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and Kyrgyzstan.**

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TITLE

Capital Based Macroeconomic model and 100 percent reserve system, free banking system and BFH system: A Comparism among Latvia, Lithuania, Kazakhstan, and Kyrgyzstan.

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ABSTRACT

This essay extends the capital based macroeconomic theory to include international capital flow thus extending it to an open economy and analyze it in the context of the BFH system, Free banking system and 100 percent reserve ration. In all these, it was noticed that interest rate will barely change even though the possibility of interest rate changes was not ruled out completely. A test of these systems was conducted on Latvia, Lithuanian, Kazakhstan and Kyrgyzstan and was successful. However, it must be noted that these are just prepositions as these system are not in place at the moment. In furtherance to this, past and present monetary system used by the countries exhibited similarities to these systems, even though difference could largely be seen.

1.1 INTRODUCTION

Sérgio Pereira Leite, Assistance director, Office in Europe of the IMF opens his article in July 2001 as follows,

‘Capital flows flourished in the 1990s, but were accompanied by periodic financial crises. One of the challenges of the 21st century is for the world to put in place an international architecture that would sustain economic growth and the expansion of capital flows, while improving crisis prevention and resolution’.¹

In his article, he was very much particular of the use of capital flows to enhance economic growth and development.

In the period ahead, it will be important to continue to work toward a better understanding of the dynamics of international capital flows, while at the same time, putting in place the building blocks that will ensure greater stability of capital movements and more generally good governance and smooth functioning of national and international financial systems. This is the challenge we need to face early in the 21st century. This paper tries to explore some of the building blocks theoretically using capital based macroeconomics theory as the foundation stone.

The paper essay starts with briefly explaining 100 percent reserves ratio, BFH system and Free banking system. It goes on to extend the capital based macroeconomic theory to include international capital flow and test the success of the extension in all four countries under consideration. It analyzes the 100 percent reserve ratio, free banking system and BFH system as well as the monetary system in all four countries. It again examines the monetary system past and present in these economics with 100 percent reserve, BFH system and Free banking system to ascertain their similarities and differences.

1.2 100 PERCENT RESERVE BANKING

100 percent reserve banking is a practice in which the full amounts of each depositor’s funds are available in reserve (as cash or other highly liquid assets) when each depositor had the legal right to withdraw them. As late as the twentieth century court decision in Europe have upheld the demand for a 100 percent reserve requirement, the embodiment of the essential element of custody and safe keeping in the monetary irregular deposit (Huerta de Soto). In other words, banks will act as a more or less safe keeping house where people deposit their monies and withdrawal them as a when needed.

¹ Leite S.P.(2001), *International Capital Flows: A Challenge for the 21st Century*, International Monetary Fund, Article

There are historical factors and circumstances which gave rise to the bank-deposit contract with a fractional reserve. These contracts originated from a privilege governments granted bankers, allowing them to use in their own interest the money of their deposits most often in the form of loans given to the very granter of the privilege, i.e., the government or state. If government had fulfilled their essential purpose and had adequately defined and defended the property rights of depositors such an anomalous institution would never have emerge. Other criticism against 100 percent reserve banking includes the need for financial intermediation.

Nevertheless aside these criticisms, proponents of 100 percent banking reserves argue that lack of government-manipulated currency (monetary policy) and the presence of a sound currency (as opposed to an 'elastic' one) are advantage to a 100 percent reserve system. Other advantage of 100 percent reserve system includes perfect certainty. As Huerta de Soto writes *'if pessimism and the lack of confidence spread, all banks may become insolvent, ending in the disastrous failure of the banking system and of the monetary system based on fractional-reserve banking. This instability intrinsic to the fractional-reserve banking system is what makes the existence of a central bank as lender of last resort inevitable, just as the correct functioning of a system of complete banking freedom requires a return of traditional legal principle and thus a 100 percent reserve requirement'*.

1.3 BFH SYSTEM

BFH was named to credit Fischer Black, Eugene Fama and Robert Hall, but Greenfield and Yeager modified their ideas and have developed the system.

The idea of the BFH system is to define the unit of account physically, in terms of many commodities and not in terms of any medium of exchange which value depends on regulation of its quantity or on its redeemability (Yeager). The reasoning applies to that of a gold standard but in a more effective sense, because the money unit will not be convertible to not a single commodity but with physically specific bundle of commodities. Because of the almost non-monetary character of the demand and supply of the commodities defining the unit and because of the separation from the medium of exchange, no monetary pressures can exert themselves on the value unit

The BFH system would virtually get rid of money existing in an explicit quantity. The government will therefore not issue legal-tender status to any particular means of payment, but would only simply put in force contracts which the parties had clear-cut what would comprise achievement. By this prices would be quoted in a defined unit of value. The commodities defining the unit would not have to be storable. With no money quantitatively existing, people make payments by transferring other property.

