Euromoney August 1998

Why foreign-currency debt is best for Russia

Alex Jurshevski

The question most Emerging Markets investors want answered is: “What will happen next in Russia?” Not surprisingly, the experience of other emerging markets economies can offer some guidance. In the last twenty five years there have been over one hundred crisis situations which have occurred in emerging market economies. The good news is that following what is typically a very painful adjustment process; countries that have experienced financial dislocation typically emerge to regain economic competitiveness. Ultimately investor confidence is restored and the countries typically return to the good graces of the Rating Agencies. Unfortunately the good news pretty much ends there.

The history of past emerging markets crises provides grim detail of what usually happens during the down stroke of a crisis:

> Risk premia typically reach extremely high levels and the yield curve becomes steeply inverse, market volatility increases and the currency comes under pressure. Judging from past experience (as shown below), these phenomena can persist for years. Russia’s interest rate risk premia are presently huge.
>
> The contingent of foreign direct and portfolio investors which pour money into the markets in search of “high” local yields prior to the onset of a crisis make uneasy bedfellows. If foreign portfolio and/or direct investors panic, the risk of severe exchange rate and interest rate pressures increases significantly.
>
> Credit ratings typically remain under downward pressure until well after the crisis had passed. As we saw recently with the Moody’s announcement, Russia’s debt ratings are now on watch. They will likely remain under pressure for some time.

Costs of Crises in Lost Output Relative to Trend*
(Emerging Market Economies)

Type of Crisis	Number of Crisis	Average Recovery Time (years)	Cumulative Loss of Output per Crisis (per cent)	Crisis With Output Losses (per cent)	Cumulative Loss of Output per Crisis with Output Loss (per cent)
Currency Crisis	**116**	**1.5**	**4.8**	**64**	**7.6**
Currency Crashes	**42**	**1.9**	**7.9**	**74**	**10.7**
Banking Crises	**42**	**2.8**	**12.1**	**86**	**14.0**

Currency and Banking Crisis	**26**	**2.6**	**13.6**	**73**	**18.8**

[* Source : IMF]

Statistics recently published by the IMF, and shown on the table above, underscore the length of time that recovery can take and the severity of output losses. A simple transposition suggests that macroeconomic variables in Russia will likely remain under pressure for at least the next 12 to 24 months. High real rates will likely cause bank asset quality to deteriorate, which bringing with it an even greater risk of a banking crisis. This spells trouble for Russian equity prices.

Downward pressure on the currency should continue in this scenario. Despite brave words from the IMF and Russia's politicians and policymakers, a Ruble devaluation is probably inevitable given the weakness of Russian finances and the slowness of the reform process.

The previous table from which this point draws its authority reflects a compilation of more that 100 emerging markets crisis episodes which occurred between 1975 and 1997. Importantly, a key prerequisite to the recovery times shown on the table is a direct function of the fact that appropriate policy steps were taken to remedy the cause of the instability and foster positive readjustment.

This evidence suggests that recovery from a crisis is complex, long and painful. However what is also of immediate relevance is that these past crises occurred in countries much smaller and less politically and militarily important than Russia. Contrary to these past incidents where the contagion effects were reasonably small and manageable, an unstable Russia could potentially have serious repercussions that will be felt all the way to Main Street, USA.

What Must Be Done?

In all types of crises, the immediate problem is one of preserving financial stability. In the markets "perception is reality", and thus the mere possibility of default can lead to a self fulfilling crisis.

The key Russian policy dilemma relates to a number of interrelated factors: shortfalls in government revenue, a distorted revenue structure and deficiencies in the framework that governs revenue collection and expenditure disbursement. This combination of persistently weak government revenue collection, a shaky privatization program, soft energy prices and political instability has caused the markets to become worried by the prospect of a devaluation and possible government default.

Although Russia's immediate fiscal challenges are somewhat different from those faced by other countries, there is no question that Russia needs strong medicine, and needs it fast. A package of measures designed to address the fundamental problems outlined above must be devised and implemented very quickly. The framework must be comprehensive, complete and coherent. In addition it must achieve popular support. Judging by past experience, broad political consensus is need to devise the appropriate cure. The dosages will prove politically difficult to administer, and a great deal of time will pass before the

benefits begin to flow through. In this context the measures announced by the Russian authorities to date do not nearly go far enough.

A further key ingredient for the success of this process is sound financial planning and management. In this regard, a framework for budgetary and financial management must be devised that provides Russia with additional insulation against speculative attack. This set of institutional arrangements should include:

A coherent set of ministerial procedures and guidelines which feature clear accountabilities and transparent operating strategies;

A comprehensive set of management arrangements for tax collection, expenditure control and budget preparation;

A debt management paradigm that enables domestic markets to develop, yet allows the government to exercise more control over the timing, maturity and cash impacts of the debt portfolio on the budget.

