

On the Tenge: Monetary and Exchange Rate Policy for Kazakhstan

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Executive Summary

This chapter begins by discussing the determinants of the real exchange rate. These are dominated by monetary influences in the short run. But for a country like Kazakhstan, they also include the Balassa-Samuelson effect and the Dutch Disease, especially in the medium and long run. These latter factors suggest the likelihood or pressures toward real appreciation of the tenge in the short and medium run, though it is also important to realize that this trend could reverse in the future.

With this as a background, the chapter discusses alternative options for the choice of monetary regime, such as floating exchange rates, fixed exchange rates, and various alternative nominal anchors for monetary policy (including the currently popular regime of inflation-targeting).

Two polar cases are rejected, as likely to turn out to be too constraining for Kazakhstan. (The author thus rejects the conventional wisdom of the corners hypothesis, the proposition that intermediate exchange rate regimes are unworkable and countries should easily float freely or peg rigidly.) On the one hand, the economy is too small and open to meet the “optimum currency area” criteria for a purely floating exchange rate. It is also too much in need of a nominal anchor for monetary policy. While a monetary regime of targeting the CPI while floating has been recommended widely, and for Kazakhstan in particular, this chapter emphasizes one problem with that: vulnerability to increases in world prices of imports. On the other hand, the country is too large for a rigidly pegged exchange rate. It is especially too diversified across trading partners to qualify for a peg to any one major currency (dollar, euro or ruble). If anything, a basket peg would be necessary for the tenge, perhaps at the center of a target zone.

But the heavy specialization of Kazakh export revenues in a single commodity – oil – suggests a further difficulty with using major currencies as the sole anchor, whether singly or in a basket. The difficulty lies in the powerful forces in favor of real appreciation during oil booms (Dutch Disease), followed by real depreciation during oil busts. Textbook theory says a country’s currency should be allowed to appreciate when world markets for its export commodity are strong, and to depreciate when they are weak. In the late 1990s, commodity exporters like Indonesia, Russia and Argentina achieved necessary real depreciation only through painful currency crises, losses in investor confidence, overshooting, and recession. A newly proposed regime, called Peg the Export Price (PEP) would accomplish the desired shifts in the terms of trade automatically. The narrow form of the PEP proposal is to fix the price of the export commodity, oil in this case, in terms of the domestic currency, i.e., to fix the value of the domestic currency in terms of oil. Assuming Kazakhstan seeks to reduce the degree of

¹ The author would like to thank Yun Jung Kim and Maral Shamloo.

dependence on oil and encourage alternative exports, the narrow form of PEP is probably too extreme. A more moderate form of the proposal would include oil as one component of the anchor variable – that is, as part of the currency basket if a fixed exchange rate regime is chosen, or part of the price index if a form of inflation-targeting is chosen – and would declare a band or target zone around the anchor parity that is relatively wide. The goal would be to achieve the benefits of a nominal anchor, and yet remain robust with respect to changes in the terms of trade that an uncertain future could bring.

1. The Real Exchange Rate and its Determinants

The real exchange rate is sometimes defined as the price index of import goods in terms of the price index of export goods. But for a relatively small economy like Kazakhstan, which must take the prices of most import and export goods as determined on world markets, macroeconomic policy has little influence on that relative price. Therefore, it is not a useful definition of the real exchange rate. This report will instead define the real exchange rate to be the price index of a basket of all goods that are internationally tradable, whether imported or exported, in terms of a price index of goods and services that are not internationally tradable.

We discuss four categories of determinants of the real exchange rate. We begin by considering briefly monetary influences on the real exchange rate that are important in the relatively short term, such as devaluation, revaluation, and expansionary monetary policy. Then we discuss some longer term determinants of the real exchange rate: the Balassa-Samuelson effect and the Dutch Disease. We offer some new quantitative estimates regarding these last two effects.

1.1 Shorter term monetary influences

In the short run, monetary influences can pull the real exchange rate away from its long run equilibrium.

Effect of nominal exchange rate policy on the real exchange rate

Imagine for a moment that all domestic goods markets were fully integrated into world markets and wages and prices of goods and services were perfectly flexible, so that goods and labor markets always cleared. Then a devaluation or revaluation of the currency (a change in the nominal exchange rate) need have no effect on the real exchange rate. In practice, however, this is not the case. Markets are not fully integrated into the world, and not all wages and prices are perfectly flexible. Changes in the nominal exchange rate are heavily reflected in the real exchange rate in the short run. Then over time, nominal wages and prices adjust, and the real effects diminish.

Effect of macroeconomic policy on the real exchange rate

Even if the nominal exchange rate is fixed, the real exchange rate can change in the short or medium run, e.g., a high rate of inflation can be reflected as a “real appreciation of the currency,” that is, a loss of price competitiveness on international markets. Such inflation can be the result of an increase in demand for goods, coming, e.g., from a monetary expansion.

1.2 Balassa Samuelson relationship

The Balassa-Samuelson relationship observes that countries with higher per capita incomes tend to have higher absolute prices (when expressed in a common currency). It is a rough, but fairly robust tendency that holds in the long run, both across countries and across time.