Financial intermediaries been a mix of present day banks and mutual funds would develop. Payments would be made by checks to transfer suitable value unit of share ownership. These financial intermediaries will seek to attract customers by compiling records of high earnings, safety and efficiency in administering the payment of checks. What would serve as hand-to hand currency of fund share of fluctuating value could take the physical form of coins and circulating paper.

The advantage of the BFH system is that it will provide a stable unit for pricing, invoicing, accounting, economic calculation, borrowing and lending and writing contracts reaching into the future (Yeager 1997). Second, the government will come under financial discipline. Again, competition in free-market economy would ensure innovation in finance and payment system and would ensure discipline of banks and investment funds.

1.4 FREE BANKING SYSTEM

Free banking is a theory of banking in which markets forces control the provision of banking services, where there is no central bank to protect commercial banks from runs and where money production is unregulated by government. Under free banking, government-supported central banks and currency boards do not exist, banking specific government regulations are either non-existent or not as strict and general commercial laws against fraud, insolvency and bankruptcy apply to banks as they apply to other commercial entities (Rothbard). Unregulated banking services may include the provision of full reserve banking services. In short, under free banking banks are totally free, even to engage in fractional reserve banking, but they must redeem their notes or demand deposits on demand, promptly and without cavil, or otherwise be forced to close their doors and liquidate their assets.

There are several strict and important limits on inflating credit expansion under free banking. This may include the build-up of trust and dread bank run (when the clients of a

bank, lose confidence in their bank and begin to fear that the bank does not really have to ability to redeem their money on demand and depositors begin to rush to their bank to cash in their receipts). Banks cartel could be formed legally under free banking system but economic incentives will ensure that such cartel will not occur.

Rothbard therefore concludes that *'contrary to propaganda and myth, free banking would lead to hard money and allow very little bank credit expansion and fractional reserve banking. The hard rigor of redemption by the one bank upon another will keep any one bank's expansion severely limited.'*

2.1 AN EXTENSION OF CAPITAL BASED MACROECONOMIC MODEL TO INCLUDE INTERNATIONAL CAPITAL FLOW IN AN OPEN ECONOMY

Capital-Based Macroeconomics is an outgrowth of the Austrian theory of the business cycle- a theory set out in 1913 by Ludwig Von Mises and developed by Friedrich A. Hayek and other in 1930s. Three elementary graphical devices serves as building blocks for capital based macroeconomics. These are – the market for loanable funds, the Production Possibilities Frontier and the Intertemporal Structure of Production. The theory shows just how the supply and demand for loanable funds, the production possibility frontier and the intertemporal structure of production relate to another.

When the theory is extended to include international capital flow, how will interest rate be affected? We assume that international capital flows comes in the form of financial aid. As governments' starts spending the capital flows, for instance on the payment of workers salaries, individuals tend to be the final recipient of these flows thereby increasing their income. If intertemporal preference changes are absent, both the supply and demand for loanable funds shifts rightward. Savers will be supplying increasing amounts of loanable funds out of their increasing incomes; investors will be demanding increasing amounts of loanable funds. With ongoing shifts in the demand and supply for loanable funds, the equilibrium interest rate remains constant. We started off by saying that, governments spends international capital flows in a specific pattern to trigger off these trends. But government expenditure depends on other factors of which two will be considered – monetary system and budget deficit or financing. If a government is operating a flexible exchange rate, it expenditure will not be constrained by currency readjustment. In this case government can allocate international capital flows into sectors of the economy that needs re-capitalization. A flexible exchange rate not only accomplishes necessary

adjustments of resources allocation in a relatively efficient way but also helps avoid unnecessary adjustment (Yeager). But if a government is operating a fixed exchange rate, part of the international capital flows will have to be channel into adjustment. But the adjustment is easier than if the country had to adjust to foreign depression under fixable exchange rates.

What happens in an open economy situation where imports and exports are considered? Because international capital flows and domestic savers determines the supply of loanable funds and taken the pattern of expenditure already described under consideration, the capital flow will ensure that more goods and services will be produced when profit opportunity is expected to increase. In this case, the country's export increases and their import falls especially import substitute goods. The international community will demand the goods and services of the domestic country if prices of exports are relatively cheaper. Producing more as a result of credit with relatively stable interest rate will mean that the cost of production falls and that export of goods will be cheaper on the international community market and import goods relatively expensive. The inflow it must be noted will depend on foreigners' savings. Higher savings will ensure higher accumulation of international capital and higher inflow to trigger off these effects in the domestic economy with the underlying assumption. Where foreign savings are less, inflow will be less and the process of interest rate adjustment as described above will suffer more complexities. Less inflow will result in higher interest rate where investors increase their demand for loanable funds.

