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Official Reserve Adequacy in Ukraine: Assessment and Policy Implications

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Official reserve adequacy in Ukraine: Assessment and policy implications

Executive Summary

At normal times, many people wonder why central banks, especially in emerging markets, keep vast amounts of official reserves, and they accordingly emphasize the (opportunity) costs of such holdings. However, in times of a financial crisis, the benefits of holding official reserves become evident. Reserves help to absorb external shocks, making the likelihood and the negative consequences of such shocks smaller.

The main goal of this paper is to assess the adequacy of official reserves in Ukraine. Based on a thorough review of the relevant theoretical and empirical literature we select three standard criteria for such an assessment. The "classical" import coverage criterion, with its exclusive focus on foreign trade; the Guidotti-Greenspan criterion, which is based on short-term external liabilities of the country; and the Wijnholds-Kapteyn criterion, which was developed to catch the important phenomenon of "internal" capital flight, i.e. the conversion of domestic into foreign currency by residents.

After explaining the economic reasoning behind the selected criteria, we apply all three criteria to Ukraine. As of the end of the second quarter of 2009, Ukraine held USD 27.3 bn of official reserves. This amount would be sufficient to cover 5.6 months of future imports, while the minimum threshold for this criterion is 3 months. However, the level of reserve holdings is clearly not sufficient to withstand an external financial shock, especially when accompanied with internal capital flight. Both criteria which measure this sufficiency (Guidotti-Greenspan and Wijnholds-Kapteyn, respectively) are below their respective minimum thresholds.

To be better positioned for withstanding external shocks, Ukraine has to address both the supply and demand side of official reserve holdings. On the supply side, there is no doubt that Ukraine needs more reserves. Here, the continuation of the IMF program and the disbursement of the fourth and further tranches would be extremely important for Ukraine. Among general economic policy measures, the authorities should pursue a much more aggressive policy of structural reforms, FDI attraction, privatisation, and export facilitation to boost reserves.

On the demand side, the NBU has to run a sound and credible monetary policy, limiting the expansion of the money supply and thus capping the internal capital flight. Moreover, structural reforms alongside with macroeconomic stabilisation should reduce the country risk score and thus restrain demand for reserves. Here again, the importance of the continuation of IMF program should emphasised as a centrepiece of macroeconomic policy.

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1. Introduction

The current international financial crisis has forcefully demonstrated that emerging economies can be subject to sudden and violent external shocks, both to their current and capital/financial accounts. However, this vulnerability is not new, as many previous crises reminded us. Consequently, the negative experiences with previous financial crises have put much emphasis on the accumulation of international reserves in many countries, effectively to decrease the probability and the adverse impact of such shocks on the domestic economy.

While the general importance of official reserve holdings became again evident during the current crisis, a related question is less clear, and often less understood. This concerns the appropriate level of reserves. Since reserve holdings bring both benefits and costs to the country, policy makers need to search for an optimum value of such holdings. The determination of such an optimum value should follow certain rules, or criteria. Thus, the next question is which criteria should be used to estimate the appropriate level. To answer these questions, the relevant economic literature has identified a number of different and (partly) competing criteria over the years. International experience shows that such criteria are frequently applied by central banks to determine the adequate level of their respective reserves. In the present paper, we extend this discussion to Ukraine, and apply standard criteria for reserve adequacy to this country.

The paper is structured as follows. A short discussion on the pros and cons of holding official reserve assets are presented in Section 2. Section 3 explains in more detail the main criteria used to calculate the adequate level of official reserves. Section 4 then applies above criteria empirically to the situation of Ukraine. In Section 5, we conclude and present the policy implications of our analysis.

2. Benefits and Costs of Official Reserves

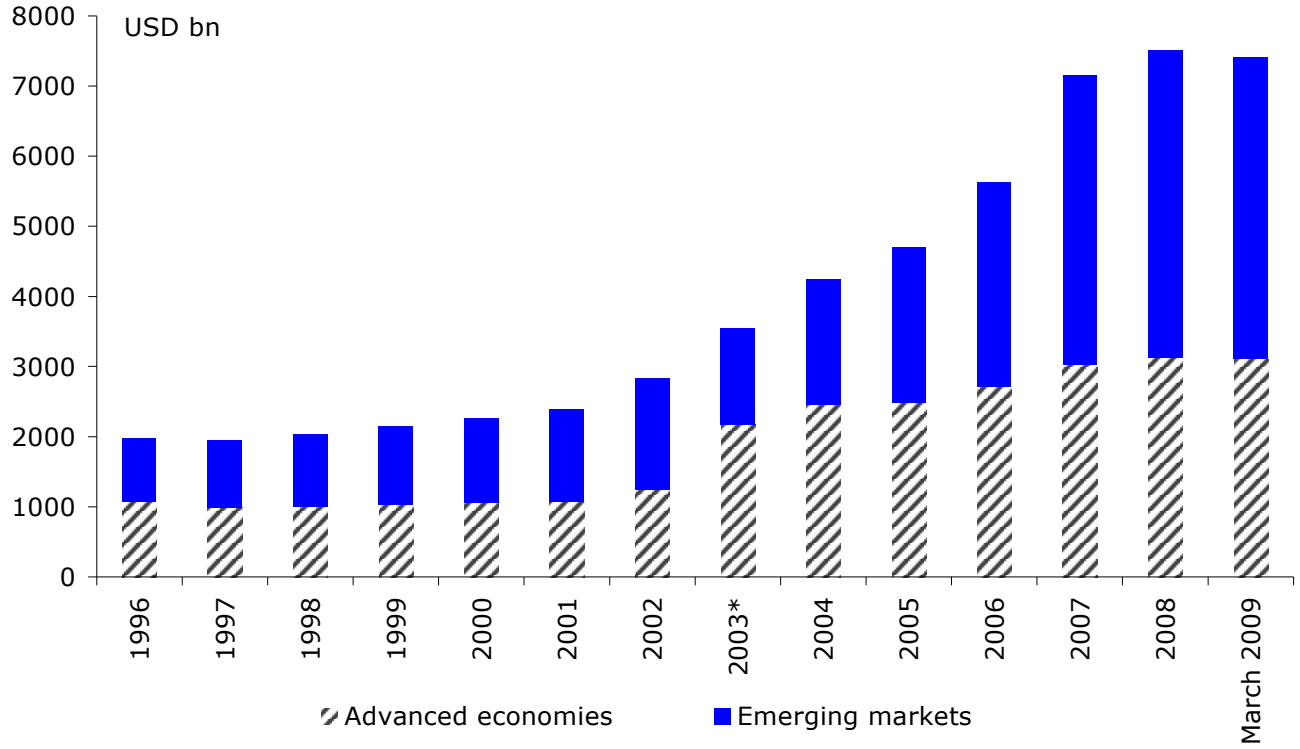
International reserves, which usually consist of foreign exchange assets, monetary gold holdings and IMF-related assets, are by definition

