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What Causes Bank Asset Substitution in Kazakhstan? Explaining Dollarization in a Transition Economy

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WHAT CAUSES BANK ASSET SUBSTITUTION IN KAZAKHSTAN?

EXPLAINING DOLLARIZATION IN A TRANSITION ECONOMY

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ABSTRACT

Dollarization comes in several forms. The type that this paper examines is asset substitution, when savers hold dollar assets in bank accounts, instead of local currency. This paper estimates demand for dollar accounts. It shows that inflation risk explains asset dollarization more effectively than exchange risk. This result is unexpected. Households are more motivated than firms are to store assets in dollar accounts.

This study examines data from Kazakhstan. Kazakhstan has a strong banking system and a healthy economy for a former Soviet Republic. It is seen as one of the most market-oriented, FSU countries. However, Kazakhstan also has a large demand for a means of storing savings in dollars, rather than in the local currency.

The paper combines statistical methods with anecdotal information in order to improve our understanding of a paradoxical occurrence.

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Introduction.

The former Soviet Union (FSU) exhibits higher degrees of dollarization than do other transition countries, that is Central and Eastern European states, according to Feige (2003). This is not surprising. The Soviet Union had less development of market-oriented economic institutions, and it began transition to a market economy later than non-FSU, transition economies. Of the FSU countries, Kazakhstan is one of the most dollarized economies.

When we speak of dollarization, we mean the use of any foreign currency, as a substitute for the domestic currency. Dollarization can be currency substitution, if there is a preference for trading in a foreign currency, or asset substitution, if there is a preference for saving in a foreign currency. Asset dollarization occurs in Kazakhstan when a saver choose to save in a dollar saving account, rather than in a tenge saving account.

The currency of Kazakhstan, adopted in 1993, is the tenge.[2] Only the tenge can serve as legal tender. Holding dollars and saving in dollars is legal, but purchases are made with tenge.[3] This does not mean that prices are not often given in dollars.

There is another form of dollarization that is not discussed in the literature, which I refer to as "price-normalizing dollarization." This occurs when goods and services are quoted in dollar prices, but are paid in local currency. This arises frequently, in places such as Kazakhstan, when the commodity is a "large-ticket" (price-elastic) item,[4] or the seller wishes to insure against exchange-rate fluctuation, but payment must be made in the local currency.

There is some confusion in popular writing of the phrase, "dollarization of prices," with international price convergence. This is a misuse of the term dollarization.

The interesting question to ask about a dollarized economy is how much of the money supply is made up from foreign currencies? One cannot directly observe the degree of currency

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[2] "Tenge," pronounced "ten-gɜ′" or "teng-gɜ′." This is the Turkí. The word for money, so it serves as both singular - 1 tenge - and plural - 10 tenge. At the present, 1.5 tenge equal approximately 1 U.S. cent, or 150 tenge to the dollar.

[3] At present, these are the currency restrictions in the Republic of Kazakhstan:

- "All payments on operations between residents should be made only in currency of the Republic of Kazakhstan, except for cases stipulated by normative legal acts of the National Bank of the Republic of Kazakhstan, as well as tax and customs legislation;
- Purchase, sale and exchange of foreign currency, omitting authorized banks and authorized organizations carrying out separate kinds of bank operations, as well as their exchange offices, are forbidden.

[4] Examples of items for which prices are given in dollars, though goods are paid for with tenge, are: lodging, automobiles, cell-phone and cable TV services, artists' work, and electronics.

substitution. In countries such as Kazakhstan, it is far easier to gauge asset dollarization, which can be directly observed. These banking data are reported to the central bank.

Data are available from the Statistical Agency of Kazakhstan, IMF, and the National Bank of Kazakhstan (NBK). The National Bank of Kazakhstan's recent data are assumed to be the most correct, as the National Bank is the reporting authority on all matters regarding asset-holding in Kazakhstan. These data series indicate high levels of dollarization with a preference by households for foreign currency asset holding.