In this section we estimate the relationship across countries by OLS regression. Often the theory is spoken as if countries move along the regression line: predicting real appreciation during a given period according to growth rates. This approach neglects that in any given year or decade, a typical country lies rather far off the regression line. The Balassa-Samuelson relationship does have predictive power. Historically approximately half of any deviation from the line can be expected to be corrected over the course of the subsequent decade. This “regression toward the relationship” is quantitatively more important than – but supplemental to – any further real appreciation attributable to further growth.²

We begin by defining the following variables:³

RER – Real Exchange Rate is obtained by dividing *Price Level of Gross Domestic Product* for each country by that of the US (normalized to 100).

LogRER – Log of Real Exchange Rate

rgdpch – Real GDP per capita (Constant price: Chain series)

Loginc – Log of real GDP per capita

The regression logRER vs. loginc was run for 133 countries, based on their year 2000 data for RER and Real GDP per capita. It yields: $\log RER = -4.34 + 0.395 \log inc$

The coefficient on loginc is statistically significant.

Number of obs =		133	R-squared =		0.496
logrer	Coef.	Std. Err.	t		
loginc	.395	.035	11.35		
_cons	-4.345	.300	-14.49		

² Frankel, “On the Renminbi: The choice between adjustment under a fixed exchange rate and adjustment under a flexible rate,” High-Level Seminar on Foreign Exchange System, Dalian, China, May 2004. KSG Working Paper RWP04-037, Aug. 2004.

³ The data source is: Alan Heston, Robert Summers and Bettina Aten, Penn World Table (PWT) Version 6.1, Centre for International Comparisons at the University of Pennsylvania (CICUP), October 2002.

The residual for each country was calculated. The residual for Kazakhstan is -1.081. This means that

$$\log RER - \log RERhat = -1.081$$

$$\left(\frac{RER}{RERhat} \right) = 0.340$$

or in other words, the real exchange rate is 34% of the value predicted by the regression: the currency was **66% under-valued in 2000**.

The data in the graph below (“Figure 1”) pertain to the year 2000. (For the purpose of this graph, the vertical axis is actually $-\log RER$, so that appreciation is a movement upward.) It is estimated that over the last four years Kazakhstan has undergone a real effective exchange rate appreciation of about 5.8%, perhaps for Dutch Disease reasons (see accompanying Table.). But this calculation still leaves the currency, if anything, substantially undervalued by comparison with the Balassa-Samuelson relationship. The implication is that further real appreciation is to be expected in the future, absent unforeseen developments. (The absolute PPP data in the Penn World Table are subject to very large possible measurement error, so that the estimates for any given country must be taken with a measure of caution.)

Figure 1 – Balassa Samuelson Relationship

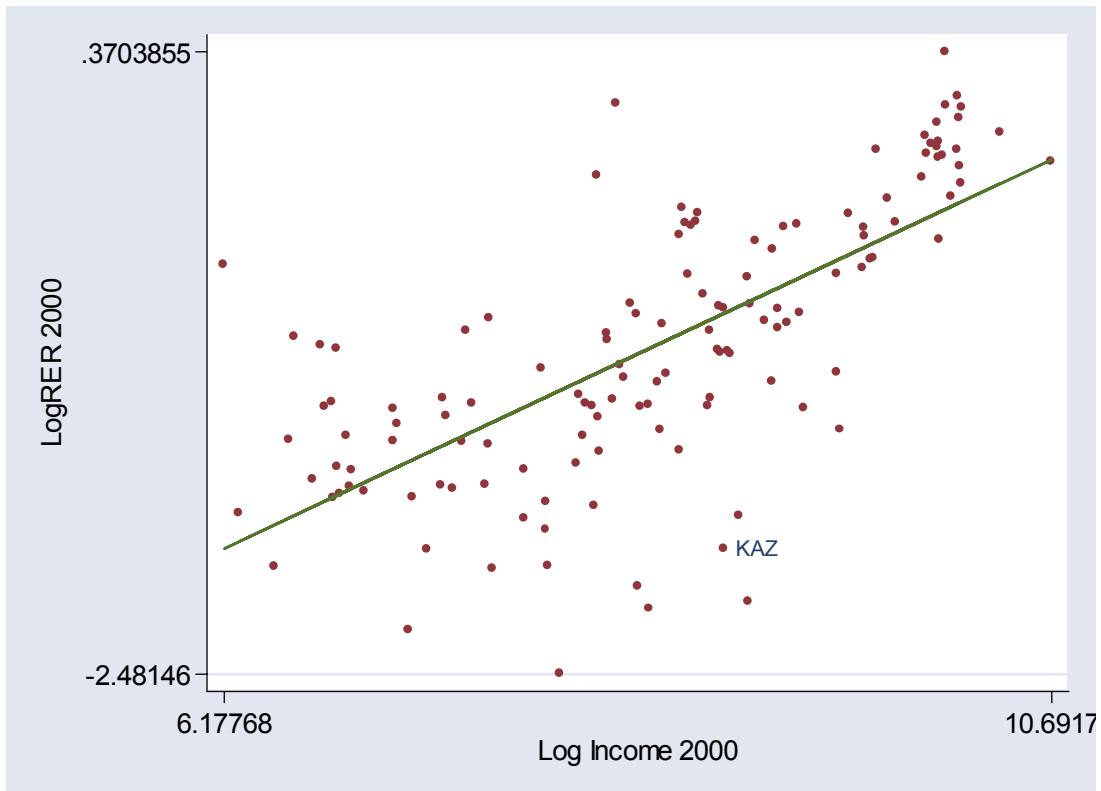


Table 1

	RER	% change
1999	110.7	-
2000	85.2	-23.0%
2001	83.7	-1.8%
2002	85.8	2.5%
2003	83.2	-3.0%
2004	80.3	-3.5%
Average (Overall)		-5.8%