"*…those external assets that are readily available to and controlled by monetary authorities for meeting balance of payments financing needs, for intervention in exchange markets to affect the currency exchange rate, and for other related purposes (such as maintaining confidence in the currency and the economy, and serving as a basis for foreign borrowing."* [1]

Global holdings of international reserves have increased rapidly over the last number of years, especially in emerging markets, as Figure 1 shows:

[1] See IMF (2008): Balance of Payments and International Investment Position Manual, 6th edition.

Figure 1. Global holdings of international reserves



Source: IMF Annual Reports (2002, 2003, 2009)
**Before 2003, "emerging markets" were classified as "developing countries", whereas "advanced economies" were "industrial countries", respectively.*

To explain this massive reserve accumulation, two competing views have been presented. The first view states that reserve accumulation constitutes the main form of self-insurance by the authorities, to prevent and weather external shocks, especially in light of previous crisis in emerging markets[2]. The second ("mercantilist") view sees the steady increases in reserves only as a by-product of an export-oriented growth strategy, which implies resisting currency appreciation (i.e. keeping an undervalued exchange rate) by means of intervention in the foreign exchange market.

Regardless of the underlying motivation, holding official reserve assets involves certain benefits and costs, which are likely very different from the perspective of a private holder of foreign exchange assets. This stems from the fact that official reserve holders (i.e. central banks) have quite different, macroeconomic policy objectives than private holders of foreign assets, which care solely about the risk/return characteristics of their assets.

2.1 Benefits

Potential benefits of holding reserves are mainly centered on precautionary insurance arguments, as reserves give the country an important instrument to better protect the domestic economy against external shocks. By buffering the economy against different balance-of-payments shocks, the authorities can smooth their negative effects on domestic absorption and output. However,

[2] However, since reserves are not the only tool to provide self-insurance, a broader approach is called for. Bilateral and/or official financing by the IMF can partly substitute for reserve holdings, a fact which might reduce incentives for reserve accumulation. However, further issues become relevant in this context, like: How quickly are these funds accessible? What are the conditionalities attached?

while reserves can decrease both, the likelihood and the impact of external shocks on the domestic economy, they should not be seen as an adequate policy response to permanent structural changes. In such cases, the economic policy response needs to consist of a bundle of instruments to facilitate adjustment back to sustainable levels. Reserves can play an important role in this context by smoothing the adjustment, as stated above, but they cannot substitute other policy measures.

Further benefits of reserve holdings relate to the ability to limit volatility on the foreign exchange market by intervening in the market ("leaning against the wind"). By influencing supply and demand in the foreign exchange market in times of market stress, the efficient functioning of the market can also be improved.

Reserves can also send powerful signals about the credibility of monetary and exchange rate policy, in particular in form of a public commitment to exchange rate stability. The ability to influence the exchange rate by means of interventions can help to moderate expectations of market participants about sudden and abrupt exchange rate changes and discourage speculation.

2.2 Costs

The costs associated with reserve holdings can be seen as a form of "insurance premium". They are usually measured by the differential in returns on short-term foreign currency assets and alternative, often more profitable investment opportunities. This relates to the fact that official reserves are predominantly invested in safe, liquid, and thus low-yielding foreign currency assets, in order to be able to use them quickly. The dominant global reserve assets are still US dollar-denominated Treasury bills and bonds, deposits, and Agency bonds (i.e. bonds issued by US government agencies like Fannie Mae or Freddie Mac), even though reserve diversification into other currencies (e.g. Euro assets) is an important issue. The question which alternative investment opportunities should be considered is difficult to answer, however, since here a wide range of possible cases could be considered (ranging from paying back outstanding foreign debt to domestic investments in public or social infrastructure). In empirical work, the return differential is often calculated using the yield on short-term US Treasury bills (as a proxy for reserve assets) and the yield on external borrowings (e.g. via sovereign Eurobonds) of the country in question.

Besides individual costs of reserve holdings for the country in question, reserve accumulation can also imply costs in terms of the stability of the international financial system, as global imbalances can increase under a policy of reserve accumulation, and the risk of a sudden adjustment rises accordingly. Recent initiatives by international financial institutions like the IMF to reduce the need for individual reserve accumulation might thus be welfare enhancing.