When the USSR crumbled and the financial sector liberalized, many people continued to prefer dollars to other foreign currencies.[5] When prices, which were controlled under the planned economic system were freed, inflation resulted, as domestic prices adjusted to meet international prices. Those who were holding foreign currency when the Soviet Union dissolved were far better off than those who were holding rapidly depreciating rubles.

Today, acquiring foreign currency is simple in transition countries with liberalized financial sectors, such as Kazakhstan. Money-changing kiosks are found easily in the cities. One may change the local currency into dollars, euros, rubles, or currencies of neighboring Central Asian states.[6] Firms and households use saving accounts, which may or may not be interest bearing, and one may save in the local or in dollars.

Checking accounts are nonexistent, and debit cards are uncommon. Pre-paid "credit" card accounts are available, but uncommon. A lack of "Rule of Law" makes it impossible to implement time-saving, liquidity-increasing, financial instruments for consumers, so trade is cash-based. More developed credit instruments will increase the demand for tenge assets.

It is not possible to separate dollar account savers who are local and who are foreign, as one cannot differentiate in the data between accounts held by locals and those held by foreigner-households or foreign firms.   It is also not possible to correctly gauge dollars held for transactions, currency substitution, which is why Feige has to use a proxy system.

It *is* possible, however, to show how some factors influence household and firm willingness to save in dollars versus tenge. Research in this field has not yet explained what

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[5] In Kazakhstan, the domestic currency is worth more euros than dollars. Nevertheless, individuals are likely to hold dollars and less likely to hold euros or legacy currencies. Bank deposits are available in dollars, though euro-accounts are not. Dollars are more likely to serve as a medium of exchange, than is the euro.
[6] Although China is also Kazakhstan's neighbor, it is not easy to change tenge into the currency of China.

causes dollarization in transition countries. This paper expands our understanding of what influences willingness to substitute currencies in asset saving in a transitional economy.

Dollarization Analysis.

An official (Kazakhstani) source provided data that suggested that dollarization ranged from 13 to 28 percent and declined after 1998. This is consistent with an IMF publication that indicated 21.8 percent dollarization in 1995. According to Erlan Zamaubetov of the National Bank, the ratio FCD/TCD rose to 50 percent in 2002, but had fallen to 44 percent in March 2003.[7] The NBK data indicte that in May 2003, 49 percent of currency held in Kazakh banks was held in tenge accounts; 51 percent was held in dollar accounts.

Feige's work estimates dollarization using a proxy system. He estimates that per capita foreign currency in circulation in 2001[8] ranged from 5 to 10 USD in Macedonia and Uzbekistan to 1,024 and 1,209 in Kazakhstan and Latvia.[9] Feige estimates that dollars accounted for 95 percent of total currency in Kazakhstan. "The highest percentage of [foreign currency in circulation] holdings is found in Kazakhstan, with Russian Azerbaijan, Georgia, and Latvia all having more than 70 percent of their total currency supply held in the form of [foreign currency in circulation]."[10] If Feige's statistics are anywhere near being correct, there is a great deal of U.S. dollars floating around in the economy. Yet, this is a cash society where dollars are not accepted for purchases in most cases. One explanation for where these dollars are going is asset dollarization.

What is asset-dollarization?

Asset-substitution dollarization is defined as the ratio of foreign currency deposits (FCD) to total currency deposits (TCD). In the case of Kazakhstan, the deposit ratio (DEP) that measures asset dollarization is: $DEP = \dfrac{\$Deposits}{(\$Deposits) + (Tenge.Deposits'.\$value)}$. Depending on which source of data is used, this ratio may vary.

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[7] The source for this is a talk that was given by this National Bank official at KIMEP in Spring 2003.

[8] Feige, E. 2003. *The Dynamics of Currency Substitution, Asset Substitution and De facto Dollarization and Euroization in Transition Countries.* Paper presented at the 8th Dubrovnik Economic Conference "Monetary Policy and Currency Substitution in the Emerging Markets, 26-29 June 2002, and also at the American Economics Association Annual Meeting, January 2003, Washington D.C.

[9] Using the same comparison as for 1999 (using May 2003 data and an estimate for population for 2003), average USD per Kazakhstani is 33,880 USD.