Source: EIU

1.3 Dutch Disease

A determinant of the real exchange rate particularly important for a country such as Kazakhstan that is specialized in a mineral commodity like oil is the Dutch Disease. The Dutch Disease can be defined as the pattern whereby a boom in the commodity leads to real appreciation of the currency.

What is the “disease” part of Dutch Disease?

There are a number of possible unwanted side effects on the real economy of an otherwise-desirable commodity boom.

Among the possible side effects, some renditions focus on the case of inflation under a fixed exchange rate: a commodity-induced surplus on the balance of payments raises the domestic money supply because the inflow of reserve is not completely sterilized, and the increase in the money supply leads to overheating and inflation. The monetary expansion may be associated with excessively rapid growth in bank credit, which may exacerbate, for example, a real estate bubble. Other versions of the unwanted side effects focus on excessive borrowing from abroad (e.g., to finance development of the oil fields). Others focus on resource shifts in response to the change in relative prices: out of non-commodity tradeable goods; or on resource shifts into nontradeable goods. Still others focus on expansion of government spending. In each case, the idea is that such shifts might be appropriate if the commodity boom were to continue indefinitely, but that in practice the boom is likely to be temporary, to an extent not adequately foreseen at the time. At some point in the future, when commodity export revenue dries up, the country will then be left with a large debt, or a decimated export sector, or bloated non-traded and government sectors.

What happens when the world price of oil goes back down?

In the midst of an oil boom, it is easy to focus exclusively on the current effects. On the list of unwanted side effects of the Dutch Disease, this means the dangers of inflation and loss of competitiveness for non-commodity exports (or for goods that compete with imports).

But it is important to realize that oil booms do not go on forever. Some day the world price of oil goes back down, or the oil fields start to run dry, or both. It is then that the costs

of the preceding Dutch Disease period become the most apparent. It is often difficult to reverse the expansion of government and nontradables investment, or to service the foreign debt that was incurred. The result can be financial crises, in any of their several (related) varieties: debt crises, banking crises, and currency crises.

The case of the government wage bill.

One illustration of the problem is the tendency for oil exporters to respond to high oil prices by increasing the number of workers employed by the government and their rate of compensation – and then, when oil prices fall, to face the painful necessity of cutting back on the public sector wage bill.

We obtained data on the government wage bill (as a share of GDP) for seven oil exporters, over the period 1974-1997 (with two missing years: 1975-76), and regressed it against real oil prices, both contemporaneous and lagged. In the cases of Mexico, Iran and Venezuela, current oil prices have had an effect on the government wage bill that is highly significant statistically (at the .01 level). In the case of Malaysia, there is no significant effect coming from contemporaneous oil prices, but there is from oil prices over the preceding three years (averaged). For the remaining three countries there is no significant positive effect: Norway (probably because its political institutions are sufficiently mature to shield against excessive sensitivity to government revenues), Indonesia (perhaps because oil revenue is not as large as among the others), and Kuwait (surprisingly).

To obtain the strongest estimation of determinants of the government wage bill, we then pooled the data for all seven oil exporters together (allowing country-specific dummies). The results are reported in the accompanying table (see the Appendix at the end of the chapter). Oil prices are statistically significant, both contemporaneous and lagged. To pursue the idea that countries with well-developed political institutions, such as Norway, were less subject to this aspect of the Dutch Disease than others, we tried an interactive term. When oil prices are interacted with an index meant to capture the quality of political institutions (ICRG), it is statistically significant (in column 1, where contemporaneous and lagged oil prices are allowed to have different effects). When oil prices are interacted with income per capita, its effect is even stronger: statistically significant at very high levels (columns 3 and 4).

A lesson is that advanced political institutions can help an oil exporting country insulate itself against some of the excessive fluctuations associated with the Dutch Disease.

2. Monetary policy regime choices

There are two big questions to consider when a country designs a regime to govern monetary policy. The first big question is to what extent is it prepared to put in place binding constraints on monetary policy, to prevent a vicious circle of actual inflation and high public expectations of inflation from ever developing? Should the Central Bank rigidly commit to a fixed exchange rate or other precise numerical target? Should the government give the central bank constitutional independence? The alternative is to retain full discretion on the part of the

government, to use monetary policy in pursuit of political and objectives other than price stability. The second big question is – to whatever extent the country is indeed willing to bond monetary policy by some sort of public commitment, even if it is no more than a vague reference to a nominal target – what form should that target take? A peg to the dollar? To the euro? A gold standard? A money supply target? A CPI target?

