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Kazakhstan: The Case for Floating and Inflation Forecast Targeting

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Table of Contents

| | |
|---|----|
| Preface..... | 3 |
| I. Introduction | 4 |
| II. Overview of Monetary Policy Regime Options..... | 5 |
| III. The Case for Floating in Kazakhstan..... | 9 |
| IV. Managed Floating or Inflation Targeting | 10 |
| A. Exchange Rate Targeting..... | 11 |
| B. Inflation Targeting..... | 12 |
| V. Conclusion | 14 |
| Bibliography | 15 |

PREFACE

The Asian Development Bank is conducting a technical assistance program for the National Bank of Kazakhstan (NBK) to strengthen its foreign exchange reserve management capabilities (including as administrator of the National Fund) and its implementation of an inflation forecast targeting (IFT) monetary policy.¹ As part of the ADB's assistance to the NBK in developing its capacity to implement IFT, this background paper prepared by Warren Coats reviews the case for IFT in Kazakhstan and the steps needed to implement it. It is meant to contribute to the debate within the NBK and the Government of Kazakhstan over whether and when to fully implement an inflation targeting policy regime. David Kemme continues to assist the NBK develop a core quarterly inflation forecasting model.

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Dr. Kemme currently holds the William N. Morris Chair of Excellence in International Economics at the University of Memphis and now serves as an ADB Consultant on monetary economics and econometric modeling. He has over twenty five years of professional experience working in Eastern Europe and the countries of the former Soviet Union with training, research or technical assistance projects in Armenia, Bulgaria, the Czech Republic, Hungary, Kazakhstan, Poland, Russia, Slovakia, and Ukraine. He has published extensively on economic issues of transition economies in scholarly and professional journals.

¹ TA 4431-KAZ Financial Sector Governance, approved in November 2004. The TA also supports National Bank of Kazakhstan in strengthening governance for financial assets managed by NBK, which include official reserves and the National Fund. Responsible ADB staff is Jurgen Conrad (East and Central Asia Department).

I. INTRODUCTION

The NBK has developed much of the infrastructure needed for inflation targeting. Jointly with the government it sets broad inflation objectives for the next three years ahead and publishes an Inflation Report. It has put in place the instruments needed to implement its policies and allows the market to determine the nominal exchange rate much (but not all) of the time. It is well advanced in developing a quarterly inflation forecasting model, on which work continues, though staff shortages make progress relatively slow. Beyond further work on its inflation forecasting model, two steps remain before the NBK joins the ranks of inflation targeters: a) The regular time table and process by which quarterly inflation forecasts are produced and discussed by NBK management as the basis for setting policy instruments and communicating them to the public need to be completed and strengthened; and b) the NBK must leave the exchange rate to the market (other than smoothing excessive volatility).

With a relatively open balance of payments capital account (free capital mobility), the behavior of Kazakhstan's real exchange rate (the nominal exchange rate adjusted for the difference in domestic and foreign inflation rates) reflects fiscal policies, oil prices, real economy developments and international factors. The NBK is not able to control the real exchange rate. If its interventions resist the appreciation of the nominal exchange rate when market equilibrium requires a real appreciation, that appreciation will be achieved through higher domestic inflation. Thus, in order to become a full fledged inflation targeter and to be held accountable for an inflation target, the government and the NBK must give up their concern for the path of the tenge exchange rate.

None-the-less, the NBK resists exchange rate movements from time to time to the detriment of its inflation objectives. The result has been a more volatile exchange rate than would result from explicitly targeting the nominal exchange rate and higher and more variable inflation than would result from inflation targeting. It would be economically better for Kazakhstan to make a clear commitment to one regime or the other. This is ultimately a political decision, and one that Kazakhstan has been debating for some time.

This paper's goal is to help the debate over monetary policy regimes come to a conclusion so that the NBK may move forward with a clear and coherent policy. Its conclusion is that as a significant oil exporter, Kazakhstan needs exchange rate flexibility² and that this flexibility will be better served by an inflation target than by an exchange rate target.

