Classifying the Tenge-Dollar Regime 2001-2008: An Application of the Reinhart-Rogoff Taxonomy

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Abstract

Managed exchange rate regimes come in many varieties ranging from rigid pegs to managed float. This paper examines the tenge-dollar exchange rate and employs the taxonomy method established by Reinhart and Rogoff (2004). The period covers 2001-2008 and the evidence indicates several regime shifts during this period. There is also evidence that the change in regimes is motivated by a combination of changes in foreign reserve holdings and previous regime behavior.

1. Introduction.

In his assessment of Kazakhstan's foreign exchange regime Aasim Husain (2006) noted that the de facto pegged regime indentified early in the decade had become somewhat more relaxed towards the end of the period covered by his study. Citing Kazakhstan's integration into global capital markets and declining inflation this relaxation of foreign exchange regimes appeared to be a reasoned response to changing economic conditions. On the other hand Husain noted the continued existence of conditions, particularly the high degree of economic integration with Russia, which would justify some degree of control over exchange rate fluctuations especially between the tenge and the ruble. However the author does acknowledge that pegging the tenge to the ruble involves a serious credibility issue given the ruble's volatility and Russia's own problems with inflation.

Assessing economic conditions to determine an appropriate exchange rate regime can be problematic for several reasons. First, at the theoretical level, much of the comparisons are between flexible versus fixed regimes rather than nearly-fixed or managed regimes. Some conclusions concerning the benefits or costs of fixed regimes relative to flexible regimes may not be valid when applied to nearly-fixed or managed regimes. The more important factor, however, is the multitude of considerations; such as trade orientation, financial integration, economic diversification and inflation; that go into assessing the relative merits of an exchange rate regime. As Juhn and Mauro (2002) and Rogoff et al. (2004) point out, some factors may suggest a fixed rate is preferable while others support the use of flexible rates. Calvo and Reinhart (2002) add an additional factor, the "fear of floating" phenomenon. This occurs when countries have large external debt obligations enumerated in terms of the currency they use as a peg. Large fluctuations in the exchange rate could have significant balance-sheet effects which would then impact the corporate and banking sectors. Additionally large exchange rate movements could have serious inflationary impacts.

As Husain (2006) observed, no single factor consistently explains actual regime choice. Edwards and Savastrano (1999) and Husain, Moody and Rogoff (2005) examine the issue of regime choice and performance and the subsequent durability of alternative

regimes. As Jeffrey Frankel (1999) argues there is no one regime that is right for all countries or for all times, a position held by John Williamson (1999). In the case of Kazakhstan, Frankel (2005) rejects the Corner Hypothesis that argues against the stability of intermediate regimes and concludes that countries should limit their choices to free-float or rigid pegs. In the case of Kazakhstan we have a country that is too large, too diverse across trading partners and too dependent upon a single export commodity for a rigid peg to a single currency. On the other hand the country is too small and in need of a nominal monetary anchor for free float to be an advisable option.

Stanley Fischer (2001) uses anecdotal evidence to support the Corner hypothesis or what he terms the bi-polar view on exchange rate regimes. Fischer notes that countries adversely impacted by major financial crises in the 1990's all employed fixed or pegged exchange rate regimes. During this same period emerging countries that utilized floating exchange rate systems avoided the serious financial problems experienced by the countries with rigid exchange rate systems. Since the relative importance of each consideration is sensitive to the particular economic conditions of a country the injection of some degree of subjectivity is inevitable.

Husain (2006) analyzed the economic conditions for both Pakistan and Kazakhstan. In the case of Kazakhstan he concluded that recent changes in economic conditions, specifically the integration into global financial markets and the decline in inflation, serve as a strong case against a pegged regime. He also noted that the de facto pegged regime in Kazakhstan had become more flexible in recent years. The classification of Kazakhstan's early regime as a de facto peg was based upon the criteria established by Reinhart and Rogoff (2004). According to their methodology an exchange rate regime can be classified as a de facto peg if the monthly mean absolute deviation is less than one percent at least 80 percent of the time over an extended horizon, generally five years. Husain (2006) only noted the end of de facto peg conditions without further examination as to what regime classification would be appropriate. The Reinhart and Rogoff "natural" taxonomy has 14 different categories based on the monthly movements in the mean absolute variation. As these authors note, to correctly assess how an economy operates under a given exchange rate regime it is important that the regime be properly categorized. Additionally the time period examined by Husain (2006) only covers through 2005 so there has been no analysis of a potential subsequent tightening of the dollar-tenge exchange rate.

The purpose of this paper is to examine the monthly variations in the dollar-tenge exchange rate over the period January 2001-September 2008 and use these results to determine the appropriate regime classification based on modifications of the criteria established in Reinhart and Rogoff. Additionally the composite exchange rate variability index created by Reinhart and Rogoff will be calculated to better illustrate periods of relaxation and tightening.