3. Criteria to Assess the Adequacy of Official Reserves

While the need to hold international reserves is undisputed, a key concern for policymakers relates to the optimum level of reserves in quantitative terms. Since the benefits of reserve holdings are multiple, a number of benchmark criteria have been developed to assess the adequacy of reserves that a country possesses[3]. Historically, the focus of economic research shifted from trade-related criteria (see 3.1 below) to criteria that focus on capital flows (see 3.2 and 3.3). Even though these criteria provide very useful insights to policy makers and analysts, they lack strong analytical foundations. Over recent years, some progress has been made to fill this gap by developing an analytical framework, which helps to address the question of reserve adequacy in a more comprehensive way (see 3.4).

3.1 Import coverage

This traditional criterion assesses the adequacy of international reserves in terms of their import coverage, i.e. is based on current account transactions. The underlying idea is that there should

[3] This section concentrates on a selected number of benchmark criteria, which can be considered the most important ones. For a more comprehensive discussion, see Wijnholds/Kapteyn (2001) or Movchan (2002).

be always enough reserves available to finance imports at their planned level for some time, even though there might be a temporary stop in foreign currency inflows. This criterion is especially relevant for those countries, which are less financially integrated with the rest of the world, and were trade shocks are thus the key factor for vulnerability in their external economic relations.

Regarding the concrete minimum benchmark for reserves, a number frequently stated is 3 months of future (expected) imports, even though there are also higher numbers in the literature mentioned (in the range of 4-6 months). However, as stated above, all numerical "rules of thumb" lack a clear theoretical or empirical basis and should be considered rather reference points than strict criteria.

3.2 Guidotti-Greenspan criterion

The relevance of conventional trade/import-related benchmark criteria became questionable in a time of increasing financial integration, where crisis concerned predominantly the capital account. Accordingly, many countries - partly as a reaction to emerging market financial crisis – began to accumulate reserves which by far surpassed levels justified by the import-coverage criterion.

Since the level of short-term external indebtedness has been found a key predictor of financial crises[4], the focus of the literature on reserve adequacy shifted to this variable. Specifically, Pablo Guidotti, former Deputy Minister of Finance of Argentina, suggested as a rule that countries should manage their external assets and liabilities in such a way that they can refrain from foreign borrowing for at least one year. This implies that reserves should cover scheduled external debt amortizations for at least one year, i.e. a ratio between these two variables of at least one. Even if new inflows completely cease, and there is no roll-over of existing obligations falling due, the country would be able to honour its external debt.

The original rule proposed by Guidotti was subsequently extended by other authors. Two particular enhancements were proposed by Alan Greenspan, the former Chairman of the Federal Reserve System of the US[5]. First, he suggested that in addition to the rule proposed by Guidotti, the average maturity of the external debt of a country should exceed a certain threshold value, e.g. 3 years. Second, he refined the rule as a "liquidity-at-risk" standard. Here, the net external liability position of a country would be computed under a wide range of possible outcomes, with probabilities of each outcome attached. The rule would than suggest that reserves should be sufficient to avoid new external borrowings for at least a year with a reasonably high probability, e.g. 95%[6].

3.3 Wijnholds-Kapteyn criterion

The Guidotti-Greenspan criterion focuses on the negative effects of potential withdrawals of capital by non-residents, i.e. it relates mainly to an "external drain" on reserves. Usually, in case of a financial (and possibly banking) crisis, these withdrawals are also accompanied by an "internal drain"[7] on reserves, when residents try to exchange domestic currency assets into foreign currency assets. A comprehensive criterion should be able to capture both effects.

Wijnholds and Kapteyn[8] develop such a comprehensive criterion, which takes both the "external" and the "internal drain" into account. It consists of three components. The first component is the short-term external indebtedness at remaining maturity, which is similar to the approach by Guidotti and captures the "external drain". Second, as a potential indicator for the "internal drain",

[4] See Rajan (2002).
[5] See Greenspan (1999).
[6] This rule is similar to the "Value-at-risk" (VaR)-methodology used at commercial banks, which measures the risk of loss on a specific portfolio of financial assets.
[7] The "internal drain" described above is one particular form of capital flight by residents, but is not identical to the latter variable, which is a broader concept.
[8] See Wijnholds/Kapteyn (2001).

a certain fraction of the broad money supply[9] is used. The concrete fraction which should be covered by international reserves depends on the exchange rate system. Third, since different countries are not equally susceptible to the risk of sudden shifts out of domestic into foreign currency, an adjustment factor is needed. Thus, the authors propose to include a probability factor for such shifts for each individual country. This is implemented by adjusting the fraction of broad money that should be covered with reserves by an adequate country risk index. The authors use in their calculations the widely accepted country risk index published by the weekly newspaper "The Economist".

3.4 Recent approaches

As stated in the introduction to this section, the economic literature on adequate reserve benchmarks has lacked a common framework, and thus has traditionally focused on individual assessment criteria (related to trade, external debt, etc.). Recently, this work has been extended by new and unifying approaches. Among these attempts, influential academic work initiated by Jeanne/Ranciere (2006, 2009) derives the optimal reserve stock in an analytical, model-based framework, which explicitly takes into account the benefits and costs of holding reserve assets.