[10] Feige, E. 2003: p. 14.

Dollarization is said to have begun in 1993-1994 when inflation rose sharply. This would offer an explanation as to why households are so likely to hold their savings in foreign currency accounts.

Differences between households and firms in dollar-holdings.

It would appear that 70 to 80 percent of money supply exists in the form of bank deposits. The remaining 20 to 30 percent exist mainly in the form of cash. The actual data on currency holdings are not available, although Feige (2003) has estimated that currency substitution in high in Kazakhstan, based upon a proxy method of estimation. Bank assets are available and they show that more money is being held in the form of dollars than in tenge.

Feige suggested that Kazakhstan is at the forefront for dollarization among FSU countries. At the same time, investment analysts are finding that the banking system in Kazakhstan is among the best in the FSU. So why is dollarization so extreme in Kazakhstan?

The National Bank of Kazakhstan (NBK) supervises banks, which are required to submit financial statements concerning their accounts. These statements include data for both dollar and tenge accounts and "physical" (household) accounts and "juridical" (corporate) accounts.

**Table 1: Bank Deposits, Household and Corporate, Tenge and Dollar Accounts**

Year	Deposits of Physical Accounts		Deposits in Juridical Accounts	
	in tenge (1000)	in USD	in tenge (1000)	in USD
1998	20,967,246	10,672,096	33,871,219	42,683,189
1999	28,347,064	26,643,965	57,870,313	67,047,331
2000	32,917,759	58,791,173	105,331,659	108,984,143
2001	49,469,927	136,609,855	119,378,116	182,284,828
2002	57,371,577	187,609,029	122,303,239	116,786,446

Source: National Bank of Kazakhstan

We see from Table 1, that households are more likely to have assets stored in dollars than are firms. We see slightly increasing ratio of assets in dollars to tenge for households.

Today a significant differential is evident in saving in dollars vs. tenge between households and firms, as seen in Figure 1. While funds in local currency accounts are increasing, more saving is maintained in foreign currency, rather than local currency, accounts, particularly by households. Dollarization by firms may be falling, indicating different perspectives or different degrees of risk aversion.

Figure 1: Dollar (*Valuty*) Accounts to Tenge Accounts Ratio
"Physical," i.e., Individual, Accounts or Juridical," i.e., Corporate, Accounts
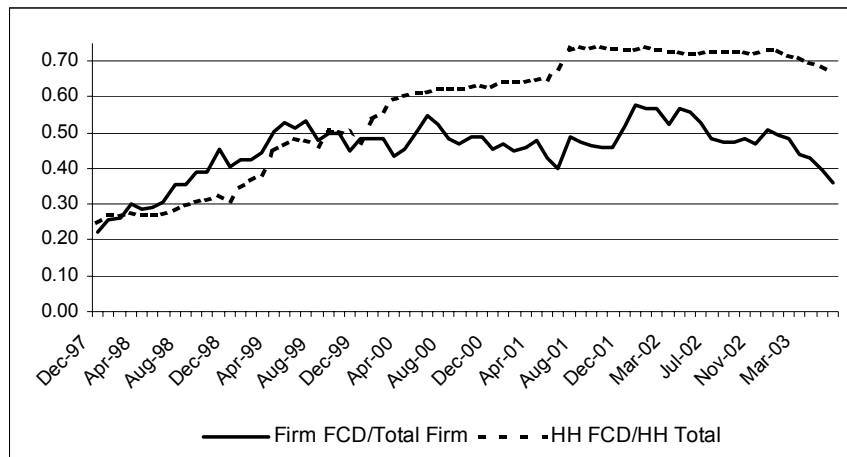
Source: National Bank of Kazakhstan

A divergence between the asset-storing behavior of firms and households is evident. This trend seems apparent after 1999. While households hold only 10.46 percent of bank deposit assets, 94.6 percent of these holdings are in *valuty,* or foreign current deposit, accounts. The rise in households' FCD is shown in Figure 2 below.