With the exception of debt management issues, there is little debate regarding the appropriateness of implementing these measures. On the other hand, debt policy has recently become the subject of some controversy. This is because the lack of a clear policy has contributed significantly to the current crisis.

Recently, Prime Minister Kiriyenko has proposed that a debt conversion take place. Existing domestic debt should be replaced with foreign currency denominated debt. Upon hearing this idea many commentators, some in the IMF, have roundly lambasted the idea suggesting that this was “the same thing that got South East Asia in trouble”. Such observations are far too facile. Moreover, to the extent that the Prime Minister’s suggestion can be taken to mean that some thought should be given as to how the liabilities are managed; there are a number of reasons why Mr. Kiriyenko’s proposals should not be rejected out of hand.

To start with, a coherent borrowing strategy is crucial to ensure that external resources are employed in the context of a sustainable and credible macro policy framework. Unfortunately, Russia does not appear to have a debt strategy of any kind at all. The excessive reliance on short term domestic debt is what has exposed the vulnerability of Russian finances. Although the overall debt numbers are not that bad i.e. the total stock of debt equals a comfortable 50 % of GDP, and some 60 per cent of this or 30% of GDP is foreign currency denominated debt; the portfolio is unstable and requires restructuring.

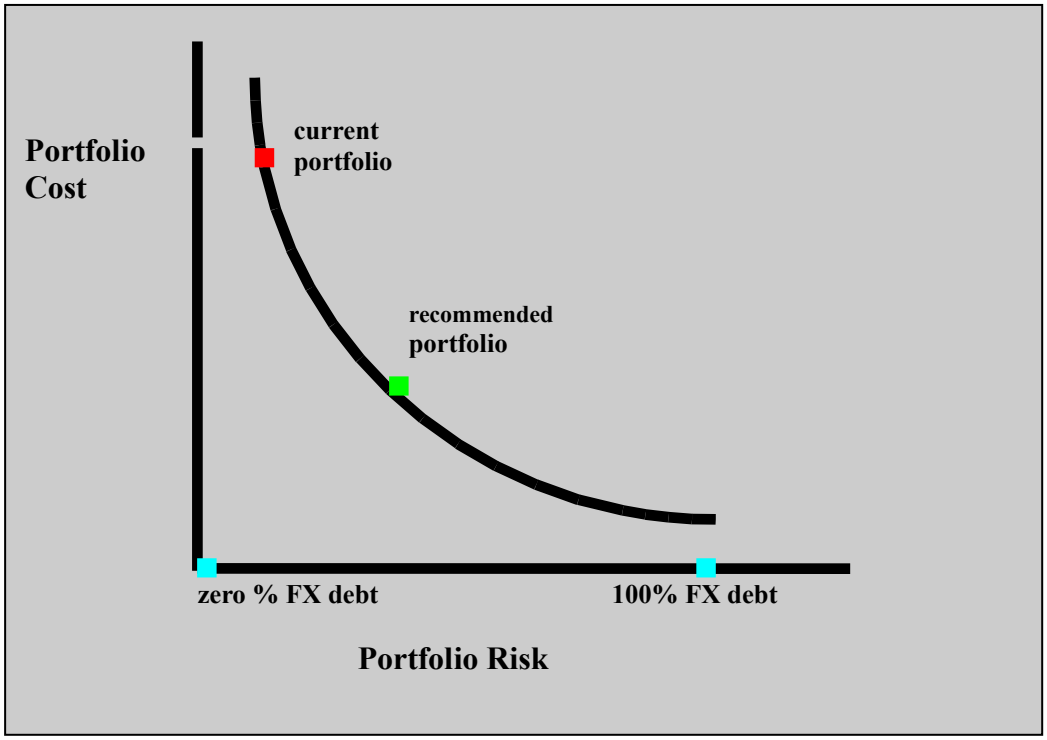
Well over 25% of Russia’s debt falls due or reprices within one year. This is a very aggressive portfolio posture by any commonly used sovereign yardstick. Even at that, the short dated nature of the portfolio is understated. Most of the “longer term” Russian debt is reset against GKO yields on a six monthly basis. A goodly chunk of the foreign currency debt is also floating rate. As a result; the cost of the portfolio is highly sensitive to both Russian and offshore short term rates. This “reset risk” must be reduced. Along with carving out some of the reset risk, portfolio variance should be reduced further by extending maturity, diversifying funding sources and providing investors with a signaling mechanism that restores confidence.