In this framework, reserves can be seen as a form of self-insurance against balance of payments crises. The underlying idea is that while reserve holdings have costs, they help to reduce the frequency of a sudden stop in capital flows and smooth the impact of such shocks on domestic consumption and output by providing liquidity. The authorities need therefore to strike a balance between their costs in non-crisis times and their benefits in times of crisis. Their level is optimal when marginal costs of holding reserves equal their marginal benefits. A closed-form solution of the optimal reserve level reveals that it is an explicit function of:

- the probability of a sudden stop,
- the size of a sudden stop,
- the output costs of a crisis caused by a sudden stop,
- the opportunity costs of holding reserves, and
- the degree of risk aversion of the authorities.

In the empirical part of their work, they calibrate their model on economy-specific data for a panel of emerging markets, in order to see if the results predicted by the model match the actual level of reserves. Largely, under plausible calibrations, their model can explain actual reserve holdings in many countries.

4. Application to Ukraine

In this section, we apply the three criteria discussed in Sections 3.1 – 3.3 to the specific case of Ukraine. First, we present estimates of resulting benchmark levels for Ukraine's reserves for different criteria, and then compare them with the actual level of reserve assets in Ukraine to judge the adequacy of the current level of the country's foreign exchange reserves.

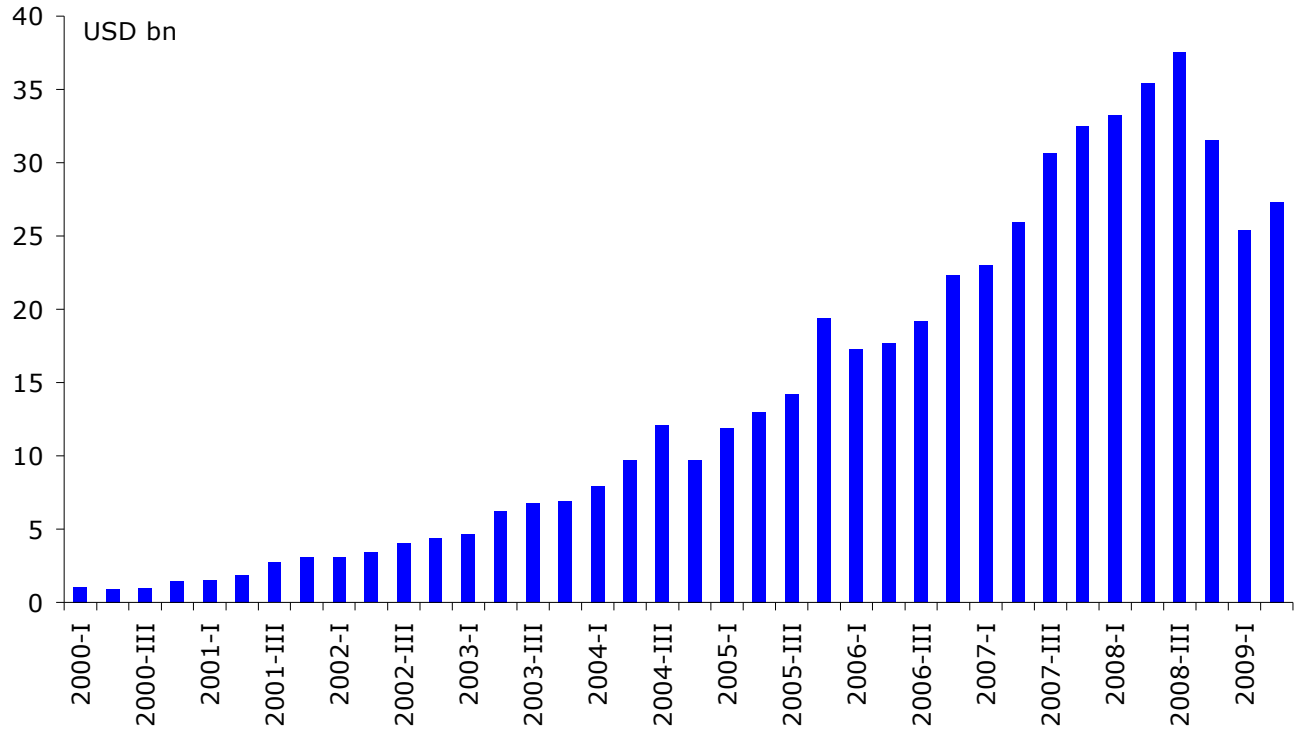
Ukraine accumulated a significant stock of foreign exchange reserves over 2000-2008 (Figure 2). In 2000-2005, the reserve growth originated in the current account, thanks to a surplus in the trade balance (goods and services) and to net inflows of current transfers. During this period, the financial account was in deficit. However, by the end of 2005 the situation had changed completely. The worsening of the merchandise trade balance had turned the current account balance negative in the fourth quarter of 2005, and this deficit has been preserved in 2006-2009. At the same time, since 2006 capital inflows started to grow rapidly compensating the current account deficit and allowing a further build up of reserves in the context of a de-facto fixed

[9] Since agents need domestic liquidity to purchase foreign currency, a certain fraction of the broad money supply should be the preferable measure to capture the potential for such a sudden shift from local to foreign currency.

exchange rate. The peak in reserve holdings was achieved in the third quarter of 2008, when USD 37.5 bn of gross foreign exchange reserves were accrued.

The spillover of the international financial crisis to Ukraine in late 2008 led to a sudden decline in reserves drugged down by net capital outflows and a run on national currency (cash market). The sharp decline in reserves was partly mitigated by the IMF loan agreed in the framework of the Stand-By Arrangement signed in October 2009. At the end of the second quarter 2009, the end of our sample period, reserves stood at USD 27.3. bn. This implies a drop by more than a quarter compared to their peak value.