Figure 2: Breakdown of Households' Bank Assets, nominal, mil. USD
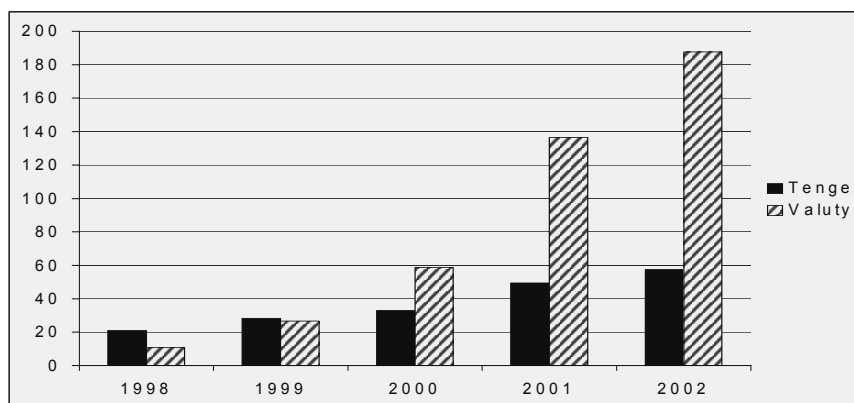
Source: National Bank of Kazakhstan

What does this tell us? It tells us that individual consumers lack confidence in their local currency and monetary system. If savers were risk-neutral, or if risks from saving in dollars were equal to risks from saving in tenge, we would expect depositors to be indifferent. This is not what is observed.

How to explain demand for dollar-accounts?

One obvious explanation for dollarization, especially when it occurs in household accounts, is fear, or risk aversion. What fear is this? Individuals fear high inflation that will erode their savings. They saw this happen when the Soviet Union collapsed and they saw this

happen after prices that had been controlled adjusted to world prices.   Many people tell stories of how their parents lost a lifetime of savings when their savings from Soviet earnings could no longer purchase a fraction of what it had.   What other kind of risk do people try to avoid by saving in dollars? They fear relative currency devaluation through worsening exchange rates. When the government decided to float the tenge, the value of the tenge fell to a small percentage of its former exchange value in a matter of days.

The government elected to move from a fixed to a floating exchange rate in April 1998. This naturally was followed by wide adjustments in the Kazakh tenge during 1998 and 1999.. Consequently, the tenge depreciated against the dollar until 2003 when the dollar fell, as can be seen in Figure 3 below.

The explanation given by the World Bank for this government response was that depreciation of the tenge would counteract lagging foreign direct investment due to falling oil prices[11] and help trade.   Russia was Kazakhstan's main trading partner; the Russian Crisis decreased demand for Kazakhstani metals and other goods. However, allowing the tenge to float was a deliberate decision, accompanied by IMF support. Regardless of the reasons for this reform, allowing the tenge to float resulted in an increase in the exchange rate of tenge-to-dollars, or depreciation.

These events are common to all developing countries. A developing country may experience high inflation and exchange rate variability.

Figure 3: Kazakh Tenge per USD, Kazakhstan, Jan. 1998 to Feb. 2003
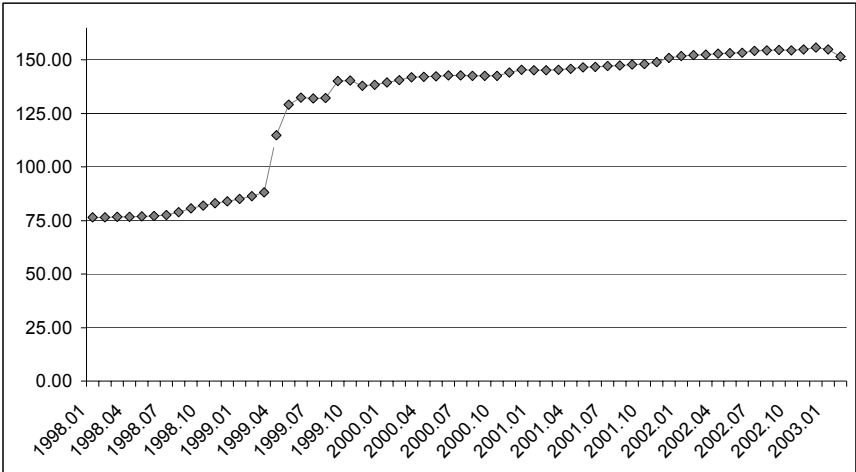
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[11] World Bank Group. 1999. "Kazakhstan Devalues the Tenge and Prevents a Trade War," *Transition Newsletter*. March-April: 12.