2.1 Goals: inflation versus others

Most central banks declare price stability – i.e., low and stable inflation – as their overriding objective. This is not because a given rate of inflation is especially costly, nor because other possible objectives such as economic growth and employment are unimportant. It is, rather, because the consensus among macroeconomists is that monetary expansion cannot boost growth and employment except temporarily, that attempts to do so result instead in higher inflation that can only be reversed in the future at the expense of recession, and that in the long run high price instability can actually be bad for growth.⁴

Still, this consensus does not imply that there are no benefits to retaining some ability for monetary policy to respond to excess supply (recession) or excess demand (overheating) in the short run. Like most things in economics, “rules vs. discretion” is a tradeoff. The optimal point is likely to call for some degree of commitment to a nominal target (and some degree of independence for the Central Bank), but not an ironclad zero-tolerance commitment. Indeed it is not within the ability of monetary authorities to hit precisely targets for such variables as the money supply, CPI, or nominal income. Attempts to get close could lead (technically) to instability, and (politically) to lower credibility than targets that appear nominally looser.⁵

2.2 Credible commitment

The argument for some degree of commitment to a target is well captured by the “time inconsistency” model of monetary policy. In this model, if the government retains full flexibility to respond to circumstances as it sees fit, the monetary authorities are unable in any given period to resist the temptation to pursue growth by expanding enough to create some inflation. Workers and firms are aware of this, and build the expectations of inflation into their behavior when they negotiate wages and prices. The result of such expectations is to produce inflation but without any success in raising growth on average. (This is called inflationary bias.) The lesson is that countries would be better off giving up on the use of monetary policy to pursue growth, and instead tie the hands of their monetary authorities, so as to reduce expected inflation, and therefore actual inflation. This strategy is called credible pre-commitment.

⁴ Empirical evidence suggests that negative effects on growth begin to show up at inflation rates above 40%. But this does not mean that it is safe to go to 20 or 30%. There appears to be a slippery slope once one goes into double digits, and it can be costly to reverse the slide once it gets started. REFERENCES. Easterly, Fischer.

⁵ Velasco and Neu (2003). Gramm-Rudman legislation in the U.S. and the Stability and Growth Pact in the EU are examples of commitments of fiscal policy where the degree of commitment that was written in exceeded the degree that would have maximized credibility.

There are three approaches to credible pre-commitment:

1. *Delegation*: Appoint conservative central bankers, grant the central bank institutional independence, and thereby shield the monetary policy process from political pressures.
2. Develop a *reputation* for monetary rectitude, e.g., by a past history of tight money.
3. Commit to a nominal *rule*.

These three strategies are not mutually exclusive. Indeed, some mixture of all three is recommended. Internationally-recommended best practice is to grant the Central Bank independence: separate it from the finance ministry, give the central bank its own budget, specify long terms for governors once they have been appointed, and insulate them from political pressure by making it difficult to remove them. Reputational considerations suggest that a central bank should be particularly tough on inflation in the early part of the life of the institution or in the term of a particular governor.

The third approach, *rules*, requires a lot more discussion. The degree of commitment can range from a rigid fixed formula, to a wide band. In practice, the strategy of obtaining discipline and credibility via a rule is usually phrased in terms of targeting a single nominal variable. There are a number of candidates for what that single nominal variable should be. The difference is important in an uncertain world.

We begin by discussing the pros and cons of a fixed exchange rate, both in general and for Kazakhstan in particular. Then we proceed to consider other possible nominal anchors

As already noted, the choice of nominal anchor is as important a question as the degree of rigidity with which the target is declared (e.g., the width of the band). In the absence of uncertainty and shocks, setting one nominal anchor would be the same as another. But uncertainty and shocks are in fact large, so that it makes a big difference which of the various possible candidates for nominal anchor is chosen and announced. The choice to commit to one variable or the other, *ex ante*, can determine whether monetary policy turns out to be overly tight, loose, or appropriate in the face of *ex post* shocks.

In the end, the author will argue in favor of a novel proposal called Peg the Export Price (PEP). It has a key advantage often attributed to floating rates, which is that it is robust with respect to the terms of trade and yet does not give up the advantages of a nominal anchor.

2.3 Pros and cons of a fixed exchange rate

Instead of a comprehensive review of the exchange rate regimes, we list briefly five pros and five cons of fixed exchange rates.⁶

Advantages of fixed rates

1. A fixed exchange rate provides a nominal anchor to avoid the inflationary bias that can arise

⁶ The debate on fixed versus floating exchange rates is of course a huge subject, with many valid arguments on both sides. Frankel (2004) offers a survey, including references to other surveys.

under fully discretionary monetary policy

2. It facilitates international trade by reducing transactions costs and exchange risk
3. Similarly, it facilitates international investment
4. It avoids the competitive appreciation or depreciation among trading partners that adjustable pegs occasionally suffer
5. It avoids the speculative bubbles that floating rates occasionally suffer.

Disadvantages of fixed rates

1. Under a fixed exchange rate, especially under circumstances of high capital mobility, the country loses its monetary independence, and is thus unable to respond to country-specific shocks
2. The country loses the property of automatic adjustment to trade shocks, an advantage promised by floating rates that is particularly important for a country like Kazakhstan that is specialized in the export of a particular volatile commodity (e.g., appreciating in an oil boom, depreciating in an oil bust)
3. The Central Bank loses seigniorage, especially in the case of a rigid peg like a currency board or full dollarization.
4. The Central Bank loses some capability to act as Lender of Last Resort to the banking system (as did Argentina under its convertibility plan).
5. It is occasionally subject to speculative attacks and crashes (as in Mexico, 1994; East Asia 1997; Russia 1998; Turkey 2001, etc.)