We assumed previously that, international capital flow comes in the form of financial aid. But, let's extend to technological or even physical and human capital. In this sense, we are considering both financial capital and physical and human capital. From the theory, technological advance has a direct effect on the PPF and on the market for loanable funds. When there is international capital flow in the form of technological innovation in one or few markets, it allows, through resource reallocation, for shifts in the PPF. The demand for loanable funds shifts to the right, as business firms takes advantage of technological inflows. The resulting higher incomes cause the supply of loanable funds to shifts to the right and that the interest rate though initially increases becomes indeterminate thereafter. Again we are back to the point of unchanging interest rate. It is important to point out that international capital flows in the form of technological advancement affects all stages of the production directly and proportionally, so that no reallocation of

resources among the different stages is called for. This is because understanding capital combination entails an understanding of the concept of complementarity and substitutability. International capital flows in different forms such as financial aid and physical and human capital and technological innovation ensures that all 'gaps' are filled. Lewin states that between any two points of time, during which unexpected changes will necessary have occurred, resources substitution will have been made in an attempt to adjust to the changes. Complementarity is a condition of plan equilibrium (stability), substitutability is a condition of plan disequilibrium (changes). Again, the scope for resources reallocation allows the implementation of technology that is usable only in one or a few stages to have an immediate or nearly immediate impact on current consumption. In this case the demand for loanable funds rises as producers seeks to take advantage of new international capital flow (technology) that directly affects early stage of production. The interest rate rises but the increased interest rate causes resources not directly involved in implementing the capital flow to be reallocated towards the late and final stages of production, which allows consumption to increase. As income increase and consumption increase the supply of loanable funds is driven back to the initial level.

In this case international capital flows under fixed exchange rate tends to inflate the domestic money supply, prices, and production and employment. These changes are not the result of the goods-and-services export surplus but rather a part of the means of bringing the surplus about. Under fluctuating exchange rates international capital flows causes exchange appreciation and an export surplus where necessary. With the money supply remaining under domestic control, this international capital flow will raise prices in the country as individual income increase as explained early on and production and employment increases. What does this mean for government deficit financing? The government will be in the position to increase for example income tax and seeks various ways of widening the tax 'net' to capture the increasing number of people been employed. This will enable government raise enough revenue to finance its deficit or better still write it off.

In an open economy where exports and imports are considered again and where the demand for loanable funds depends on expected profit opportunities, export to the international community will increase when higher profits are expected. Import (import substitute) will fall. With a relatively stable interest rate described above export prices will fall and import prices will relatively increase. Consideration should be taken of the fact

that the demand for loanable funds also depends on foreign as well as domestic demand if higher expected profit is foreseen. Foreigners will also increase their demand for loanable funds and or technology and this might cause interest rate to increase marginally. Under circumstance where domestic supply for loanable funds is relatively higher, interest rate will not be affected so much. But when domestic supply is not also enough, then interest rate will be affected. The opposite situation happens when lower profit margins are expected of both domestic and international demanders of loanable funds. This case also depends on how the international community is willing to supply this technological progress. Where these progresses are obsolete in the international community and add nothing to output but new in the domestic economy, supply will not be affected and the above repelling effects can be seen. But in case where there is a need for competition, interest rate will increase.

The capital based macro-economic theory also considers the change in intertemporal preferences. It simply hypothesizes an autonomous economy wide change in intertemporal preferences. For instance increasing doubt about the viability of social security cause people to save more for their retirements. More pointedly, the theory suggests that change in intertemporal preference cause the interest rate to change moving upward or downward. That is the change in credit –market conditions result in a decrease in the rate of interest and an increase in the amount of funds borrowed by the business community. But international capital flow fills the gap between demand and supply of loanable funds bringing interest rate back to its initial point. This is because the public has some set of time preference that determine its willingness to supply loanable funds in the form of saving, including holding of bank liabilities, as well as its willingness to demand loanable funds from the banking system and/or government. In general the quantity supplied of loanable funds (saving) will vary directly with the interest rate. The quantity demand of loanable funds (investment) will vary inversely with the interest rate. International capital flow in the form of financial aid increases the supply of money and the monetary system's role as a supplier of money and the public's role as a demander are an important subset of the broader market for loanable funds. At any point in time, inflows of international capital tend to make up excess demand for loanable funds and will bring interest rate down. Outflows also tend to reduce excess supply of money. This will maintain monetary equilibrium. If monetary equilibrium is maintained, it makes it that much easier for the loanable funds market to smoothly translate time preference into intertemporal exchanges (Horwitz). In this sense a country operating a fixed exchange

rate system tends to depend heavily on monetary policy and is greatly vulnerable to external shocks. This is because, in a situation where there is no international capital flow, a difference in the demand and supply for money cannot be eliminated and the interest rate will tend to rise. However, a country operating a flexible exchange rate may not have these problems but will have to face the problem of reduction in financial transfer due to higher exchange rate volatility and this will also cause a problem for interest rate stability (Elgar).