Given that the domestic markets are in an uproar and foreign investors will be difficult to coax back, it is highly unlikely that this portfolio restructuring can be accomplished while retaining the existing currency characteristics of the liabilities. Increasing the stock of foreign currency liabilities gives rise to a set of tradeoffs. Broadly speaking, the decision to fund in offshore markets gives rise to a need to balance policy credibility and portfolio management cost flexibility against the exposure to a larger foreign exchange risk and foreign funding conditions. But why would Russia want to intentionally increase its foreign currency liability exposure? Don't most countries want to avoid foreign currency debt?

The framework normally employed to answer such questions is the mean variance portfolio optimization approach. This framework provides the optimal currency composition for different levels of portfolio cost and risk. Using this approach one finds that the conditions which usually argue against the accumulation of foreign currency debt are in fact quite different from the situation facing the Russian policymakers today. Although there is a dearth of data which would enable a rigorous empirical analysis a rough calculation (using the equations specified in the theoretical discussion shown in the box) currently suggests that 100% of Russian debt should be non-Ruble denominated. While, as with all model-based prescriptions, this result must be tempered with judgment, the results underscore the extreme nature of conditions in the Russian domestic financial markets.

The benefits of moving the portfolio composition to contain a larger proportion of foreign currency debt are shown below on the diagram. A large reduction in portfolio cost comes at the expense of some increase in risk. This risk is related to an increase in the Ruble cost of servicing the portfolio in the event of devaluation.

The Efficient Frontier and Russia's Debt Portfolio



Move to more FX debt, a much lower cost at the price of only a minimal increase in risk.....

This aside, a number of other important portfolio risks would be reduced. One is *maturity risk.* Russia will be able to source much longer term debt in the offshore markets giving it certainty of what the coupon cost of this debt will be for fiscal planning purposes. In addition Russia will be able to lower *interest rate rest risk* by moving away from the volatile GKO market. Finally, Russia will reduce its *liquidity risk*, again because of the move away from unpredictable auctions of GKO's.

It is now probably impossible to reduce portfolio devaluation risk by issuing Ruble denominated debt. The Russian authorities may have to take on more foreign currency debt simply because the buyers for its domestic paper no longer constitute a stable source of funding. This is because investors have become extremely nervous and require very high risk premiums in order to continue rolling over their fixed income investments. In short the domestic markets may simply be unable to supply the required funding. Therefore, given the market forces at work, a debt conversion may therefore be inevitable. In this regard, the risks of not converting to foreign currency debt may presently be much greater than of converting in a planned fashion.

These forces should not be allowed to impinge upon the portfolio without forethought. If skillfully exploited, the situation represents an opportunity to restructure and stabilize the debt portfolio. A pro active debt conversion of part of the GKO stock as recently suggested by Prime Minister Kiriyenko could give the government important, and needed fiscal breathing room. None of this should come as any surprise. In recent weeks the Russian government has been quietly arranging offshore loans to shore up its shaky finances.

At present these moves to seek financing in offshore markets is uncoordinated and unplanned. This must not be allowed to continue. A key component of this plan should be the controlled devaluation of the Ruble. This should occur prior to any significant portfolio move into foreign currency debt. This will have two benefits. First it will reduce the devaluation risk of the portfolio as more offshore debt is accumulated. Secondly it will calm Russian financial markets which have been volatile in part precisely because of devaluation fears.

To sum up the authorities should:

Devise and implement credible institutional reforms as outlined above;

Devalue the Ruble in order to take the pressure off of domestic markets;

Restructure the debt portfolio by refinancing in offshore markets.

A planned well organized debt conversion is a key component of this multi-pronged strategy. If it is properly managed, the accumulation of an increasing proportion of appropriately structured foreign currency debt that is *necessarily* accompanied by tough fiscal, administrative and regulatory reforms, promises to deliver cost benefits to the Government as well as a needed stabilization of portfolio risks. It would also provide an important signal to investors that the commitment to reform is real.

Why Russia Should Convert - The Theory

The accepted argument against accessing the foreign markets is that the accumulation of high levels of foreign currency debt by sovereigns can lead to a vicious circle: high foreign debt keeps risk premia wide and therefore the unwinding of the debt becomes hard to justify on cost grounds. This can lead to continued and sometimes increasing dependence on offshore markets and exposure to foreign currency exchange and interest rate risk. Clearly this is a scary prospect.

However, the perception of risks arising from the accumulation of foreign currency debt has typically been exaggerated in much of the popular press and, to some extent, the theoretical literature. Conversely these same commentators generally understate the benefits of diversification in order to justify their assertions. The following framework will demonstrate both theoretically and empirically that a positive case for the accumulation of foreign debt can be made. This is quite apart from the policy signaling benefits that the holding of foreign currency liabilities may impart.