The choice of regime depends on the country in question. No single exchange rate regime is appropriate for all countries. How can one add up the pros and cons, to decide if a fixed exchange rate is appropriate for Kazakhstan? There are a number of criteria, some of them grouped under the traditional “optimum currency area” framework, to help make this judgment.

2.4 Should Kazakhstan fix? OCA criteria for degree of exchange rate rigidity

One way to assess Kazakhstan’s standing is the traditional theory of optimum currency areas (OCA). OCA theory says that countries or regions are better suited for a fixed exchange rate if their economies are small and open to trade, if they have a high cyclical correlation with trading partners, and if labor mobility is high. This field has never been able to attain a high degree of precision, in the ability to predict either what currency regimes countries will choose in practice or to predict what will best work for them. Nevertheless, a useful starting point is to examine how Kazakhstan compares by these measures to other countries. If the country were to lay at one extreme or the other with regard to the OCA criteria, it might suggest the choice of a corresponding regime: rigid peg or free float.

(i) Trade Openness

Kazakhstan ranks **70th out of a sample of 184** countries in the world in terms of trade openness. Trade openness was measured as Trade (Exports + Imports) as a share of GDP. This ratio for Kazakhstan is **89.6%** (average for 1992-2003, source: WDI). This is squarely in the

middle of the pack. If one controls for size, the country falls further down in the rankings: to 98th out of 173 if one controls for land area, and 117th if one controls for population. The obvious reason for not ranking as more open is that the country is landlocked. But it does not matter whether openness is the result of size, geography, or policy: in open countries the advantages of fixed exchange rates tend to be relatively large and in less open countries the advantages of floating relatively large.

(ii) Labor Mobility

Labor mobility could be captured by the size of remittances as a share of GDP. One rationale for looking at this variable is as an indirect proxy for the migration of workers, the sort of definition of labor mobility that Mundell (1961) originally had in mind. (The logic was that if a country suffers a cyclical downturn different from that of its neighbors, and if it has given up the ability to devalue or expand the money supply by the choice to give up an independent currency, then its workers should at least have the ability to move to where there are more jobs.) But another rationale is that the size of remittances is an important and under-recognized OCA criterion in its own right. In countries where emigrants' remittances are large, a domestic downturn can be partially offset by increased inflows from expatriate workers. (Examples include El Salvador, Turkey, Pakistan, and the Philippines.)

In this category Kazakhstan ranks **67th out of a sample of 136** countries for which data was available. Remittances make a mere **0.3%** (average for 1992-2003) of the Kazakh economy. Again, this is in the middle of the pack.

(iii) Preliminary verdict on degree of exchange rate rigidity

Diehard fans of the “corners hypothesis” may insist that all countries choose between the two extremes: rigid pegs [such as dollarization or a currency board] or high flexibility [such as a free float]. But a look at the simplest OCA data leads to the obvious conclusion: Kazakhstan is neither so small and open as to mandate a rigid peg (as is the case in Hong Kong, Kuwait, Estonia, or El Salvador) nor so large and self-sufficient as to mandate a relatively free float (as is the case with the US, Japan, or euro-land taken as a whole). The author believes, on this and other grounds, that some sort of intermediate regime is probably called for. This includes target zones or bands, basket parities, adjustable pegs, or a combination thereof.

2.5 OCA criteria for choice of anchor currency

Beyond assessing the degree of exchange rate rigidity desirable for a particular country, Optimum Currency Area theory is also useful for suggesting to what major currency it should peg or anchor, whatever the degree of rigidity in the relationship. Indeed OCA theory is somewhat more reliable for this question.

(i) Symmetry of shocks, or cyclical correlation

We calculated the correlation of the Kazakh economy with other major economies of the world. GDP deviations from the trend (from 1992-2003) were measured for Kazakhstan, US, China, EU and Russia and the respective correlations were calculated. The results in table 2 show that Kazakhstan's economy is very closely linked to Russia's. Of course this is a legacy of past history. But the decision to move the national capital northwestward suggests that there is not in place a national policy to diversify ties further in the direction of China.

Table 2-Business Cycle Symmetry

Correlation with Kazakhstan	
Russia	96%
China	60%
EURO Area (AGG.)	55%
EU15 (AGG)	54%
United States	53%
Kazakhstan	100%

Source: EIU

(ii) Major trade partners

Tables 3 and 4 show Kazakhstan's major trade partners. Still the major export destination is Russia, though the share of exports going to Russia is falling. Other main export destinations are China and Switzerland. The share of imports coming from Russia is even larger and does not seem to be falling.