But the above analysis can be extended to the intertemporal preference of both domestic consumers and foreign consumers. In a situation where foreign consumers are future oriented and tend to save more of their income, the supply of loanable funds will increase and international capital flow will make up for the difference in savings and investment in the domestic economy. Where foreign consumers are not future oriented but domestic consumers are, less international capital flows are expected into the domestic economy and because less difference in savings and investment exists, the less capital inflows make up for the 'gap'.

Exports of the domestic economy under future oriented preference will increase as more funds are available for investment. Imports (import substitutes) of course will fall. But if the domestic economy is less future oriented, imports will increase and exports will fall because fewer funds will be available for investment.

The extension of the model basically considers interest rate movement and establishes that the interest rate will not change so much along the margins (fairly stable interest rate). We consider what happens to the various components of the capital model. In the first place, there is an unchanging rate of interest and these translate into an unchanging slope of the hypotenuse for the successive Hayekian triangles, because the slope of the hypotenuse measures the rate of interest. The interest rate allocates resources among the stages of production and more resources will be committed to the time-consuming production process. The vertical side of the Hayekian triangle increases and because international capital flow causes credit expansion, the horizontal side also increases. The PPF curve will shift outward and to the right. But this shift may depend on the consumption pattern whether the domestic or international economy is more future oriented. If the domestic economy consumers are future oriented, the gap between the previous level of consumption and the current level becomes smaller but the gap between the

previous and current investment level of the other side of the axis becomes much larger even though there will be general outward shift. This is the case of an unequal intertemporal preference.

Some aspects of the extended model considers the possibility if higher interest rate. Under circumstance where interest rate increase as a result of reduced international flow, the structure of production shortens thus the horizontal side of the Hayekian triangle reduces. The high interest rate reduces the profitability of long-term projects. Resources are allocated away from the earlier stages of production and into the late stages. Here, we observe movement along the PPF from point closer to the investment axis to point closer to the consumption axis.

2.2 A TEST OF THE EXTENDED MODEL

The table below shows the capital flows of all four countries in million of dollars and interest rate values in percentages.

Country	1990-2000	2001-2003	2004	2005	2006	2007	2008
Latvia							
International Capital Flow							
Inflow	226	n.a	713	n.a	1664	2247	1426
Outflow	-4	n.a	128	n.a	173	335	231
Interest rate	4.9	5.1	4.84	4.4	4.42	5.5	6.21
Lithuania							
International Capital Flow							
Inflow	222	n.a	1032	n.a	1840	2017	1815
Outflow	4	n.a	343	n.a	290	608	356
Interest rate	9.2	9.5	3.5	3.1	3.51	4.75	4.95
Kyrgyzstan							
International Capital Flow							
Inflows	39	n.a	n.a	43	182	208	233
Outflow	3	n.a	n.a	0	0	0	0
Interest rate	28.5	21.0	n.a	18.5	23.0	17.0	19.9
Kazakhstan							
International Capital Flow							
Inflows	851	n.a	n.a	1971	6278	11,126	14,543
Outflow	2	n.a	n.a	-146	-385	3151	3821
Interest rate	15.0	n.a	n.a	8.0	9.0	11.0	10.5

Let's consider how these four economics will fair in this explanation. We are testing an extension of the capital base macroeconomic theory to include international capital flow.

We have noticed the behaviour of interest rate in the theoretical sense. Lets us therefore analyze it in the empirical sense. International capital flow in Latvia between 1990 – 2000 averaged 226 million dollars. Interest rate also averaged 4.9 percent in the same period. For some unexplained reason, interest rate increased to 5.1 percent between 2001-2003. Figures for international capital flows are not know but we can notice that interest rate dropped to 4.84 percent in 2004 almost equalling the figure between 1990-2000. We could also notice that in the same period International capital flow increased from 226 to 713 million dollars. We then can say that, our theory is in line, because the rise in interest rate has been reduced by the inflow of international capital bringing it back to almost the initial level. As international capital flow continue to increase to 2247milliion dollars interest rate stay in the range of between 4.9 and 5.5 falling back to its mean value as marginal increase in inflow occur. Expect for 2008 which is a major outlier largely because of the global financial crises. But w do not rule out the possibility of increasing interest rate seen from 2006-2008 and reasons for that have already been given as seen in the extended model.

The same can be said of Lithuania. With the exception of 1990-2000 and 2008 figures which are outliers, international capital flow has increased from 1032 to 2017 million dollars. We can observe that interest rate decreased from 3.5 percent to 3.1 percent from 2004 to 2005 but came back to its initial value of about value of 3.51 percent when international capital flow increased to 1840 million dollars.