Over this period, the exchange rate Kazakh tenge per dollar (KZT/USD) grew from 76 to a high of 156. The downturn at the end of this trend indicates the beginning of USD depreciation. The tenge may have begun to float in 1998, but the real depreciation came one year later when the price of a dollar in tenge increased 34 percent.

The inflation rate was been in the double digits, and has risen steadily, as seen in Figure 4. (This was after it exceeded one thousand percent in 1992 and two thousand percent in 1993.) Kazakhstan did not experienced true "hyperinflation," but hyperinflation is not needed for the inflation rate to influence the foreign deposit rate.

The last five years have experienced monthly inflation and deflation, with extreme variability in March and April of 1998; otherwise, statistics ranged from −1.0 to 4.8 percent monthly inflation. Overall inflation between April 1998 and June 2003 was been 47 percent. The inflation rate for 2002 was 12 percent.

Figure 4: Price Index, end of period, Kazakhstan, Jan. 1998 to Feb. 2003
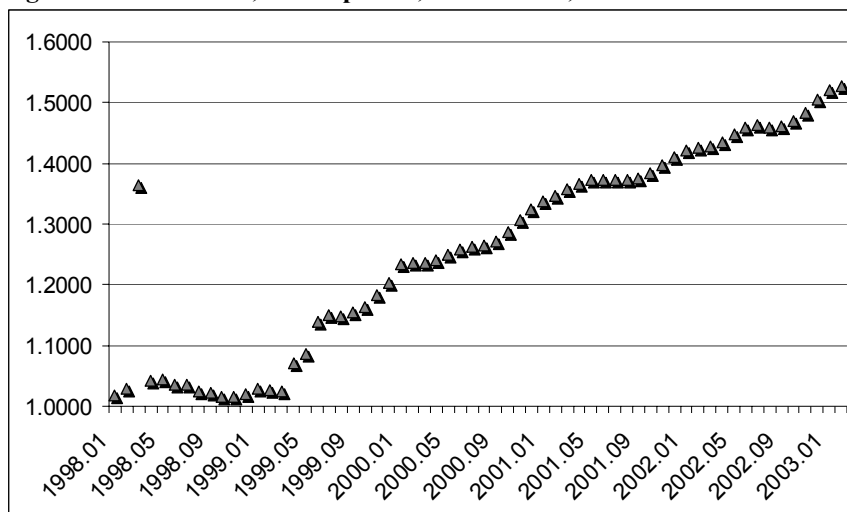
A lack of confidence in the domestic currency may increase *valuty* holdings. Histories of inflation and currency devaluation will increase dollarization, as locals attempt to minimize seignorage costs and exchange risks. Inflation rates, as indicated here by CPI, are likely to be important in predicting dollarization. Although inflation and exchange rate risk are the most common explanations given for dollarization, there are many variables that could increase dollarization, that we cannot yet include, because monthly data are not available. Much of Kazakhstan's economic growth has been a result of FDI and resource exports. For example, the

correlation between the deposit ratio and oil and gas FDI is 0.80. These factors may influence both savings and the propensity to save in dollars as opposed to in tenge.

It is also relevant to point out the considerable role of FDI in Kazakhstani banking. Between 1993 to 2000, 206 million (nominal) USD of FDI were invested in the financial sector. Of this $206 million, 93 percent was in monetary intermediation (192.3 million USD).

International trade may increase dollar asset holdings. It is possible that foreign currency deposits are a result of foreign investors who wish to decrease transaction costs by holding firm assets in dollars. This may make it easier to repatriate profits.

Because of bank failures in the past, people may believe that holding dollars is a better way to safeguard their assets. That is, they may believe that banks that hold dollar assets themselves are more secure.