Figure 2. Gross foreign exchange reserves in Ukraine



Source: National Bank of Ukraine

4.1 Import coverage

Despite the fact that this criterion might have lost some of its appeal over time on a global scale due to increasing financial integration, and correspondingly a dominant role of financial flows over trade flows, this is certainly not true for Ukraine. On the contrary, with an import share of goods and services close to 55% of GDP (2008), this trade-related criterion continues to be very important for the country.

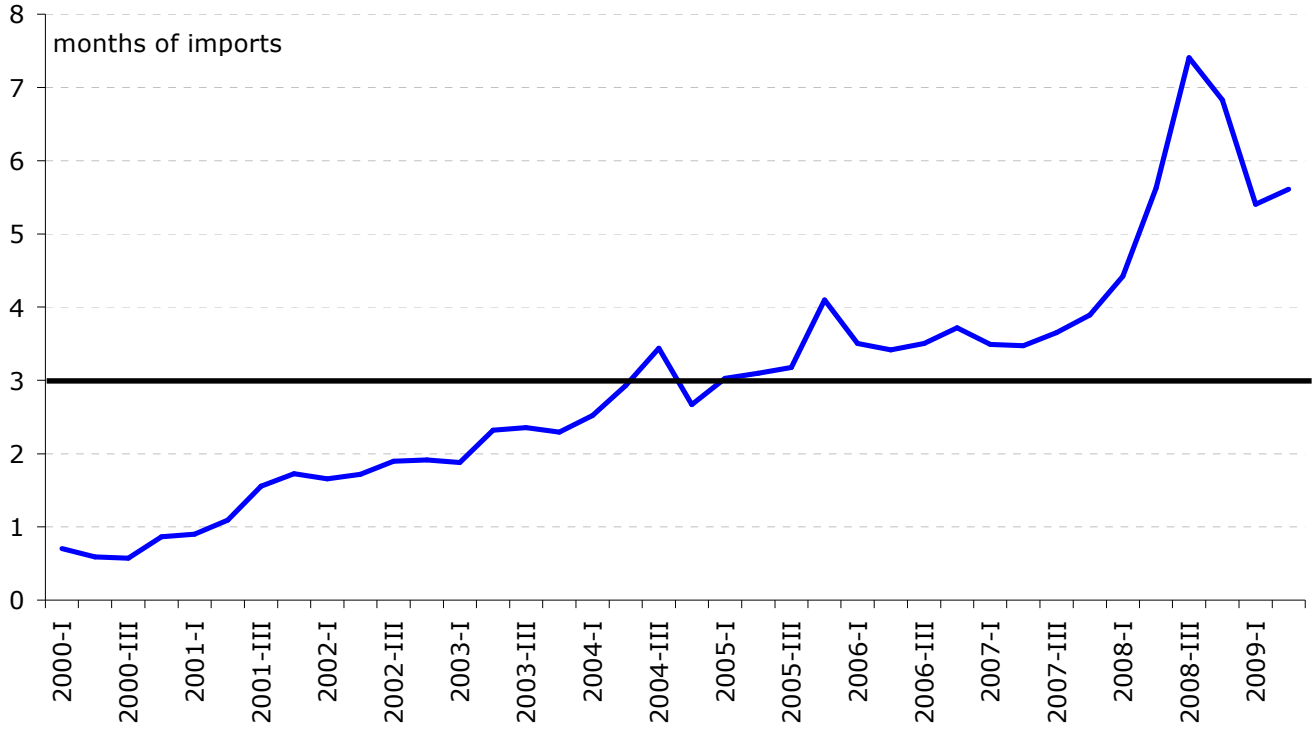
To estimate the benchmark level of foreign exchange reserves in terms of months of import coverage, we used Ukraine's import value in US dollar for goods and services. To fit the forward-looking nature of this criterion emphasised in the theoretical discussion in Section 3.1, we constructed a future import series trailing imports for the next four quarters following the reference point quarter. The IER forecast was used for the fourth quarter of 2009 and 2010 import values.

Traditionally, the benchmark level for this criterion is three months of imports (the horizontal line in Figure 3). Ukraine has crossed this benchmark in the third quarter of 2004 (Figure 3), and with one exception it has remained above this threshold afterwards. The highest level of coverage was achieved in the third quarter of 2008 when the pre-crisis level of reserves was sufficient to cover

7.4 months of imports that has started falling due to the crisis. Afterwards, a decline in reserves drugged the import coverage indicator downwards.

According to the preliminary estimates of the NBU, in the end of the third quarter of 2009 it had foreign exchange reserves sufficient to cover 5.8 months of future imports, still quite safely above the threshold.

Figure 3. Official foreign exchange reserves in months of future imports



Source: National Bank of Ukraine, IER estimates

Note: Import coverage estimate for the fourth quarter of 2008 and the first two quarters of 2009 are based on IER estimates of future imports (goods and services), and not on observed data. The NBU assessed its official reserves in the second quarter as covering 5.6 months of future imports.

4.2 Guidotti-Greenspan criterion

The second criterion shifts attention towards the financial account. For the calculation of the Guidotti-Greenspan criterion, we estimated a short-term debt at remaining maturity for Ukraine. The assessment was based on the data for short-term debt at original maturity, published by the NBU, and the amounts of scheduled amortisation of medium- and long-term credits for the next four quarters, including the reference point quarter taken from the balance of payments publications. The amortisation for the fourth quarter of 2008 and the first two quarters of 2009 was estimated assuming an average annual 20% redemption rate of the medium- and long-term debt at original maturing reported by the NBU.