² See Husain 2006.

II. OVERVIEW OF MONETARY POLICY REGIME OPTIONS

One way or another monetary policy comes down to central bank regulation of the value of the currency it issues. There are several fundamentally different ways in which countries can pursue a price level objective. One is simply to administer prices in accordance with that objective. Ultimately though, state administered prices requires state-administered investment, production, and distribution. Historically this has been associated with central planning, productive and allocative inefficiency, low levels of income, persistent market disequilibrium as evidenced by long lines for poor quality goods, *inter alia*. The desire to allocate resources on the basis of the profit incentive and market-determined price signals of consumer demand and the cost of production require the abandonment of administered prices. This note discusses control of the value of money when the prices of goods and services are determined by the market.

When individual prices are market-determined, the aggregate price level (i.e., the value of money) is determined by the market so as to equate the public's demand for money with the supply of it. The achievement of an inflation target, therefore, requires a quantity of money consistent with the public's demand for it at the targeted price level.³ The three most common general approaches to determining the quantity of money are: (a) to limit its creation by banks by directly controlling the amount of credit they may extend, as in the Soviet mono-bank system, (b) to limit its creation by banks by controlling the amount of reserves available to them, and (c) to fix the exchange rate of the currency to another currency or unit whose value behaves in the desired way and to allow the quantity of money to be determined by the public's demand for it at the value that has been fixed by the exchange rate.

The first of these approaches, which generally takes the form of an aggregate target for bank credit that is administratively allocated among individual banks, retains the worst features and disadvantages of central planning. By determining the growth in individual bank assets administratively, the incentive for individual banks to work harder to deliver better service more efficiently (i.e., at lower cost) is greatly diminished. The market is not allowed to determine the relative growth of individual banks on the basis of their success in satisfying their customers. Economic efficiency and growth are, therefore, better served by indirect techniques of monetary control, i.e., approaches (b) or (c) above.⁴

The approach of a fixed exchange rate has considerable advantages (it is easy to administer and does not require knowledge of the public's demand for money, which is

³ For a more general discussion of these issues see any standard textbook on money and banking or monetary theory.

⁴ The advantages of indirect techniques of monetary control are discussed in greater detail in Johnston and Per Brekk.

particularly difficult to estimate during periods of transition and economic reform), but requires that government borrowing be limited to amounts that can be raised from the public⁵. Fixing the value of money exogenously (e.g., to the dollar, Euro, SDR, gold, oil, or a commodity basket) is not only the easiest monetary policy to administer, assuming that the fiscal deficit can be appropriately limited, but probably provides the quickest way to establish faith in the stability of such money's value. As a result most transition economies adopted a fixed exchange rate during the earliest phase of transition to help provide credibility for the central bank, but then moved to more flexible exchange rate regimes. If the rules of a fixed exchange rate are followed, the value of money will be the same as the value of the currency or basket of currencies, goods or assets to which the exchange rate of the currency has been fixed. Therefore, it is also essential to fix the domestic currency to a sound foreign currency.

Aside from dollarization (i.e., no domestically issued currency at all), a currency board is the simplest monetary regime with an externally fixed value to administer and has the highest credibility.⁶ A currency board simply buys and/or sells its currency in exchange for the currency or commodity(s) to which its value is fixed. The rules of a currency board require the monetary authority to hold the asset to which the domestic money's value is fixed to the full extent of the currency it has issued (i.e., at least 100 percent backing). The board would accomplish this by issuing its currency only by buying the currency (or other assets) to which its value is fixed. If anyone holding its currency wishes to exchange it for the asset(s) backing it, the board must redeem its currency at the currency's fixed price (only small margins--bid/ask spreads--are allowed). These requirements, that the board must buy or sell its currency at a fixed price, ensures that the public has all, but just all, of the currency that it wants to hold at that price. In short, a fixed exchange rate as administered by a currency board supplies exactly the quantity of domestic currency the public wants to hold (i.e., equates the supply of and demand for money) by an automatic market mechanism, while ensuring aggregate price behavior equal to that of the unit to which the currency's value is fixed. Furthermore, there is no need for the monetary authority to estimate the public's demand for money in order to know how much it needs to supply in order to hit the desired price target.