Table 3
Export Destinations (Distribution of Exports in % of total)

	1999	2000	2001	2002	2003
Russia	19.5	19.9	20.4	15.5	15.2
China	8.0	7.6	7.6	10.6	12.8
Italy	7.3	10.4	11.1	9.4	7.9
Switzerland	5.6	5.1	4.7	8.2	13.0
RoW	59.6	57.0	56.2	56.3	51.1

Source: IMF

Table 4
Import Sources (Distribution of Imports in % of total)

	1999	2000	2001	2002	2003
Russia	37.0	48.0	44.9	38.7	39.3
Germany	7.7	6.7	7.6	8.9	8.9
United States	9.4	5.5	5.4	7.0	5.6
United Kingdom	6.2	4.4	3.9	3.9	3.0
China	2.2	3.0	2.7	4.8	6.0
RoW	37.5	32.4	35.5	36.7	37.2

Source: IMF

(iii) If Kazakhstan were to peg the tenge, what should it peg to?

There is no natural choice of anchor currency for Kazakhstan, regardless whether the contemplated link is tight or loose. The dollar and the euro are both possibilities. As an international currency, the euro will increasingly be a plausible alternative to the dollar, but a peg to the euro alone raises problems for a country whose trade is not heavily concentrated on the EU. To peg to the euro would mean exposure to undesired variability vis-à-vis the dollar (and other currencies). Of course the analogous point is true of pegging to the dollar. Russia remains the economy to which the country is most closely linked via trade, but the ruble is nobody's idea of a stable anchor. It is not a sufficiently reliable currency. Perhaps some day the renminbi can play the role of anchor currency, in East Asia and Central Asia, but that is not the case today. It is not yet an international currency. Kazakhstan is simply not in the position of having an obvious candidate for single-currency peg in the manner of Central European (who can link to the euro) or Central American countries (who can link to the dollar). This same problem is common throughout Asia and among many oil producers throughout the world.

That leaves a basket as an obvious anchor or benchmark; perhaps an average (either weighted or unweighted) of these four currencies, the dollar, euro, ruble, renminbi, and yen. With a basket, the target zone need not be as wide as when the central parity is defined vis-à-vis a single major currency – say plus-or-minus 10 % rather than 15 or 20%.

Basket pegs tend to lack the simplicity, transparency, credibility, and trade-boosting convenience of single-currency pegs. Also a basket does not solve the problem of large swings that can occur in the price of the export commodity when expressed in any major currency. Traditionally, floating is considered to be the proper response if fluctuations in the terms of trade are large and need to be accommodated. But if the exchange rate is not to be the nominal anchor, then some other nominal variable should take its place. We turn now to the candidates.

2.6 Each Candidate for Nominal Anchor has its Own Vulnerability

Each of the variables that are candidates for nominal anchor has its own characteristic sort of extraneous fluctuations that can wreck havoc on a country's monetary system.

- A **monetarist** rule would specify a fixed rate of growth in the money supply. But fluctuations in the public's demand for money or in the behavior of the banking system can directly produce gratuitous fluctuations in velocity and the interest rate, and thereby in the real economy. For example, in the United States, a large upward shift in the demand for money around 1982 convinced the Federal Reserve Board that it had better abandon the money growth rule it had adopted two years earlier, or else face a prolonged and severe recession.
- Under a **gold standard**, the economy is hostage to the vagaries of the world gold market. For example, when much of the world was on the gold standard in the 19th century, global monetary conditions depended on the output of the world's gold mines. The California gold rush from 1849 was associated with a mid-century increase in liquidity and a resulting

increase in the global price level. The absence of major discoveries of gold between 1873 and 1896 helps explain why price levels fell dramatically over this period. In the late 1890s, the gold rushes in Alaska and South Africa were each again followed by new upswings in the price level. Thus the system did not in fact guarantee stability.⁷

- One proposal is that monetary policy should **target a basket of basic mineral and agricultural commodities**. 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.⁸ The proposal might work if the basket reflected the commodities produced and exported by the country in question. But such a peg gives precisely the wrong answer in a year when the prices of import commodities go up on world markets. Just when the domestic currency should be depreciating to accommodate an adverse movement in the terms of trade, it appreciates instead. Korea should not peg to oil, and Kuwait should not peg to wheat.
- The need for robustness with respect to import price shocks argues for the superiority of **nominal income targeting** over inflation targeting.⁹ A practical argument against nominal income targeting is the difficulty of timely measurement. For developing countries in particular, the data are sometimes available only with a delay of one or two years.
- Under a **fixed exchange rate**, fluctuations in the value of the particular currency to which the home country is pegged can produce needless volatility in the country's international price competitiveness. This is especially true if the major currency that is chosen as the anchor does not constitute a majority of the country's trade. For example, the appreciation of the dollar from 1995 and 2001 was also an appreciation for whatever currencies were linked to the dollar. Regardless the extent to which one considers the late-1990s dollar appreciation to have been based in the fundamentals of the US economy, there was no necessary connection to the fundamentals of smaller dollar-linked economies. The problem was particularly severe for some far-flung economies that had adopted currency boards over the preceding decade: Hong Kong, Argentina, and Lithuania.

Dollar-induced overvaluation was also one of the problems facing such victims of currency crisis as Mexico (1994), Thailand and Korea (1997), Russia (1998), Brazil (1999) and Turkey (2001), even though none of these countries had formal rigid links to the dollar. It is enough for the dollar to exert a large pull on the country's currency to create strains. The loss of competitiveness in non-dollar export markets adversely impacts such measures of economic health as real overvaluation, exports, the trade balance, and growth, or such measures of financial health as the ratios of current account to GDP, debt to GDP, debt service to exports, or reserves to imports.