Many banks that opened early in the reform process failed. Between 1997 to 2000, the total number of domestically- and foreign-owned banks registered in Kazakhstan fell from 82 to 47. In 1997, the most frequent level of bank capitalization was 80 to 130 million tenge.[12] By 2000, no bank held such little capital stock, and the mode for capital stock had risen to 500 to 1300 million tenge.[13] The number of undercapitalized banks decreased while assets per bank increased over time. Dollar account data were first reported in December 1997, so there are insufficient data to measure the effects of bank closings statistically.

The above variables are unfortunately not considered because of lack of available data. For now, we can only look at the simple correlations for annual data. Some of these are presented in the Appendix, in Figures 6 to 10. These suggest that the deposit ratio of FCD to TCD increases with GNP, FDI, net exports, and monthly salary, and decreases with population.

Demand for dollar-accounts.

With the monthly data for bank deposits, CPI, and exchange rates, let us explore which most impacts Kazakhstani asset holders. The dependant variable is the ratio of foreign currency deposits (FCD) to total currency deposits (TCD), which tells us the percentage of bank assets for which a foreign currency is preferred over the local currency for maintaining the value of one's savings.

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[12] This value in dollars is $575,000-$935,000 using the 2004 exchange rate. Using the exchange rate of December 1997, this value is $1.1-$1.7 million dollars.
[13] *Statisticheskii Yezhegodnik Kazahstana 2001:* 396

Figure 5 indicates the increase over time of foreign deposits relative to total deposits. The overall ratio has increased to higher than 60 percent, although 2003 saw a decrease in this ratio.

Figure 5: FCD/TCD, Jan. 1998 to Feb. 2003
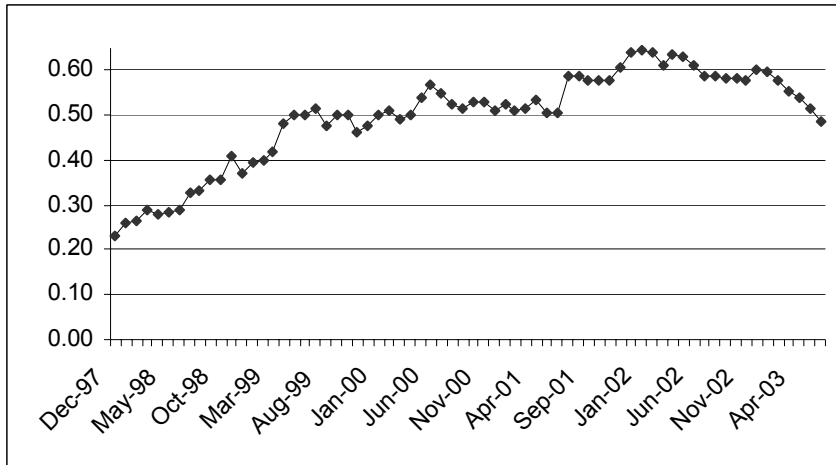
Source: National Bank of Kazakhstan

It is possible that dollarization peaked at the beginning of 2002 at 64 percent. The trend still remains quite high, with more than 50 percent of bank savings stored in a foreign currency.

The best estimation for modeling the deposit ratio uses OLS methods. The logged value of the ratio of FCD to TCD is estimated as a function of inflation and the exchange rate. The expected sign for CPI is positive; inflation will decrease the value of one's savings in tenge. The expected sign for the exchange rate of KZT to USD is positive; depreciation or an increase in KZT/USD means that $1 is equal to more tenge, so the preference for dollars should increase. The logged model without a constant is reported below. Using this monthly data from 1998 to 2002, we see that:

$$Log(DEP) = 1.76 * Log(CPI) - 0.23 * Log(EXCH)$$
$$R^2 = .49, N = 62$$

where *DEP*=deposit ratio=FCD/TCD; *CPI*=consumer price index; *EXCH*=KZT/USD. Coefficients are highly significant. The expected sign for CPI is observed. When there is inflation, asset dollarization rises. The expected sign for the exchange rate is not observed. When $1 acquires fewer tenge (the exchange rate of KZT/USD falls) dollarization rises. This would suggest that an income effect dominates risk aversion.