A fixed exchange rate regime without the currency board restrictions would work in the same way to produce the quantity of money the public demands, but would open the possibility for the central bank to buy and sell domestic assets as an additional instrument for influencing the quantity of money. In this case the central bank's monetary liabilities would no longer need to be fully backed by foreign assets. This has the advantage of

⁵ A modest amount of borrowing from the central bank might be consistent with the monetary growth desired by the public under a fixed exchange rate.

⁶ See Coats 2007

accommodating various domestic demand and external supply shocks without the need for adjustments in the domestic price level. However, it is subject to abuse or misjudgment that can result in a domestic money supply that does not match demand. Such a mismatch would put pressure on the fixed exchange rate and could result in the loss of the ability of the central bank to defend the exchange rate. For this very reason fixed exchange rate regimes that are not fully backed with foreign currency can be subject to speculative exchange rate attacks.

Fixed exchange rate regimes are now relatively rare, though currency boards have staged a modest come back since the collapse of the Soviet Union. However, many central banks target the exchange rate as the anchor to monetary policy in countries with market determined exchange rates. The advantages of an exchange rate target are that it is simple to implement, very transparent and easily understood by the public, and can be changed to absorb supply shocks that would otherwise require potentially painful domestic price level adjustments. However, the prospect of occasional, discrete changes in the target and hence market exchange rate can give rise to speculative pressures on the rate that can be very disruptive and that the central bank might not be able to resist. These may result in huge economic losses. Declines in GDP up to 20-25% have been experienced from wide spread bank failures precipitated by unexpected devaluations.

An alternative market approach to equating the supply of and demand for money is for the central bank to determine the money supply and allow the market to determine its value (i.e., to determine the price level). This approach contrasts with the fixed exchange rate approach in which the value of money is fixed and the market determines its supply, and obviously requires that exchange rates be market-determined. Controlling the quantity of money in an effort to stabilize its value requires a reasonably good estimate of the public's demand for money. This is a challenging task for any central bank, and particularly difficult in a transition economy.

In most economies for which estimates have been made, money demand has been found to have a relatively stable relationship with nominal income and interest rates (or more exactly, with the opportunity cost of holding money—defined as the difference between the average rate of interest on financial market instruments and the average interest return on money). Estimates generally find a stable long run relationship between real money demand (money deflated by a general price index) and real income (nominal or money income deflated by the same price index) and an interest rate. These empirical findings are in keeping with economic theory. For a given level of real income and interest rates, the demand for money tends to be proportional to the price level, i.e., other things equal, doubling the price level will tend to double the demand for nominal money and vice-versa. A stable price level, therefore, generally requires that the supply of money grow at about the same rate as real income.

The observed stability of the demand for money is far from perfect, however. For example, changes in the growth rate of money tend to effect prices with a long and variable lag (in the U.S. nine month to two years). Furthermore, improvements in payment technology and financial market development cause trends in money demand over time that tend

ultimately to economize (reduce) the amount of money held in relation to income, while wealth effects tend to go in the other direction. In the earlier phases of financial development the demand for money tends to grow with income and improved payment system efficiencies that lower the cost of using bank deposits.⁷ At later stages of development, the growing use of credit/debit cards and other modern means of payment reduce the demand for monetary aggregates such as M2 that exclude these means of payment. The usefulness of targeting the behavior of the quantity of money (an intermediate target) in order to achieve an inflation target (the ultimate target) depends on the accuracy with which the demand for money can be forecast. There is a large body of literature on the demand for money in developed market economies.⁸

Price stability is still the ultimate objective of monetary policy with a market determined nominal exchange rate. And as noted above, a monetary aggregate target is really an intermediate target that is only chosen because the central bank has closer control over the monetary aggregate than inflation. The behavior of the monetary aggregate, in turn, should have a relatively predictable impact on inflation (given stable money demand or a stable velocity of circulation). If the link between the monetary aggregate is weak, difficult to measure or unpredictable, an alternative to targeting a monetary aggregate is targeting inflation directly. Inflation targeting eliminates the intermediate target and focuses directly on the ultimate objective for inflation.