The pattern is not very much different in Kyrgyzstan when interest rate fell back to 17% almost equalling its initial value of 18.5 percent. Infact interest rate seems to have been in a range of 19.0 – 21.0 percent as international capital flow increases even in 2008. This is keeping interest rate from not fractuating too high or too low from its mean value.

Even though a clear pattern cannot be readily seen in the case of Kazakhstan, because of very high capital outflow, the table above still exhibit some truth in the theoretical analyses undertaken early. That is interest rate almost returned to the former figure of 9.0 percent in 2006 when international capital flow increased from 6278 to 14,543 million

2008. International capital flow keeps interest rate from not fractuating too high or too low from its mean value.

3.1 THE EXTENDED MODEL AND 100 PERCENT RESERVE RATIO, FREE BANKING SYSTEM AND BFH SYSTEM

From the explanation above it could therefore be stated that, interest rate movements is very much affected by International capital flows. Inflows will depend on the willingness of foreign savers, expected profit opportunities etc. We first consider the possibility of stable interest rate under these systems and later consider the possibility of higher interest rate. Based on the explanation of these two concepts given previously, about credit expansion, it could be stated that interest rate would basically be stable for a long time within the economy or that interest rate changes will not be possible. Under 100 percent reserve ratio, banks will only be seen as a safe keeping house and by that; they can only charge a 'fee' for that duty. The amount of fee accumulated will be the only source through which banks can lend. The right of banks to create deposit will be taken away from them. In terms of free banking system; banks cannot also expand credit because of 'build-up of trust and dread bank run'. For these reasons, credit expansion and contraction cannot fluctuate unnecessarily and interest rate, once fixed will be maintained for a long time. International capital flows and taxes received by the government therefore becomes a very important source of finance. In situation where the foreign community is willing to give out more capital flows, the domestic community will have their 'gap' between investment and saving catered for by these inflows. Interest rate will tend to be stable with the ongoing shift in demand and supply for loanable funds. But if the foreign community compete with the domestic community for loanable funds because of for example higher expected profit on investment and there is lesser capital inflow, interest rate will rise. This is due to the inability of banks under the free banking system and 100 percent reserve ratio to increase loanable funds for the business community. The pattern of expenditure will determine whether the country will be on a contraction, stationary or expansion path. If the government decides to even out the expenditure between consumption and investment and net investment is zero then the economy will be on the stationary point. The other two points gives a direct contrast to each other.

Growth is depicted by outward shifts in the PPF. As stated earlier on, we can start our analysis by looking at the behaviour of interest rate movement. Again we bring back the assumption of International capital flow in the form of financial aid. A more realistic case

will be considered later. Government expenditure of international capital inflows tends to benefit income earners through higher incomes; under 100 percent reserve ratio, credit expansion may not be possible because increased saving cannot be loaned out. But under free banking system, marginal increase of loanable funds out of increasing income can occur but this marginal increase will not be enough to cause interest rate to change. Recall also that we have explained why International capital flows in the form of financial aid will cause an unchanging interest rate with government expenditure benefiting income earners. We can therefore strongly conclude that, interest rate will remain unchanged or slightly fluctuate (down and up) about the existing value. But the possibility of rising interest rate under 100 percent reserve ratio and free banking system is not ruled out as already stated.

Under BFH system, the unit of account is defined physically in terms of many commodities and the function of money as a medium of exchange is separated from the unit of account. What this means is that individual gets increased income from the expenditure of international capital flow in not a single commodities but in different commodities. The business community also borrow in not a single commodity but in different commodities. Again international capital flows comes to the domestic economy not in a single commodity units but in different commodity unit. There will therefore be no room for scarcity of one commodity to drive its price up. The scarcity of one commodity is immediately compensated for by the relative non-scarcity of the other commodity. Because higher price will not be paid for borrowing, again interest rate will remain at the equilibrium point for a long time. Again we can consider the willingness of the international community to lend under the BFH system. Because different commodities units determine the supply of loanable funds in the foreign markets, no single commodity will be relatively scarce to drive up its price. There will therefore be free flow of capital because of the issue of compensation effect (one commodity compensate for the scarcity of the other commodity) under the BFH system. Since higher or lower prices are not paid for the demand of loanable funds, interest rate stability is assured.

We previously assumed that international capital flows comes in the form of financial aid. Let's consider a realistic case. That is international capital flows in the form of technological or physical and human capital and financial flows. Again interest rate changes will not occur under the free banking system and 100 percent reserve system. This is because, even though technological advancement will cause the business

community to increase their demand for loanable funds, the financial flow increases money supply because of increased income. Ongoing shifts in the demand and supply of loanable funds will not cause interest rate to change. Under Free banking system and 100 percent reserve, increases in the demand for loanable funds will not cause banks lending to increase because of the reason given earlier and also because the 'gap' for incentive in increasing borrowing has been consumed away by financial flows.