Another interpretation of a logged equation such as this is the percentage by which inflation and exchange rate contribute to dollarization. For every 1 percent increase in inflation, there is a corresponding 1.76 percent increase in dollarization, and for every 1 percent decrease in the KZT/USD exchange rate, there is a two-tenths' percent increase in dollarization. This suggests that, judging from data from the 1990s, households and firms fear high inflation more than a fall in the exchange rate.

When using nonlagged variables, we see a small, nearly zero, coefficient for EXCH, although the R^2 value is higher (89 percent is explained). This suggests that although the growth of the tenge decreases dollarization, that the exchange rate is not as important as is inflation. This model is not included here.

Is there a lag-effect, and if so, what is the duration of the lag? That is, how long does it take households and firms in Kazakhstan to respond to an increase in inflation or a fall in the exchange rate?

The initial model included independent variables for time, a constant, contemporaneous and three monthly lagged variables for changes in the price-regime and exchange-regime. This successfully explained 96 percent of deviation in dollarization, but most of the lags were superfluous.

As variables were dropped for lack of significance, the current exchange rate became significant only at the 75th percentile. When all insignificant variables were dropped, the remaining model was:

$$DEP_t = 0.230 * \underset{2.68}{INFL_t} - .147 * \underset{-2.02}{INFL_{t-1}} + .800 * \underset{12.21}{DEP_{t-1}}$$

$$R^2 = 0.94$$

As the non-lagged equation suggested, inflation was far more relevant to dollarization, than was the exchange rate. Past behavior (past dollarization) predicted current behavior. Lags beyond one month lack importance. Both INFL variables' coefficients were significant, but the past lag reversed the sign.

Perhaps instead of expecting trends to continue, people expect the opposite. When inflation was high, they may have thought, "prices cannot go higher," or when prices seemed stable, they thought, "this cannot continue." This equation also suggests habit-formation; if assets were saved in dollar accounts last month, they will be saved in dollar accounts this month.

The fact that exchange rate is not important tells us something interesting. Firstly that Kazakhstanis fear inflation, but trust the tenge. The tenge is readily convertible and has appreciated relative to the dollar. This would seem to calm asset holders. Inflation, on the other hand, seems less predictable.

One thing that is observable in Kazakhstan is that many prices do not reflect world prices as of yet. Prices for domestic goods are very low and prices for imported goods are higher than can be explained by transportation costs. This lack of market integration with global markets suggests that prices will continue to adjust and that people cannot accurately predict future prices.

Conclusion.

This paper does not seek to quantify dollarization, but to compare two risks that could cause asset dollarization. It seeks to improve our understanding of dollarization in the FSU, using more than five years' of Kazakhstani data. It is important to remember that Kazakhstan is one of the "successful" transition economies in the CIS. Hence, behavioral responses to these risks may be greater in other CIS countries.

The data shortage does not diminish what we have learned regarding policy. Avoidance of risk from inflation appears to play a greater role than does exchange rate risk.

The general statistics indicate that the preference for dollars is stronger among household savers than with firms. The trend has been increasing dollarization, even as structural reforms have been established that create a much healthier macroeconomy.

Dollarization as a whole is only dangerous to the Kazakhstani economy insofar as it limits monetary control and opens up the economy to a type of contagion effect if the dollar becomes destabilized. However, there is probably much less risk of the dollar becoming destabilized than there is the tenge destabilizing, which also is a very small risk. The U.S. dollar impacts the domestic real money supply,[14] when money supply is estimated as a function of national income, local and foreign currency deposits, and interest rates. This impacts monetary policy and the ability to conduct seignorage. However, given Kazakhstan's Transparency International corruption rating and high income, consumption, export taxes and fines levied on

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[14] This result is from unpublished work outside of this research paper. The coefficient for foreign deposits is positive and statistically significant at the 99th percentile. The foreign interest rate is negative and statistically significant at the 90th percentile.

producers, the lack of seignorage taxes may be a boon to those who work and live in Kazakhstan. Nevertheless, it remains that dollarization will influence monetary policy, while at the same time, monetary and fiscal control may be that which most influences asset-dollarization.