While inflation targeting central banks require much the same data as those targeting a monetary aggregate, a more central role is played by relatively simple policy models that forecast inflation given alternative assumptions about the near term (two to three years) behavior of key macroeconomic variables. Building such models generally takes several years of experimentation.

Successful inflation targeting requires a very structured process of collecting and analyzing economic and financial data and discussing the stance of policy in light of model assisted forecasts. Regular interaction between the policy makers and the forecast team is critical. The same is really true for monetary targeting as well but tends to get stressed even more for inflation targeting because expected inflation, the inflation forecast of the central bank if it is credible, is key in determining realized inflation.⁹ Thus, inflation targeting also requires very transparent communication of the central bank's policies and why they are expected to result in achieving the inflation target in two years (or so).

⁷ However, these very developments tend to reduce the currency/deposit ratio and thus increase the money multiplier. As a result, slower growth in base money is needed for a given rate of growth of broad money.

⁸ See, for example, the classic article on this subject by Friedman (1969).

⁹ See Douglas Laxton and Alasdair Scott, 2000

III. THE CASE FOR FLOATING IN KAZAKHSTAN

Economies whose exports are dominated by one product, usually a commodity and often oil, are subject to market forces that crowd out other potential exports (the Dutch disease). To balance exports and imports an oil exporting country's real exchange rate tends to price non-oil exports out of the market. If the real exchange rate's adjustment does not take the form of a nominal exchange rate appreciation it will take the form of domestic currency inflation. While monetary policy has little or no influence over the real exchange rate, fiscal policy can have a profound effect. To illustrate with the case relevant to Kazakhstan—dollar oil revenue flowing to the government—fiscal policy determines how much of its oil revenue is spent each year. Ultimately foreign currency income must be spent abroad (imports). If more is spent (per period), the real exchange rate will appreciate, encouraging more imports and discouraging (non-oil) exports. Thus, the government's decision with regard to the rate of spending of its oil revenue is key to the equilibrium level of the real exchange rate. Kazakhstan's Oil Fund plays a central role by investing some of the government's oil revenue abroad for use in future years. This reduces the expenditures of oil revenue in the current year and thus reduces the need for a real exchange rate appreciation to reduce what would otherwise be a trade surplus.

The economics literature strongly supports the benefits of flexible exchange rates for oil exporting economies. An IMF study suggests that a “permanent” increase in oil prices results, on average, in an increase in the real exchange rate of oil exporting countries of 50 percent of the oil price increase.¹⁰ Bench mark oil prices over the past decade have ranged from \$10 to \$100 per barrel. With a fixed nominal exchange rate, such adjustments in the real exchange rate must take the form of domestic price inflation. Similarly a “permanent” fall in oil prices, or any other market factors causing depreciation in the real exchange rate, will result in domestic price deflation. Forcing real exchange rate adjustments to take place through domestic inflation or deflation is more difficult than through nominal exchange rate changes. Domestic price adjustments are slower and thus tend to lag behind the adjustment needed and ultimately to overshoot once price adjustment momentum has built up. Fixed nominal exchange rates in these circumstances tend to result in wide swings in real exchange rates. In addition, the normal difficulties for oil exporters with exchange rates fixed to the U.S. dollar facing large oil price increases have been made even more difficult in the last few years by a depreciation of the dollar against the Euro and many other currencies.