Under BFH system, different commodities serves as medium of exchange and therefore different commodity quantity will be borrowed at any moment in time. Under such as system, no bank could keep more of its note and deposit liabilities in circulation and of its checkable equity accounts outstanding than the public was willing to hold. A temporarily over expanded bank would experience adverse clearing balances and the resulting transfer of both assets and liabilities to banks with which the public was more willing to do business. (Yeager)

4.1 ANALYSIS OF THE 100 PERCENT RESERVES, FREE BANKING SYSTEM AND BFH SYSTEM AS WELL AS THE MONETARY SYSTEM IN THE FOUR COUNTRIES.

We can then consider how each of the four countries will fair under these systems and their current monetary system.

LITHUANIA

For some reason not directly connected with trade in goods-and services, there is International capital flow because of relatively higher interest rate or better profit prospects, changes in taxation or other governmental policies in Lithuania. Perhaps the international community is seizing favourable opportunities to float new securities on the Lithuanian market. Starting with international transactions imbalance, the capital movement now means overall disequilibrium in independently motivated transaction which will eventually come to equilibrium as explained earlier. Under 100 percent reserve and free banking system the disequilibrium between demand and supply may not even occur or even if it occurs, it will happen for a very short time. This is because banks tend to quickly absorb any such inflow as soon as possible. Lithuania has in place the currency board and operates a hard peg currency system. That is Lithuania establishes a fixed exchange rate between its litas (national currency) and the dollar. Under such system, the 'absorption' depressing cash balances effect occurs because of the resulting decline in

money supply available. There is automatic tendency for saving and investment to be equal at just this right level of money supply. They are made equal not so much by changes in the level of interest rate, but the explanation hinges on Keynes's 'fundamental psychological law' (Yeager). The 100 percent reserve and free banking system seems appealing because the internal adjustment to an external disturbance of any given size can proceed more impersonally and slowly. Under the current monetary system, if revenue and capital flow is not enough to maintain a particular peg, then different peg will have to be set. Government revenue and capital flow therefore becomes important in maintaining the peg because of constrained in government borrowing under the 100 percent reserve and free banking system. Under the BFH system, these capital flows again comes in not in the form of a single commodity, but in different commodities. This presents us with the possibility of corrective arbitrage. Much of the arbitrage would no doubt involve the operation of the banks at their clearinghouses in terms of interest rate equilibrium and pegging stabilization. What this means under the current Lithuanian monetary system is that, there will no risk of currency crises and subsequent sharp recession. Again there will be not a strong dependence of monetary policy because the BFH ignores base money - nothing comparable to gold or to government fiat money as we know today.

KYRGYZSTAN

Kyrgyzstan is operating a dirty floating monetary system. That is a system of floating exchange rate in which the government or the central bank occasionally intervene to changes the direction of the value of the country's currency. In most instances, the intervention aspect of a dirty float system is meant to act as a buffer against an external economic shock before its effect become truly disruptive to the domestic economy. Under 100 percent reserve and free banking system, government domestic borrowing will be very limited. Government will therefore have to use up its internally generated funds and capital inflow to manage this floating system. How deep or bad the floating is will determine how long the government can hold unto such maintenance. For example government can manage a 15 percent shift in floating than say a 50 percent shift. Because of government constraint of domestic borrowing, international capital flow will be basically used for such purpose. If government uses much of her capital flow in a short period, it cannot continue to manage anymore. For Kyrgyzstan to continue operating a dirty floating exchange rate system under 100 percent reserve and/or free banking system, the government should therefore more or less 'act' like a 'private individual'

whereby she seeks ways of increasing her domestic revenue and attracting more capital flow.

Under BHF system, the problem becomes less severe. Government revenue generation and International capital flow does not come in terms of one single commodity. The part of the floating to be managed by the government is managed in terms of different commodity. Managing the float in this case just equals to managing the value of the commodity basket used. Kyrgyzstan under the BFH system will have lesser problem with dealing with their dirty floating system

LATVIA AND KAZAKHSTAN

Latvia pegs her currency to the euro and Kazakhstan pegs her currency to the dollar. In effect, both countries are operating a pegged or fixed exchange rate. The main idea is to stabilize the value of their currency against the currency it is pegged to. This makes trade and investment between the two countries easier and more predictable. A similar analysis from the above could be given in this sense but with slight difference. While the government manages a percentage amount of the currency in the previous case, here the government manages 100 percent of the currency. What this means is that once government pegs the currency to either the euro or the dollar, it becomes their sole responsibility to keep the pegged value. Government revenues and International capital flow therefore becomes extremely important. If revenue and capital flow is not enough to maintain a particular peg, then a different peg will have to be set. Pegs will frequently change if revenue and capital flow are not enough and it would have been better off if both countries have not pegged. Of the two countries, under 100 percent reserve and free banking system Kazakhstan would have been able to manage its peg quite well than Latvia because of revenue and capital inflow from the Oil sector.