2. The Reinhart-Rogoff "Natural" Taxonomy of Exchange Rate Regimes

As Reinhart and Rogoff (2004) note there are many important reasons for finding a more suitable method of classifying exchange rate regimes. Most studies on the relative costs and benefits of alternative exchange rate regimes rely on official classifications and official exchange rates. Baxter and Stockman (1989) is a classic example where it was determined that there are no discernable differences in business cycle activity across alternative exchange rate systems. However, if official groupings of exchange rate systems are misleading the results become questionable. Reinhart and Rogoff develop what they call a "natural" taxonomy of exchange rate regimes involving the analysis of several descriptive statistics as well as information on the existence of dual or parallel markets, preannounced arrangements and inflation levels. The empirical analysis involved looking at five year, moving window periods. Although some researchers such as Levy-Yeyati and Sturzenegger (2005) use smaller time frames such as one year with no overlap such analysis could result in a misclassification due to a single devaluation early in the period being examined.

In cases where there is an announced peg the starting point for the analysis was the month of the announcement. Monthly levels of the mean absolute deviation were examined to determine if the announcement was credible. The same approach was used if the announcement involved a band in lieu of a peg. The distinction between announced and de facto regimes is based on the belief that announced regimes may be more rigid than de facto regimes therefore there could be differences in macroeconomic performance between announced pegs and de facto pegs. However, since this paper is only concerned with a general classification scheme for Kazakhstan, the distinction between announced and unannounced policies will be ignored.

The classification approach employed in this paper will rely on the methods for establishing de facto regimes. This approach will allow for three broad categories: peg, narrow band and wide band. Each of these categories can then be separated into crawling revaluation, crawling devaluation, non-crawling or fixed parity (horizontal) subcategories. The primary descriptive statistic that will be used to determine which of the three broad categories best describes Kazakhstan's regime is the monthly mean absolute deviation in the tenge-dollar exchange rate. Narrowing down the regime into the appropriate subcategory will involve an assessment of the monthly mean variation.

In keeping with Reinhart and Rogoff (2004) if the monthly mean absolute variation is less than one percent at least 80% of the time the regime will be classified as a peg. The choice of one percent is based on the observed movements in announced pegs deemed to be credible. Additionally, as noted in Bordo (1993) the one percent figure corresponds to the allotted variation under the Bretton Woods system. If observed variation is less than one percent less than 80% but less than two percent at least 80% of the time the regime is classified as a narrow band. If the observed movements do not conform to the criteria for a narrow band but the monthly mean absolute deviation is less than five percent at least 80% of the time the system is designated as a wide band. If the observed monthly movements are five percent or greater at least 20% of the time the system would fall into

a float category either managed or free. However a cursory examination of the data indicates that only the first three categories would apply to Kazakhstan.

Whether the central bank is following a fixed parity regime or permitting drift or crawl will be determined by the annualized rate of change (ARC) during the regime period. If the ARC has an absolute value of less than 1 the regime will be classified as fixed parity. If the ARC has an absolute value between 1 and 2 inclusive the system will be classified has having drift and if the ARC has an absolute value in excess of 2 the regime will be classified has having a crawl. Comparisons of relative flexibility will employ a statistic developed by Reinhart and Rogoff (2004) ERF = |ε|/p, where p is the proportion of observations where the monthly mean absolute deviation was less than 1. This a purely ordinal measure where a higher value represents the more flexible regime.

3. Results

The date used in this examination was provided by Oanda, a foreign exchange information service, and represents the end of month interbank trading rate. Table One summarizes the data for each year 2001-2008.

The rise in the ERF in 2006 is consistent with Husain's (2006) observation that the National Bank of Kazakhstan (NBK) significantly relaxed exchange rate controls during in 2006, although it should be noted that the years 2003-2005 exhibited more flexibility than 2001 or 2002. Based on the Reinhart-Rogoff taxonomy the years 2001-2002 fall into the peg category with a depreciating crawl while 2003-2004 are narrow bands with an appreciating crawl and 2005 appears to be a narrow band with fixed parity. The degree of flexibility exhibited in 2006 was reduced in 2007 although the rate of appreciation in 2007 was much higher than in 2006, which only exhibited a slight drift in the core rate. In 2008 it appears that the NBK was pursuing a regime approximating a fixed parity peg.

Table One
Summary Statistics
All measures are in percent form

YEAR	ε	|ε|	|ε| < 1%	|ε| < 2%	ε < 0	APC	ERF
2001	0.3128	0.3468	91.67	100.00	8.33	3.82	0.378
2002	0.2677	0.2946	100.00	100.00	8.33	3.26	0.295
2003	-0.6912	0.8746	66.67	83.33	75.00	-7.99	1.312
2004	-0.8020	0.8350	66.67	91.67	91.67	-9.21	1.252
2005	-0.0202	0.7656	75.00	83.33	50.00	-0.24	1.021
2006	-0.0882	1.9642	44.00	75.00	58.33	-1.05	4.464
2007	-0.6047	1.4109	50.00	66.67	58.33	-7.02	2.822
2008	0.0924	0.3682	91.67	91.67	55.56	-1.08	0.402

ε represents the monthly mean variation in the tenge-dollar rate
|ε| represents the monthly mean absolute deviation in the tenge-dollar rate.