⁷ Cooper (1985) or Hall (1982). On the classical gold standard, see also Bordo and Schwartz (1997) and papers in Eichengreen (1985).

⁸ A "commodity standard" was proposed in the 1930s – by B. Graham (1937) – and subsequently discussed by Keynes (1938), and others. It was revived in the 1980s: e.g., Hall (1982).

⁹ Velocity shocks argue for the superiority of nominal income targeting over a monetarist rule. Frankel (1995) demonstrates the point mathematically, using the framework of Rogoff (1985), and gives other references on nominal income targeting.

- This brings us to the current fashion of **targeting the inflation rate**.¹⁰ Specifically, the rule, in such countries as the United Kingdom, Sweden, Canada, New Zealand, Australia, Chile and Brazil, is to target the CPI. A key difference between the CPI (or GDP deflator) and the export price is the terms of trade. When there is an adverse movement in the terms of trade, one would like the currency to depreciate. However, price level targeting can have the opposite implication. If the central bank has been constrained to hit an inflation target, an increase in the prices of imports on world markets require the country to tighten monetary policy and appreciate sufficiently so that import prices do not rise in terms of local currency. The result can be sharp falls in national output. Thus under rigid inflation targeting, supply or terms-of-trade shocks can produce unnecessary and excessive fluctuations in the level of economic activity.
- The author has proposed an alternative, called **Peg the Export Price (PEP)**. The proposal to set the value of domestic currency in terms of the leading export commodity. The dollar price of the currency would rise and fall with the dollar price of that commodity.

3. The Proposal to Peg the Export Price (PEP)

PEP is a new monetary regime designed particularly for small open economies that are specialized in the production and export of a particular mineral commodity such as oil. As noted, the proposal is to fix the price of oil in terms of local currency. One advantage is that the currency depreciates automatically when the world oil market deteriorates.¹¹ This is an advantage that floating rates also promise, but in practice deliver only partially. Another advantage of PEP is that the currency does not appreciate when the world price of the country's imports goes up. As we have seen, the candidate for nominal anchor that is currently most popular, targeting the CPI, if literally interpreted, has this unfortunate property: the monetary authorities must respond to an increase in the dollar price of imports by appreciating the local currency against the dollar sufficiently that the local currency price of imports does not rise; only then can the previously set target for the CPI be met. Overall, the advantages of PEP can be summed up by the observation that, unlike other proposed nominal anchors, it is relatively robust with respect to terms of trade shocks.

How would the proposal work operationally? Conceptually, one can imagine the government holding reserves of oil, and buying or selling whenever necessary to keep the price fixed in terms of local currency. Operationally, a more practical method would be for the Central Bank each day to announce an exchange rate vis-à-vis the dollar, following the rule that the day's exchange rate target (dollars per local currency unit) moves precisely in proportion to the day's price of oil on the London market or New York market (dollars per barrel). Then the

¹⁰ Among many possible references are Svensson (1995), Bernanke, et al. (1999), and Truman (2003).

¹¹ Simulations for exporters of oil and other commodities show that if they had been following the PEP proposal in the late 1990s, their currencies would have depreciated automatically with the dollar price of oil, improving their current accounts when they needed it most. The alternative baselines considered were hypothetical rigid pegs to a major currency, and also whatever exchange rate policy the country in fact followed historically: Frankel (2002) focuses primarily on producers of gold, Frankel (2003) on oil exporters, and Frankel and Saiki (2002) on various other agricultural and mineral producers.

Central Bank could intervene via the foreign exchange market to achieve the day's target. Either way, the effect would be to stabilize the price of oil in terms of local currency. Or perhaps, since the oil price is determined on world markets, a better way to express the same policy is stabilizing the price of local currency in terms of oil.¹²

A common objection to the strict form of the PEP proposal concerns diversification of exports. While stabilizing the price of oil in domestic terms makes things easier for the oil producing sector, it makes things harder for other exporting sectors. Even when oil is more than half of a country's exports, it is never 100 percent. Furthermore, many oil exporters would like gradually over time to diversify further into other commodities, so that they are not quite so dependent on one. For such countries, which probably include Kazakhstan, there are more moderate versions of the PEP proposal. The first possible margin of moderation is obvious: define a wide target zone around the central parity, rather than a firm peg or a narrow band. The second possible margin of moderation would be to include other major currencies in the target basket. The basket could be give 1/5 weight to the dollar, 1/5 to the euro, 1/5 to the ruble, 1/5 to the renminbi, and 1/5 to oil.¹³ The third possible way to make the proposal more moderate would be to target a comprehensive *index* of export prices, rather than a single export commodity price. This would insure that no single export sector would bear a disproportionate burden of price variability.¹⁴

4. Summary of conclusions

Two polar cases are rejected, as likely to turn out to be too constraining for Kazakhstan. On the one hand, the economy is too small and too open to meet the "optimum currency area" criteria for a purely floating exchange rate. It is also too much in need of a nominal anchor for monetary policy. On the other hand, the country is too large for a rigidly pegged exchange rate. It is especially too diversified across trading partners to qualify for a peg to any one major currency (dollar, euro or ruble). If anything, a basket peg would be necessary for the tenge, perhaps at the center of a target zone. But even a basket peg has the problem that it would fail to accommodate large swings in the Kazakh terms of trade.