“A currency that appreciated would tend to reduce the local currency revenues from oil when oil was high, and a currency that depreciated would tend to increase those revenues when oil was low. This does not reduce the size of the country's oil windfall—the windfall just shows up as a rise in the external purchasing power of a country's currency rather than a rise in the government's oil export revenue. It would, however, change the way the windfall

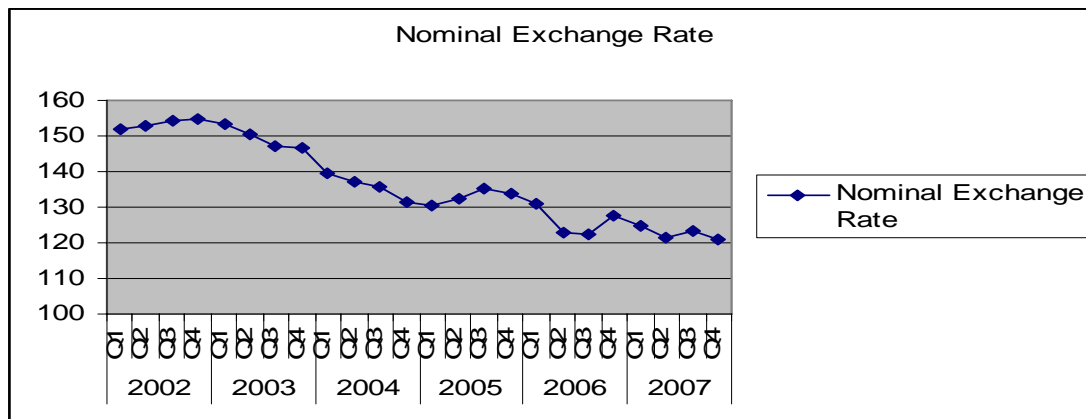
¹⁰ Lee, Milesi-Ferretti, and Ricci 2007

is distributed. If the country's currency is pegged to the dollar, the government initially captures the entire windfall through a rise in its revenues. If, by contrast, the country's currency rose along with the price of oil, the government's local-currency revenue windfall would be smaller, but the external purchasing power of all local salaries would rise."¹¹

Husain (2006) evaluated Kazakhstan's degree of trade integration (optimal currency area), financial integration (financial sector development, freedom of capital mobility), diversification of trade (oil dominance of exports), macroeconomic stability and vulnerability to real and nominal shocks, dollarization and exchange rate pass through. These are the key factors relevant for whether a fixed or free floating exchange rate would be more desirable. Husain's empirical investigation indicates that conditions in Kazakhstan in recent years, on balance, favor flexible exchange rates.¹²