Under BHF system, The problem becomes less severe. Government revenue generation and International capital flow does not come in terms of one single commodity. The pegs to the euro or dollar are done in terms of different commodity value. Maintaining the pegs becomes easier because the increasing commodity value easily make up for the decreasing one. Once the peg is fixed, effort will now have to be channelled towards maintaining the value of the fixed basket. Both Latvia and Kazakhstan can therefore maintain their peg.

5.1 COMPARASIM OF THE VAROIOUS MONETARY SYSTEM IN RELATION TO THE ACTUAL MONETRAY SYSTEM IN THE FOUR COUNTIRES

LATVIA

The Bank of Latvia's monetary policy aims at maintaining exchange rate stability and controlling the amount of banks' reserves so as to limit excessive lending. After the proclamation of the Republic of Latvia in 1918, a large variety of different currencies were in circulation - ostrubles and ostmarks, German reichsmarks, the so-called Tsar rubles and kopecks, the so-called Money of Duma and krenkas, as well as promissory notes of several town municipalities. This is very similar with the free banking system but the only difference is with the fact that, currencies were issued by the municipal and other forgiem national authorities instead of banks. The Minister of Finance set official exchange rates for the currencies in circulation, thus recognized three foreign currencies as legal tender because of the increase in different curricies.

In 1940, the right of the bank of Latvia to circular money were taken away when the USSR took over the country. They were tasked with eusuring that the pegged exchanged rate of the lats against the USSR ruble was determined and maintained (1 lats = 1 ruble). In other words, the bank of Latvia kept a 100 percent reserve of the ruble to maintain the exchange rate at all time. Latvai until autumn 2008 kept a 100 percent foreign reserve of the monetary base but reduced it below 100 percent when there were troubles as part of the rescue of Parex bank. This is also similar to the 100 percent resevere requirement but the difference is that the requirement was of only one bank (Bank of Latvia) and not all banks in Latvia. The function of money as a unit of account and the medium of exchange was determine by two different authorities. This also brings out the issue of a BFH sytem even though this failed as both right was given back to a single authority (Bank of Latvia)

Latvia has established one of the most liberal foreign exchange regimes in the world. Latvian residents and foreigners alike are allowed to open accounts in lats (official currencies) and foreign currencies without any restrictions. They can buy and sell lats freely or exchange them for other currencies. To ensure free convertibility of the lats, the Bank of Latvia buys and sells unlimited amounts of the SDR (Special Drawing Rights) basket currencies to banks at their request. There are no restrictions even on capital account transactions. Latvia has been using the exchange-rate-based stabilization program since 1993. In mid-February 1994, the Bank of Latvia pegged the lats to the SDR

basket of currencies (at the rate 1 SDR = 0.7997 LVL). Experience shows that fixing the exchange rate to a basket of currencies instead of a single currency serves to promote long-term stability to which the Bank remains strongly committed (Latvianbanks.com, 2001-2010). The fixing of the exchange rate, if it is durable and credible, reduces uncertainty, eliminates exchange risk and provides businesses with a sound basis for planning and pricing, thereby fostering investment and international trade relations. A stable exchange rate imposes a constraint on domestic monetary policy (a so-called nominal anchor), which could be regarded as a useful safeguard against unsound policies. This policy with its attendant advantages is directly in line with the BFH system. The only difference been that the price of the lats (national currency) is pegged to baskets of currencies and not commodity baskets of goods.

LITHUANIA

After restoring its independence in 1918, for several years Lithuania did not have its own bank of issue. Several currencies were issued by foreign authorities and banks just as in the case of Latvia. For a period after World War I, currencies of other countries circulated in Lithuania. The whole credit system was to be developed from the ground up. With this we see a similarity with the free Banking system. The difference again is the fact that different currencies were not issued by the banks but by foreign national authorities. By agreement with the German Darlehnkasse Ost, the mark served as legal tender until the establishment of the bank of issue. Seeking relative price stability over a longer period, the Litas Credibility Law of 1994 pegged the litas to the US dollar at fixed exchange rate; pursuant to this Law, the litas is issued into circulation with a 100 per cent backing with gold and convertible currency reserves, and the main source of issue is the purchases of foreign exchange by the Bank of Lithuania. The international reserves, initially consisting of the inter-war Bank of Lithuania gold and foreign exchange that were returned by other central banks, were continuously supplemented with foreign exchange reserves accumulated by the Bank of Lithuania and invested following the international practices of central banks. Lithuania also has the currency board in place. It means that foreign currency reserves must be sufficient to ensure that all holders of its notes and coins (and all banks creditor of a Reserve Account at the currency board) can convert them into the reserve currency (usually 110–115% of the monetary base **Mo**). This is also similar to the 100 percent reserve ratio as banks creditor can draw on their accounts but the difference is also that, only the board keeps the 100 percent reserves. The various banks are allowed to run fractional reserve to some extent.