To check these estimates, we have compared them with the IMF assessment of Ukraine's short-term debt at remaining maturing available for the end-year quarters. As Table 1 shows, the IER series has overestimated Ukraine's obligations in 2004-2006 as compared to the IMF's estimates, but has been a rather similar predictor of the short-term external debt at remaining maturing for 2007-2008.

Table 1. Short-term debt at remaining maturing, USD bn

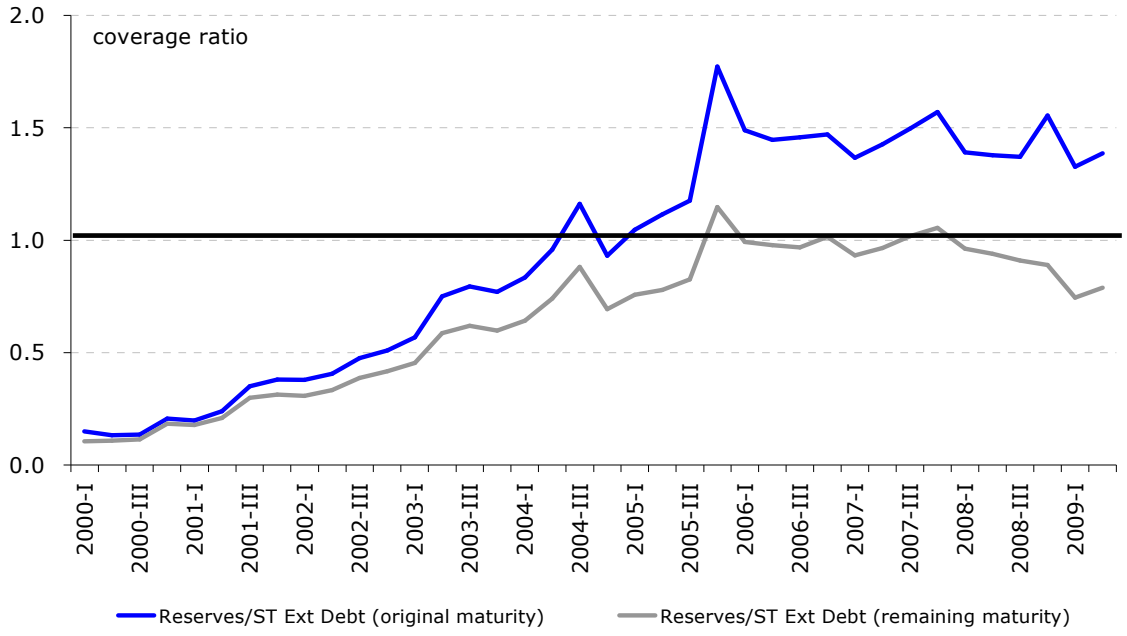
	IER estimate on the basis of the NBU data	*IMF estimate*
2004-IV	14.0	10.9
2005-IV	16.9	12.1
2006-IV	22.0	20.5
2007-IV	30.8	29.1
2008-IV	35.5	35.9

Sources: IMF, NBU, IER calculations

The threshold of the Guidotti-Greenspan criterion is a complete coverage of short-term external debt at remaining maturity by official reserves. Starting from the 10% coverage in 2000, Ukraine has significantly improved in the following years. However, the upward trend stopped in the end of 2005. The reserve level reached a 115% coverage ratio (i.e. 1.15) in the third quarter of 2005, and fluctuated around 100% coverage for the next three years against the background of a fast growing external indebtedness of Ukraine' economic agents, both private and public.

The Guidotti-Greenspan reserve adequacy criterion (at remaining maturity) has started to deteriorate already since the first quarter of 2008, that is after the first wave of the financial crisis and well before the second wave of the crisis crushed Ukraine's economy. Currently, it is below its minimum threshold (the horizontal line in Figure 4). It has signalled about an increased vulnerability to an "external drain" in the case of sudden stops or reversals of foreign capital flows.