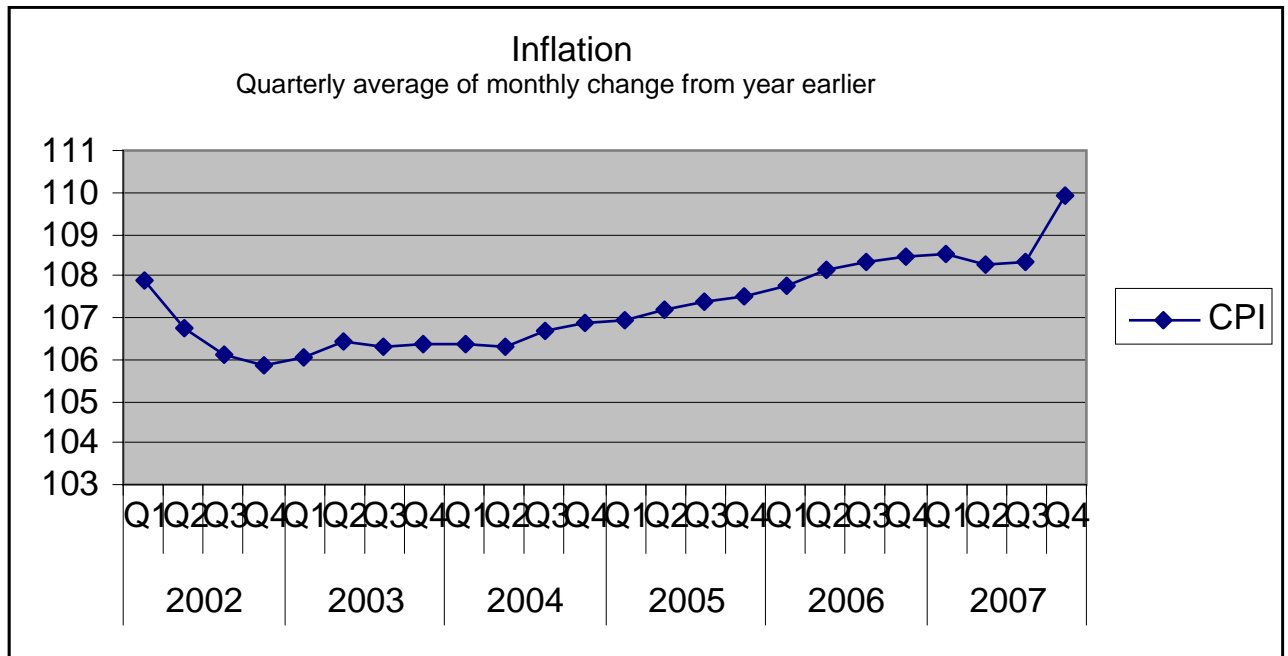
IV. MANAGED FLOATING OR INFLATION TARGETING

Countries with market determined exchange rates may target the exchange rate, i.e. intervene in that market to influence the rate, or target some other variable such as inflation, intervening in the foreign exchange market only to prevent excessive volatility. Kazakhstan has adopted floating or market determined exchange rates but the NBK has not yet been willing to focus its policy solely on inflation. From time to time it intervenes in the foreign exchange market to resist exchange rate movements it considers undesirable. In short, it has not consistently targeted the exchange rate or the inflation rate. The result has been relatively wide swings in the behavior of the exchange rate and wide swings in inflation.



¹¹ Setser (2007) p. 6.

¹² Husain (2006).



NBK policy in recent years illustrates what economists call the “impossible holy trinity” (exchange rate target, interest rate target, and free capital mobility). That is, the Central Bank cannot influence domestic interest rates if it insists on targeting the exchange rate in a world with capital mobility. When the NBK reacted to rising inflation by tightening monetary conditions (increasing domestic interest rates), capital inflows would undermine the attempted tightening because of NBK foreign exchange market intervention to prevent the tenge from appreciating more than the NBK thought appropriate. If the NBK intervenes to prevent the exchange rate’s adjustment, capital inflows will continue in search of higher interest rates (as long as foreign investors are confident that the exchange rate will not move against them), expanding the money supply and domestic demand, thereby increasing inflation. This will continue until the domestic inflation is sufficient (the increase in domestic price level relative to the foreign price level) to cause the real exchange rate appreciation needed to equilibrate the balance of payments. When the Central Bank targets the exchange rate, its attempt to influence the domestic economy (aggregate demand and inflation rates) by increasing domestic interest rates is thwarted by international capital flows. The NBK would do better to consistently target one (exchange rate) or the other (inflation).

A. Exchange Rate Targeting

Targeting the exchange rate would require the NBK to develop the capacity to determine the exchange rate target most appropriate for achieving policy objectives. The almost universal objective of minimizing volatility in the exchange rate should be relatively easily fulfilled by timely interventions to achieve or maintain the target exchange rate. From

there, defining the goals for the exchange rate quickly becomes more complex. The primary goals are generally to maintain external competitiveness (leading exporters to favor an undervalued currency), control inflation (leading importers and consumers to favor an overvalued currency), and to achieve and maintain a viable balance of payments (balancing imports and exports, requiring an exchange rate that responds to external disequilibrium). Any change in the exchange rate will please one constituency group and upset another.