The Model

A two factor model of liability management is introduced which assumes that the liability manager attempts to minimise his cost function by choosing the mix of liabilities that is consistent with the perceived risk appetite of the government. The cost relationship for a portfolio having a given probability distribution of returns can be written as a function which incorporates the expected cost of the portfolio, its variance and a term which encompasses relative risk aversion.

$$C = E\left(r_p\right) + 0.5R\left(Var_t\right) \quad (1)$$

Where,

C is total cost;

$E\left(r_p\right)$ is the expected return from the portfolio;

R is the coefficient of risk aversion

$\left(Var_t\right)$ is the variance of the portfolio (the square of the standard deviation)

Using this mathematical representation we can readily infer that a given liability manager's cost from a particular collection of financial instruments is a positive function of the expected cost of liability issuance. The sensitivity of total cost is also governed by the variance of liability costs and the degree of risk aversion. In order to develop this framework we assume a choice exists allowing the creation of a portfolio composed of varying proportions of two different liabilities.- a risk free liability i.e. one's home market; and a risky liability - foreign currency denominated debt. To supply an incentive for the raising of offshore liabilities the model assumes that the portfolio manager has backward looking expectations which tilt this choice towards offshore debt as the risk premium widens.

The home market thus carries with it interest cost r_h and variance zero. The foreign currency liability carries with it expected return $E(r_f)$ and standard deviation $SDev_f$. The rate of return on this portfolio, constrained to have the proportions of each liability sum to 100%, can be written as:

$$E(r_t) = r_h + p_f\left(E(r_f) - r_h\right) \quad (2)$$

Where,

$E(r_t)$ is the expected return of the entire portfolio

r_h is the home liability cost

$E(r_f)$ is the expected foreign liability cost

p_f is the proportion of liabilities raised in foreign markets

Since the standard deviation of the risk free portfolio is zero, the standard deviation of the entire portfolio will be governed by the relative proportions of the foreign and home liabilities that are included in it. This expression can be written as:

$$SDev_t = p_f\, SDev_f \quad (3)$$

Where:

$SDev_t$ is the standard deviation of the entire portfolio;

$SDev_f$ is the standard deviation of the foreign liabilities

From this equation the variance of the overall portfolio can be derived by simply squaring both sides of the equation:

$$SDev_t^{\,2} = p_f^{\,2}\, SDev_f^{\,2} \quad (4)$$

Armed with this information, the portfolio manager will minimise the cost function by choosing the best allocation to the risky asset. In order to find this expression we first rewrite the cost function by substituting equations (2) and (4) into Equation (1). This yields the following total cost function:

$$C = r_h + p_f\left(E(r_f) - r_h\right) + 0.5R\, p_f^{\,2}\, SDev_f^{\,2} \quad (5)$$

By taking the partial differential of cost with respect to the proportion of foreign currency debt we can find the condition for minimising total liability cost by setting it to zero, thus:

$$\frac{\partial c}{\partial p_f} = E\left(r_f\right) - r_h + R\, p_f SDev_f^{\,2} = 0 \quad (6)$$

After a simple algebraic transformation we obtain the solution for the proportion of foreign debt that will minimise the cost of the portfolio subject to the magnitude of the relative risk coefficient R and the proportionality constraint:

$$p_f = \frac{r_h - E\left(r_f\right)}{R\, SDev_f^{\,2}} \quad (7)$$

From equation (7) we can deduce that the cost minimising position in the risky liability is an increasing proportional function of the risk premium that exists between the home country interest rate market and the foreign interest rate market, The magnitude of the foreign liability is also *inversely proportional to the variance of costs in the foreign market and the degree of risk aversion of the government*. Increasing the proportion of the portfolio funded by risky foreign liabilities lowers the expected cost by the risk premium weighted by the proportion of foreign debt in the portfolio. Similarly, this will increase portfolio standard deviation at the rate of the standard deviation of the risky portfolio weighted by the change in the proportion of risky debt.

In the case of Russia, a simple back of the envelope calculation suggests that assuming a relatively low coefficient for the *R* term i.e. between 2 and 4, that 100 per cent of the liability portfolio should be denominated in foreign currencies. While this model based prescription seems a little extreme, allocating a much larger amount of foreign currency liabilities out of the total stock of debt could bring with it significant cost and risk benefits. For example, a debt rollover into foreign currencies promises to reduce the refinancing risk of the portfolio while conferring policy signalling benefits to the Government at the same time. The efficacy of this move however would also be dependant on the other components of the package of needed reforms, the overall sequencing of this process, and the quality of financial management generally.