Figure 4. Official foreign exchange reserves over short-term external debt

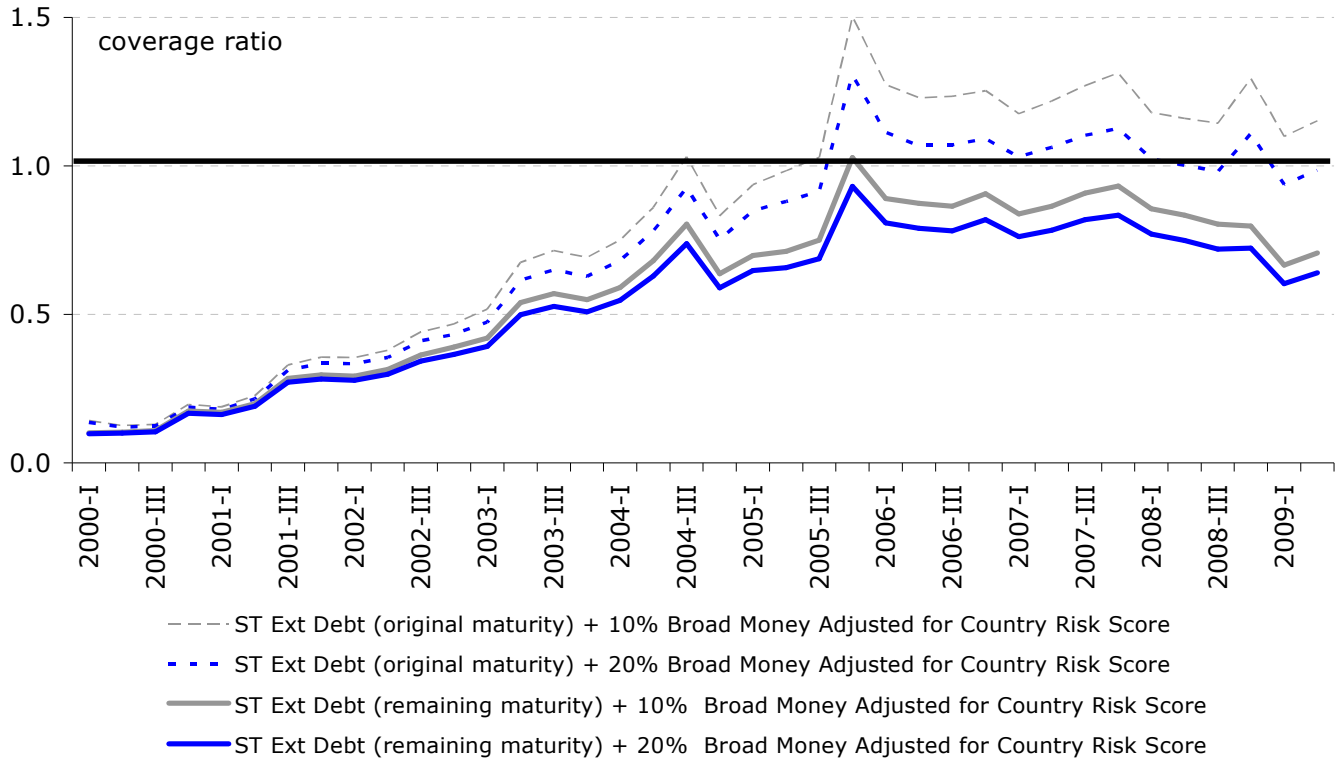


Source: National Bank of Ukraine, IER calculations

4.3 Wijnholds-Kapteyn criterion

As described in section 3.3, the potential external drain through short-term external debt needs to be adjusted for the potential internal drain, i.e. internal capital flight, in order to get a better picture for underlying vulnerabilities. This implies that in addition to short-term external debt, a certain ratio of broad money has to be covered by reserves. In the following analysis, we focus on the monetary aggregate M3. The recommended coverage value for countries with managed floating exchange rates is according to Wijnholds and Kapteyn 10-20% of M3. We use both values, i.e. a 10% and a 20% fraction of M3 in our calculations. In line with Wijnholds/Kapteyn (2001) we used a country risk score estimated by the Economist Intelligence Unit (EIU) as a probability of the internal drain.[10]

Figure 5. Official foreign exchange reserves and internal capital flight



Source: National Bank of Ukraine, IER estimates

As with the Guidotti-Greenspan criterion, the minimum threshold for this criterion is set at one (the horizontal line in Figure 5)., implying that adequate reserve holdings should be sufficient to cover short-term external obligations of country's economic agents within the next 12 months, and additionally to cover internal capital flight expressed as a fraction of broad money.

According to the Wijnholds-Kapteyn criterion, Ukraine's reserve coverage has never been sufficient. Initially the country has rapidly progressed from a 0.1 coverage ratio to levels close to 1.0 between 2000 and 2005. However, since 2006, that is earlier than for Guidotti-Greenspan criterion, Ukraine has witnessed a constant deterioration of reserves' adequacy as external debt and money supply have grown. The crisis has accelerated this drop. The current ratios at 0.64 for 20% of M3 or 0.71 for 10% of M3 are quite low, making the country very vulnerable to a combination of external and internal drains.

[10] Technically, we multiplied the fraction of M3 on the EIU country risk score divided by 100, so that the score stays in interval between zero and one.

5. Conclusions and Policy Implications

The results of applying the three selected criteria to Ukraine are summarized in Table 2.

Table 2. Implied minimum reserve level by different criteria (end of 2009:Q2)

Adequacy Criterion	Current Value	Minimum value	Implied Minimum Reserve Level	Gap
Import coverage	5.6 months	3 months	USD 18.9 bn	+ USD 8.4 bn
Guidotti-Greenspan*	0.79	1	USD 34.6 bn	- USD 7.3 bn
Wijnholds-Kapteyn**	0.71	1	USD 38.7 bn	- USD 11.4 bn

Own calculations
* Using historical imports
** Using 10% of M3 coverage

As of the end of the second quarter of 2009, Ukraine held USD 27.3 bn of foreign exchange reserves. It would be sufficient if the country faced only a current account shock, but it is clearly not sufficient to withstand an external financial shock, especially when accompanied with internal capital flight. The clear insufficiency of official reserves to resist a financial shock is amplified by the fact that Ukraine is currently facing a double external shock, involving both the current and financial account of the balance of payments. Thus, de-facto Ukraine may need more reserves than any single reserves adequacy criteria could suggest.[11]

To be better positioned for withstanding external shocks, Ukraine definitely needs a higher reserve level, as we have shown in our analysis.