Targeting the exchange rate in order to control inflation reflects the fact discussed above that while central banks might be able to control the nominal exchange rate, the market and fiscal policy ultimately determine the real exchange rate. If balance of payments factors require a real appreciation of the exchange rate, it will be achieved via domestic inflation of the local currency if the nominal exchange rate is not allowed to appreciate.¹³ While the first line of defense against external oil price shocks should be the National Oil Fund, a major benefit of an adjustable exchange rate target is the capacity to absorb and moderate external shocks such as significant oil or food price changes via a change in the exchange rate target rather than domestic inflation or deflation.

To determine an appropriate exchange rate target the NBK needs the capacity to monitor and forecast all those factors impacting the country's balance of payments. Developing this capacity requires a considerable investment in relevant data collection and its analysis. In addition to collecting and analyzing the information needed to determine an appropriate exchange rate target, the NBK would need to put in place the decision making structures needed to set the target.

B. Inflation Targeting

Price stability is the ultimate objective of monetary policy with a market determined nominal exchange rate. If the demand for money is sufficiently stable, a monetary aggregate target can be used as an intermediate target because the central bank has closer control over the monetary aggregate than inflation. The demand for money tends to change during the economic and financial market development process and as a result of changing payment technology, which makes a monetary aggregate target less useful. Inflation targeting eliminates the intermediate target and focuses directly on the ultimate objective for inflation.

While inflation targeting central banks require much the same data as those targeting a monetary aggregate, a more central role is played by relatively simple policy models that forecast inflation given alternative assumptions about the near term (two to three years) behavior of key macroeconomic variables. Building such models generally takes several

¹³ To illustrate, if over the past year the NBK resisted nominal appreciation of the exchange rate when the real rate needed to appreciate, its exchange market interventions to purchase dollars would have caused faster growth in tenge money. Inflation would be higher this year as a result.

years of experimentation. The NBK is well advanced in establishing a core quarterly inflation forecasting model.

Successful inflation targeting requires a very structured process of collecting and analyzing economic and financial data and discussing the stance of policy in light of model assisted forecasts. The inflation forecast is not a mechanical output from a model. It is the result of an interactive process between staff and management incorporating all possible information and insights into economic and market developments, assisted by and within the framework of the models. Regular interaction between the policy makers and the forecast team is critical.¹⁴ This process needs to be strengthened at the NBK.

Inflation targeting's success in stabilizing prices with minimal loss of real output is attributed to success in aligning public inflation expectations with the central bank's inflation target. If wage and other pricing contracts are based on the expectation that the central bank will succeed over time with its inflation target, market behavior will support and contribute to the achievement of that target. This requires the central bank's honest commitment to the target (over, say, two year ahead horizons) and good communication to the market about what the central bank is doing to achieving it. The NBK has many of the elements of transparency in place, such as its quarterly Inflation Report. These need to be further strengthened.

All inflation targeting central banks use a short term market interest rate as their operating target for implementing policy. There is a risk with the use of an interest rate operating target which does not exist in the case in which the central bank chooses a monetary aggregate target. If a central bank's assessment of money demand is incorrect so that its target for money is also incorrect, achieving and sticking to the target will result in self corrective market adjustments. The resulting price level will adjust (thus missing the implicit inflation target for that period) and the resulting equilibrium will be stable and sustainable. If instead the central bank is targeting the interest rate and makes an error the market process is not self-correcting. If the targeted interest rate is actually too low for the inflation target, credit and economic expansion relative to potential output will result in higher than desired inflation. Rather than equilibrating the economy at the lower interest rate, the higher inflation reduces the real interest rate. This further exacerbates the error and drives inflation still higher and real rates still lower. If not corrected by adjustments in the nominal interest rate target by the amount of the initial error plus any increase in the expected rate of inflation, inflation will accelerate and the system will explode rather than converge to a new equilibrium. Thus, inflation targeting central banks must be willing to adjust their operating target interest rate quickly and flexibly in light of revised inflation forecasts.