We can also see some similarity of the BFH system. The litas is denominated in a unit kept equal in value to a definite quantity of some commodity (gold and foreign exchange) by interconvertibility at a fixed ratio. The monetary commodity has a 'natural' scarcity value; it cannot be simply printed or written into existence. But the difference is while the redeemability is made with specific bundle of commodities, in our case, it is made with a single commodity.

The currency board in Lithuania does not attempt to manipulate interest rates by establishing a discount rate. The peg with the foreign currency tends to keep interest rates and inflation very closely aligned to those in the country against whose currency the peg is fixed. Likewise in the BFH system, interest rates are not manipulated by the government by controlling money supply but the peg of bundle of commodities determines interest rate. But the difference is that while the peg under the currency board is aligned to another currency, under the BFH system, it is aligned to bundle of commodities.

KAZAKHSTAN

By the introduction of the tenge (national currency), Kazakhstan's economy had been in a very difficult situation. In 1993 inflation rate totaled 2,265 percent and the production output decreased by nearly 50 percent in 1991 – 1995. To address these problems it was decided to conduct tough macroeconomic policy, which included a restriction of the credit expansion. In 1994 the National Bank stopped the practice of issuing loans on easy terms as well as issuing loans directly to enterprises. In 1995 the National Bank ceased to issue loans to economy according to the Government's directive and started to run a 100 percent reserve ratio. This tough monetary policy reduced inflation rate from 2,265 percent to 60 percent. This is similar to a 100 percent reserve system but the difference is that the system was operated by only the national bank and the second tier banking were allowed their normal operations.

Kazakhstan basically has not pursued a monetary policy that is very much similar to the free banking system. The farthest extent they came closer was allowing domestic banks to operate their normal way without restrictions even when the central bank pursued a 100 percent ratio in the wake to curb the high inflation problem. And again, domestic banks expanded rapidly on the back of foreign borrowing. This has some similarities under the free banking system where banks were totally free but the difference been that, under no

circumstance were they allowed to circulate their own currencies either throughout history or presently.

One monetary policy pursued by Kazakhstan has involved pegging its currency to a basket of basic mineral and agriculture commodities produced and exported by the country. The idea is that a broad-based commodity standard of this sort would not be subject to the vicissitudes of a single commodity such as gold, because fluctuations of its components would average out somewhat. Such policy is similar with the BFH system but the difference is that the export commodities in basket are varied over time depending on, as and when new resources are found and price movements while for the BFH system, the value of the commodity baskets are fixed overtime.

KYRGYZSTAN

As of January 1, 1998, under the terms of the new monetary law, the National Bank of the Kyrgyz Republic, passed on July 2, 1997, the Bank of Kyrgyzstan did not have the right to grant credits to the Government of the Kyrgyz Republic and other government agencies and thus kept almost a 100 percent reserve ratio. This is similar to the system as in Kazakhstan and also similar to the 100 percent reserve requirement. The difference is that, the central bank only kept the ratio and other banks were allowed to run their fractional reserves. Government securities issues were the only form allowed for domestic financing of the budget deficit. We don't know whether this law has been scarped or not. Again the central bank of Kyrgyzstan sized to the lender of last resort to the commercial banks. The banks had rights and freedom to do interbank transfer of loans and loans repayments. This is also similar to the free banking system but the difference for sure is the inability of banks to print and circulate its own currency.

In order to maintain liquidity of banks, the Bank of Kyrgyzstan set up a monetary policy which involved granting short-term interest-bearing repayable loans to banks for the period of not more than six months, under the conditions that the bank present a value security as collateral or that the bank could present a basket of securities as collateral. The basket of collateral may involve gold and other precious metal, foreign currency, bills of exchange in the national and foreign currencies maturing within six months, deposits at the Bank of Kyrgyzstan, securities issued by the government of Kyrgyz Republic. In cases established by the Board of Directors of the Bank of Kyrgyzstan, other assets and

commodity-backed papers may serve as security. This is also similar to the BFH system but in this case, it is rather a basket of securities and not commodity basket and also the transaction is between the central bank and the various banks seeking loan facilities and not individual consumers.

CONCLUSION

From the extension of the capital based macro economic theory to include international capital flow, we saw that interest rate change may rarely occur. Inflows and outflows will cause interest rate to be stable. We saw that the extension was a quit successful in all four countries. We later analyzed all four countries monetary system under BFH system, 100 percent reserve ratio and free banking system and saw how each one will fair.

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