In the short term, there is no alternative to financial measures to increase reserve holdings. In 2008, the authorities in Ukraine had secured important financial measures to support the reserves. Specifically, Ukraine signed a USD 16.4 bn Stand-By Arrangement with the IMF. The level of gross international reserves – and thus reserve adequacy – would be much lower without the IMF. The IMF loan disbursements at USD 10.6 bn within a year since October 2008 have been crucial in supporting gross reserves and for cushioning the effects of the international crisis. Regretfully, Ukraine failed to complete the third review and to receive the fourth disbursement as scheduled due to problems with the implementation of the program agreed under the IMF Stand-By Arrangement. Major concerns have arisen in social and fiscal spheres[12], and in achieving a broad consensus among politicians on the underlying policies.

Conclusion 1: The continuation of the IMF program is crucial for obtaining a more adequate level of foreign reserves, and thus to weather possible shocks.

In terms of macroeconomic policies, the NBU policy is of critical importance. The National Bank should conduct a tight and credible monetary policy[13], strictly limiting the expansion of the money supply and thus capping potential for internal capital flight.

Conclusion 2: By conducting a restrictive monetary policy, the NBU can reduce demand for foreign currency and thus decrease the pressure on foreign reserves.

[11] To address this issue correctly, it would advisable to run a reserve adequacy assessment based on a model approach discussed in Section 3.4.

[12] http://www.imf.org/external/pubs/ft/survey/so/2009/int110409a.htm

[13] See our policy paper on "Current issues in monetary policy" by Giucci/Kirchner/Kravchuk (PP/06/2009 by German Advisory Group/Institute for Economic Research and Policy Consulting, November 2009).

While the merits of the measures mentioned above are straightforward, it should be noted that they do not solve the underlying long-term structural problem of a sub-optimal level of official reserves. In order to tackle this structural problem, further economic measures are necessary.

The authorities should pursue a much more aggressive policy of structural reforms, FDI attraction and privatisation, since such measures help to attract foreign capital into the country, which may contribute to boosting official reserves. In the case of privatisation, the attraction of foreign capital could also take place in the very short term and thus contribute to combating the current crisis. An additional reserve-boosting policy measure should be export facilitation, which helps to reshape the current account side of the balance of payments. Moreover, structural reforms alongside with macroeconomic stabilisation should reduce the country risk score and thus restrain demand for reserves.

The arguing above has also important institutional implications. While the official reserves are kept and managed by the National Bank, its level does not only depend on its policy, but also to a very large extend on the economic policy of the government.

Conclusion 3: The task of increasing the level of official reserves is a common duty by the National Bank and the government, as macroeconomic policy alone cannot solve the problem of inadequate reserves. Thus, macroeconomic management needs be complemented by structural reforms.

Annex. Statistical Data Set

	gross international reserves, eop	imports of goods and services	cumulative imports of goods and services over next 4 quarters*	short-term external debt at original maturity, eop	estimated short-tem debt at remaining maturity, eop	broad money supply	country risk score, eop
unit	*USD m*	*USD m*	*USD m*	*USD m*	*USD m*	*USD m*	*index*
source	*NBU*	*NBU*	*NBU, IER*	*NBU*	*NBU, IER*	*NBU*	*EIU*
2000-I	1060	4560	18153	7142	10171	4463	67
2000-II	939	4111	19084	7105	8741	4983	67
2000-III	949	4188	19922	6986	8336	5327	64
2000-IV	1476	5088	20473	7141	8057	5935	61
2001-I	1516	4766	20244	7668	8526	5868	63
2001-II	1861	5042	20382	7796	8888	6896	61
2001-III	2723	5026	21014	7797	9111	7472	61
2001-IV	3090	5639	21494	8144	9889	8635	61
2002-I	3112	4537	22543	8210	10109	8944	61
2002-II	3405	5180	23794	8385	10209	9663	62
2002-III	4019	5658	25403	8451	10385	10897	61
2002-IV	4417	6119	27665	8678	10581	12214	62
2003-I	4679	5586	29916	8234	10311	13185	62
2003-II	6218	6431	32193	8290	10604	14867	62
2003-III	6742	7267	34382	8487	10890	16254	58
2003-IV	6943	8381	36313	9015	11619	17881	57
2004-I	7920	7837	37674	9492	12342	19026	56
2004-II	9725	8708	39870	10153	13123	21419	54
2004-III	12062	9456	42104	10381	13683	24545	54
2004-IV	9715	10312	43707	10440	14016	23694	52
2005-I	11892	9198	47127	11366	15715	26531	50
2005-II	12992	10904	50374	11665	16682	30928	50
2005-III	14218	11690	53689	12101	17225	33864	51
2005-IV	19391	11915	56775	10944	16904	38430	51
2006-I	17291	12618	59211	11611	17443	38674	51
2006-II	17675	14151	62088	12222	18059	42403	51
2006-III	19166	15005	65676	13156	19799	46489	51
2006-IV	22358	15001	72153	15212	22049	51696	51
2007-I	22992	15054	79078	16814	24656	53953	51
2007-II	25914	17028	89475	18164	26864	60003	52
2007-III	30665	18593	100712	20508	30132	68956	53
2007-IV	32479	21478	100132	20677	30783	78447	52
2008-I	33231	21979	90186	23889	34541	82379	52
2008-II	35452	27425	75636	25724	37710	92926	52
2008-III	37530	29830	60823	27380	41266	100705	54
2008-IV	31543	20898	55925	20301	35472	66978	61
2009-I	25393	12033	56892	19137	34128	60239	66
2009-II	27344	12875	59017	19735	34662	61748	65

*Note: * Import coverage estimate for the fourth quarter of 2008 and the first two quarters of 2009 are based on the IER estimates of future imports (goods and services), and not on observed data.*

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