¹⁴ See Douglas Laxton and Alasdair Scott, 2000

V. CONCLUSION

Kazakhstan would benefit from market determined exchange rates. A more coherent and successful policy would result from a clear commitment to either an exchange rate target that would be continuously reviewed and adjusted to balance of payments needs or an inflation target. Lack of a clear commitment to one policy, shifting from one to the other, is not desirable.

A strong case can be made for adopting inflation targeting in Kazakhstan, but political and government wide acceptance is essential. To complete its move to inflation targeting the NBK needs to:

- a) complete its well advanced work on a core quarterly inflation forecasting model;
- b) formalize its internal processes for updating model assisted forecasts and incorporating them into regularly timed policy reviews and adjustments;
- c) strengthen its communication with the markets about monetary policy conditions and its policy measures; AND
- d) allow the tenge's exchange rate to freely float (other than avoiding unnecessary volatility).

More staff resources will need to be devoted to these tasks, especially ongoing strengthening of its core quarterly model and supporting satellite models and data analysis.

BIBLIOGRAPHY

Angermann, Ingrid, Rainer Schaefer, and Dominick Thiesen. *The Gulf States: An Embarrassment of Oil Riches*. Allianz Dresdner Economic Research. 2007 www.allianz.com.

Archer, David. "Foreign exchange market intervention: methods and tactics" BIS papers No 24, May 2005 <http://www.bis.org/publ/bppdf/bispap24d.pdf>

Coats, Warren. *One Currency for Bosnia: Creating the Central Bank of Bosnia and Herzegovina*. (Ottawa, Ill: Jameson Books, 2007)

Duttagupta, Rupa, Gilda Fernandez, Cem Karacadag. "From Fixed to Float: Operational Aspects of Moving Towards Exchange Rate Flexibility" IMF Working Paper No. 04/126, July 1, 2004

Eichengreen, Barry and Mariko Hatase. "Can a Rapidly-Growing Export-Oriented Economy Smoothly Exit an Exchange Rate Peg? Lessons for China from Japan's High-Growth Era" NBER Working Paper No. 11625, September 2005

European Central Bank. "Review of the Foreign Exchange Market Structure" March 2003 <http://www.ecb.int/pub/pdf/other/fxmarketstructure200303en.pdf>

Friedman, Milton. *The Quantity Theory of Money and Other Essays*. (Chicago, Illinois: Aldine, 1969)

Husain, Aasim M. "To Peg or Not to Peg: A Template for Assessing the Nobler" IMF Working Paper No 06/54, February 2006

Johnston, Barry, and Odd Per Brekk. "Monetary Control Procedures and Financial Reform: Approaches, Issues and Recent Experiences in Developing Countries", (unpublished, International Monetary Fund, June 2, 1989).

Laxton, Douglas and Alasdair Scott, "On Developing a Structured Forecasting and Policy Analysis System Designed to Support Inflation-Forecast Targeting (IFT)," *Inflation Targeting Experiences: England, Finland, Poland, Mexico, Brazil, Chile* (Ankara: The Central Bank of The Republic of Turkey, 2000) pp. 6-63.

Lee, Jaewoo, Gian-Maria Milesi-Ferretti, and Luca Ricci. Methodology of CGER Exchange Rate Assessments. Paper presented at the workshop on global imbalances, sponsored by Brussels-based Bruegel, Seoul-based Korea Institute for International Economic Policy, and Peterson Institute for International Economics, Washington, February 2007.

Lindgren, Carl-Johan. "The Transition from Direct to Indirect Instruments of Monetary Policy" in *The Evolving Role of Central Banks*. Patrick Domes and Reza Vaez-Zadeh, eds. (Washington: International Monetary Fund, 1991)

Ötoker-Robe, Inci and David Vávra, "Moving to Greater Exchange Rate Flexibility: Operational Aspects Based on Lessons from Detailed Country Experiences," IMF Occasional Papers 256, 2007

Setser, Brad, "The Case for Exchange Rate Flexibility in Oil-Exporting Economies," Policy Brief No 07-8, (Washington DC: Petersen Institute for International Economics) November 2007