets was recorded as compared to the preceding year (approx. 4 percentage points). In this period we were witnessing, however, more liberalisation of capital flow, and introduction of the flexible exchange rate of Polish zloty (with freely floating exchange rate, since April 2000[17], the amount of reserve assets could have been smaller). Furthermore, the relevance of Poland's improving international rating in that period, related to our accession to the EU, should not be ignored, as it offered more opportunities for obtaining foreign debt to reach the desired amount of reserve assets.

Even though from the beginning of the 21st century the amount of reserve assets was not rising so dynamically as in the years 1995-1998, their relation to monthly imports did not deteriorate until the end of 2003. Although the National Bank of Poland's reserve assets in the years 1993-1994, oscillating around the minimum cash level required, were sufficient to finance (with cash) imports of goods for 3-4 months only[18], in 1995 this figure increased to over 6 months and remained so high until the end of 2003. It means that in this period reserve assets allowed flawless convertibility of Polish zloty according to the IMF criteria (i.e. in relation to current account transactions). After introducing full convertibility of Polish zloty in October 2002[19] the amount of reserve assets was two or even more (in the years 2004-2006) times smaller than the safety limit (see Table 1). To finance 12 months worth of imports, the estimated amount of reserve assets since 2002 should have equalled over USD 88 billion.

Lower coverage of imports with reserve assets under conditions of full convertibility of Polish zloty did not interfere, however, with the smooth cash exchange of the national currency into foreign currencies, nor did it affect the trust that foreign investors placed in our economy, which was related to improvement in our current account. Since the deficit in that account decreased over the years (in 1999 it reached USD 12.5 billion whereas in the years 2005-2006 it was only USD 5.1 and 7.9 billion, respectively), the amount of reserve assets in Poland in 1999 was only twice as large as the current account deficit, while in 2005 it was as much as eight times and in 2006 six times larger.

The demand for reserve assets is related also to total debt service, especially with regard to short-term liabilities. In the years 1995-1998 the reserve assets held by the National Bank of Poland stabilised Poland's position as a debtor as their amount was 3-4 times larger than the annual amount of debt to be paid to foreign lenders. It was, however, a period when our foreign debt fell even in absolute figures at times as a result of debt relief or restructuring of old debts[20]. Over the next years this indicator deteriorated, yet at the end of 2006 it was still 50% higher than the level perceived as safe for the economy. It should be noted, however, that in certain situations (such as crises), the relation of reserve assets to total debt is also an important indicator. At the end of 1998 they covered nearly half of the new foreign debt, yet in the following years that safe ratio deteriorated, too, to reach merely 30% of Poland's total debt at the end of 2006, which was still higher than in countries such as Russia, Argentina or Brazil, which had suffered from currency crises not long before[21].

The relation of reserve assets to the national money supply can also be considered as stable in that period. Nearly in the whole analysed period this ratio remained stable at 37%. The situation changed in 2005 when the reserve assets held by the National Bank of Poland covered one third of the total money supply, which meant approaching the limit considered as safe for the economy (30%).

Eventually, let us analyse the tendencies in Poland's international investment position. Although in the whole period of analysis it was negative, in 2006 it became more than five times worse in relation to 1996. This situation should be related to a faster dynamics of our external liabilities than claims (assets). Reserve assets held by the National Bank of Poland in the years 1996-2000 accounted for approximately 60-75% of total foreign assets, whereas at the end of 2006 that share decreased to merely 40% (cf. Table 1). It seems that at such a fast increase of foreign debt, the amount of our reserve assets in the first decade of the 21st century should have been larger. It would have slowed down the dynamics of deterioration of Po-

land's international investment position. Furthermore, more reserve assets would not have affected the stabilisation of monetary policy, as in the years 2004-2006 the ratios of reserve assets to both money supply and average monthly imports deteriorated significantly.

Conclusions

The analysis carried out in this paper shows that since the mid-1990s the official holdings of reserve assets of the National Bank of Poland have guaranteed financial security in Polish economy. It is reflected in nearly all the analysed quantitative ratios which have been oscillating around their limit values. Still, reserve assets have contributed too little to stabilising the country's unfavourable international investment position, especially that their amount was affected mostly by the current economic situation rather than structural factors. Poland has been reporting a permanent deficit in the exchange of goods with foreign countries, related to underdevelopment and traditional structure of exports. Reserve assets have therefore been created mainly from the border trade inflows, FDI, issuance of securities and – recently – transfers of EU funds and emigrants' remittance.

The expenditures denominated in foreign currencies have been mostly of structural character, resulting from the need to finance imports of essential investment and supplies, and to assure debt service (what is meant here is naturally new debts incurred by Polish government and companies rather than the old restructured liabilities, which are relatively low at the moment). On top of that, Poland's accession to the European Union and the need to join the Euro zone in the near future will lead to further increase in the outflow of foreign exchange. First of all, interventions in the foreign exchange market within ERM2 will become a necessity. The National Bank of Poland will be obliged by the European Central Bank to hold the most liquid reserve assets in the form of the so-called "plafond" (in the amount increasing with the PLN/Euro exchange rate volatility[22]).

All the above considerations indicate that over the next few years the dynamics of increase in the amount of reserve assets in Poland cannot be slowed down. Moreover, it may soon turn out that this amount is still insufficient to ensure financial security of our economy. It is suggested by uncertainty of economic environment related to the current political crisis in Poland, poor competitiveness of our economy in the global market, insufficient readiness of our business entities to benefit from EU's structural funds, and high dynamics of indebtedness abroad (mainly by the government and enterprises).

Notes

[1] For more on this issue see e.g. Karwowski (1997), p.53.

[2] Cf. Reichenstein (1987), p.9 and next. In Poland reserve assets include – next to the assets held by the central bank – also operational reserves held by commercial banks (cf. Białecki, Januszkiewicz, Oręziak (2007), p.239-240).

[3] Cf. Kowalczyk (1986), p.153-l56.

[4] Cf. Karwowski (1997), p.54.

[5] Cf. Karwowski (1997), p.53 and 80-81; Studentowicz (1980), p.17.

[6] For more on this issue see e.g. Małecki, Skawiński, Piasecki, Żuławska (2001).

[7] Cf. Drabowski (1988), p.204.

[8] Karwowski (1997), p.64: Bilski (2006), p.123.

[9] Cf. Karwowski (1997), p.65 and next.

[10] Cf. Wyżnikiewicz (2001); de Beaufort Wijnholds (1977).

[11] Another standard value for this ratio known in the literature on the subject is five months worth of imports (cf. Pietrzak (1996), p.144).

[12] Cf. Karwowski (1997), p.54.

[13] Cf. Balcerowicz (2003), p.49.

[14] Cf. Zieliński (2003), p.54. It seems that this interpretation is wrong since it takes into account, unnecessarily, half of annual imports. In such a case the amount of reserve assets would have to be very large (and unprofitable for the country, as already mentioned above).

[15] Cf. Koronowski (2000).

[16] Cf. Pietrzak (2001).

[17] The National Bank of Poland reserved the right to intervene in the foreign exchange market in case of an unfavourable balance of payments.

[18] Cf. Nakonieczna-Kisiel (1998), p.60-61.

[19] Full convertibility of Polish zloty concerns only transactions with OECD, EU and the so-called EU Economic Zone member countries (Cf. Pietrzak (2002)).

[20] For more on this issue see e.g. Nakonieczna-Kisiel (2003).

[21] Cf. Balcerowicz (2003), p.49.

[22] For more on this issue see e.g. Chamot (2004), p.33.

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