Two monetary regimes are most prominently discussed for Kazakhstan at present.

(i) inflation targeting – in practice a band around the CPI. This approach is popular currently with central banks, the IMF, and many economists;

(ii) exchange rate targeting -- in practice a band around a basket parity. This approach has de facto popularity, with residents who are afraid of the excessive swings in the domestic

¹² Frankel and Ayako Saiki, "A Proposal to Anchor Monetary Policy by the Price of the Export Commodity," *Journal of Economic Integration*, September 2002, 17, no. 3: 417-448; Frankel, "A Proposed Monetary Regime for Small Commodity Exporters: Peg the Export Price (PEP)," *International Finance*, (Blackwill Publishers), vol. 6, no. 1, Spring 2003, 61-88; and Frankel, "Should Gold-Exporters Peg Their Currencies to Gold?" Research Study No. 29, World Gold Council, London, 2002.

¹³ The version in Frankel (2003) proposes (for the case of Iraq), 1/3 weight on the dollar, 1/3 on the euro, and 1/3 on oil.

¹⁴ Frankel (2005) develops the Proposal to Peg the Export Price *Index* (PEPI).

prices of traded goods that would result in the absence of any intervention. The author does not take a strong position in choosing between the two sorts of targets, inflation versus exchange rate. But he does propose that the price of oil be included in whatever basket is used, whether it is a basket of prices as in inflation targeting or a basket of currencies.

The argument for PEP (Peg the Export Price) can be summarized as follows: it simultaneously delivers automatic accommodation to adverse shocks in the world market for the export commodity, as floating exchange rates are supposed to do, and the credibility-enhancing advantages of a nominal anchor, as dollar pegs are supposed to do. When there is an adverse movement in the terms of trade, textbook principles says that one would like the currency to depreciate. But, as noted, CPI targeting can have the opposite implication: If the Central Bank has been constrained to hit an inflation target, a positive shock to import prices will require a country to tighten monetary policy. On the other hand, if the price of the export commodity falls on world markets, inflation targeting does not produce the depreciation of the currency that is desired to accommodate the adverse shift in the terms of trade. PEP does, automatically. Thus under rigid inflation targeting, supply or terms-of-trade shocks can produce excessive fluctuations in the level of economic activity that are not necessary under PEP.

A moderate form of PEP would simply add some oil to the target basket that is to be used as a nominal anchor – either to the currency basket or the price basket, as the case may be. This would increase the robustness of the anchor with respect to whatever unknown trade shocks lie in store.

Appendix

RELATIONSHIP BETWEEN GOVERNMENTS' WAGE BILLS AND REAL OIL PRICES

Countries included in this analysis:

Indonesia	IDN
Iran	IRN
Kuwait	KWT
Malaysia	MYS
Mexico	MEX
Norway	NOR
Venezuela	VEN

Data and Methodology

Data on wages as a percentage of GDP are constructed using two sets of data: **Wages and salaries as a % of total expenditure** and **Total expenditure as a % of GDP**.

The data was streamed such that there are data points available for all the countries above for all the years analyzed. These years are 1974 and 1977-1997.

The price of oil variables are defined as follows:

Prices:	Real price of oil in a year
Lag price:	The average of real price of oil over the preceding three years.
Long Lag:	The average of real price of oil over the preceding four years.
MEX	Dummy for Mexico
VEN	Dummy for Venezuela
...	[Country dummies]
ICRG	Average ICRG (International Country Risk Guide) rating for institutional quality from 1984 to present
Asymmetry Term	current oil price – average oil price (1977-1997) if diff is positive and zero otherwise
Interaction Term	ICRG rating*current oil price OR Long-run average GDP per Capita*current oil prices

The following regressions were run for pooled data. Results are shown in **table 1**.

$$\text{wage expenditure} = \alpha + \beta_1 * \text{prices} + \beta_2 * \text{lagprice} + \gamma_1 \text{MEX} + \gamma_2 \text{VEN} + \dots + \lambda * \text{INTERACT} \quad (1)$$

$$\text{wage expenditure} = \alpha + \beta_1 * \text{AverageLag} + \gamma_1 \text{MEX} + \gamma_2 \text{VEN} + \dots + \lambda * \text{INTERACT} \quad (2)$$

Results

Pooled Data

Table 1				
Pooled Data regressions				
Independent Variable	Equation			
	(1)	(2)	(1)	(2)
Prices	0.194 (0.027)		0.0510 (0.007)	
Avg. lagged price	0.035 (0.051)		0.035 (0.039)	
Long lag		0.056 (0.019)		0.075 (0.000)
Interaction Term	-2823 (0.026)	-300 (0.315)	-6.19 (0.000)	-5.13 (0.000)
Number of obs.	154	154	154	154
Adj. R ²	0.7477	0.7420	0.7755	0.7721

P-values are in Parentheses

- (1) Regression of wages on current prices, average lagged prices (3 years), country dummies and the interaction of long-run GDP per capita with current prices
- (2) Regression of wages on average lagged prices (4 years including the current price), country dummies and the interaction of long-run GDP per capita with current prices

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