If authorities wish to fully control the money supply, the National Bank of Kazakhstan will have to take appropriate measures. The IMF has recommended that dollarization be curbed, but that the NBK maintain dollar accounts as a saving option. Taking appropriate measures is made more difficult by foreign capital that floods into the country (FDI) and high rates of GDP growth (about 10 percent annually). The government is beginning to loosen its tight fiscal control. Expanding transfer payments, decreasing taxes, and more government spending will increase inflation. It is not clear how well Kazakhstanis understand the relationship between these factors and inflation.   The two models estimated here predict higher dollarization if inflation increases.

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Appended Figures.

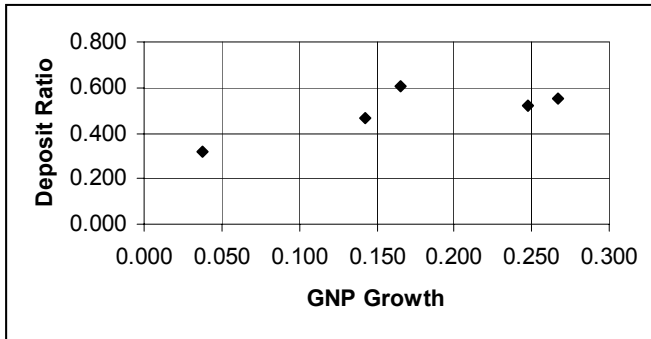**Figure 6: Correlation between Deposit Ratio and Growth of GNP, 1998-2001**

Figure 7: Correlation between FDI and Deposit Ratio, 1998-2002
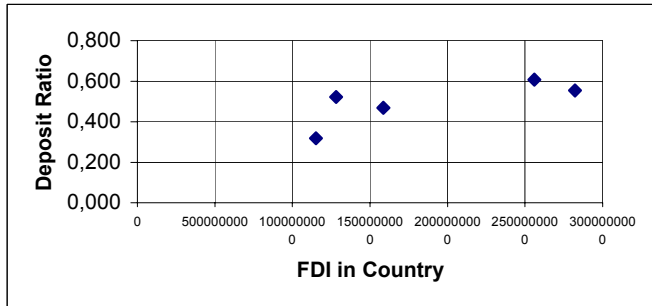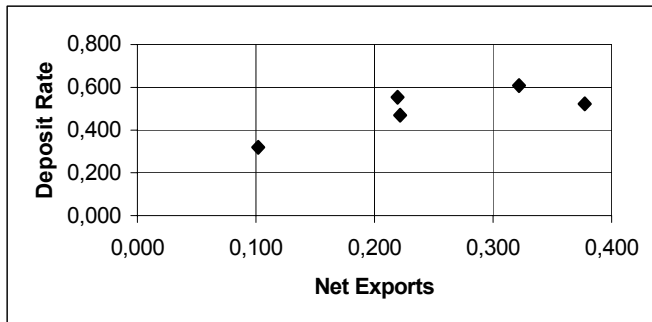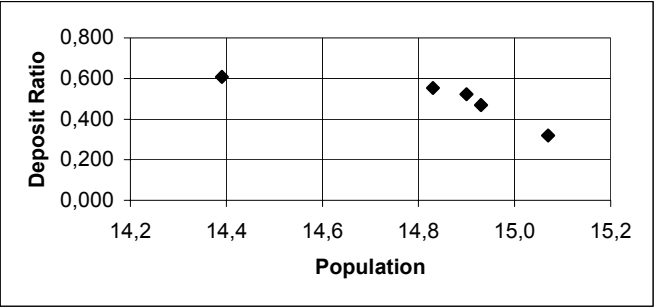

Figure 8: Net Exports and Deposit Ratio Correlations, 1998-2002

Figure 9: Correlation between Population Growth, 1998-2002

Figure 10: Monthly Wages and Deposit Ratio Correlations, 1999-2002

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