Of course it isn't likely that NBK would always institute regime changes in January so the data was examined for break points. The process involved moving observations from one year to the next and testing to see if either of the mean absolute deviations under went a statistically significant change. If transferring an observation from one sample to the other resulted in a significant change in the mean absolute deviation of one sample without a corresponding significant change in the other, the observation was kept in the sample did not observe a change. After this process a series of regimes was identified and listed in Table Two.

From table two we see that NBK was running a peg with a depreciating crawl from January 2001 through December 2002. In January 2003 the NBK increased the degree of flexibility by switching to a band and allowing an appreciating crawl. This regime held until December 2004 when a fixed parity peg was implemented. In January 2006 NBK introduced the relaxed policy referred to by Husain (2006) with a degree of flexibility that exceeds that typified by a narrow band. This 6 month episode would be either wide band of managed float. During this period the tenge appreciated at an annual rate of 13.2 percent. Shortly after Husain's paper the central bank tightened up by reinstituting a narrow band with a sharp depreciating crawl and maintained this policy for the remainder of 2006. In January 2007 the regime appears to revert to a managed float with a modest degree of appreciation in the tenge's value. NBK maintained this policy until October 2007 when it embarked on another episode of fixed parity peg which lasted through July 2008. This regime was followed by a 3 month peg with appreciation followed by a 3 month period of sharp depreciation leading up to the devaluation in early February 2009.

Table Two
Kazakhstan Exchange Rate Regimes 2001-2008

Regime	Start	End	ε	|ε|	|ε| < 1	|ε| < 2	ε < 0	ARC	ERF
1	Jan-01	Dec-02	0.2902	0.3208	95.83	100.00	8.33	3.54	0.334
2	Jan-03	Nov-04	-0.7758	0.9488	65.22	86.96	86.21	-8.92	1.455
3	Dec-04	Dec-05	-0.0243	0.7124	84.62	84.62	53.85	-0.29	0.842
4	Jan-06	Jul-06	-1.1727	2.0672	14.29	57.14	85.71	-13.20	14.466
5	Aug-06	Dec-06	1.4302	1.8201	60.00	80.00	20.00	18.58	3.035
6	Jan-07	Sep-07	-0.8200	1.6402	44.44	55.56	55.56	-9.41	3.690
7	Oct-07	Jul-08	0.0109	0.2114	100.00	100.00	50.00	0.13	0.214
8	Aug-08	Oct-08	-0.4736	0.4736	100.00	100.00	100.00	-5.54	0.474
9	Nov-08	Jan-09	1.3149	1.3149	66.67	100.00	0.00	16.97	1.972

4. Regime Changes and Changes in International Flows

Utilizing the Reinhart-Rogoff taxonomy to classify exchange rate regimes and indicate plausible regime shifts doesn't address the question as to why a central bank feels compelled to change. One possibility would be changes in the central bank's holdings of foreign currency reserves (FCR). During the period 2001-2002 the level of FCR held by NBK increased 49.86 percent from approximately $2.09 billion to $3.14 billion. At this point NBK seemingly relaxed controls and allowed a significant appreciation of the tenge. During this second episode, which ran through November 2004, FCR increased another 165.33 percent. NBK then tightened controls and essentially a fixed parity peg and FCR declined by 15.14 percent the following year. In January 2006, perhaps as a response to the drop in FCR, NBK initiated its most relaxed regime and in 6 months the tenge appreciated at an annual rate of 13.2 percent. During that period international reserves increased to approximately $13.9 billion, a 96.74 percent increase. Controls were tightened during the last 5 months of 2006 and FRC grew at 37.58 percent while the tenge devalued at an annual rate of 18.58 percent. The first 9 months of 2007 were marked by a fairly relaxed regime which saw the tenge appreciate at a 9.41 percent annual rate while FCR declined by 3.67 percent. The fixed parity regime that ran from October 2007 through July 2008 resulted in a 14.15 percent increase in FCR. The crawling peg that ran through October 2008 resulted in a negligible decline in FCR of 3 one hundredths of one percent. The relaxation in November, leading up to the February 2009 devaluation, generated a 16.97 percent annual rate depreciation of the tenge with FCR declining 13.24 percent. Trying to ascertain the driving force behind a regime change by looking at only changes in FCR or whether the previous regime resulted in a depreciation or appreciation bears no firm results. However by pairing the two a pattern begins to develop. If, in the period preceding a regime change, FCR increased and the tenge did not appreciate (3 cases) NBK relaxed foreign exchange controls but when there was an appreciation of the tenge (2 cases) they tightened controls. When the level of FCR decreased and there was essentially no change in the tenge's value due to a fixed parity regime (1 case) NBK relaxed controls but when the tenge appreciated (1 case) NBK responded by tightening controls. The November 2008-January 2009 period was the only observation when there was both a depreciation of the tenge and FCR which was followed by a significant devaluation. The subsequent regime has only 2 observations on end of month values. However a cursory examination of daily movements seems to indicate a band with a slight depreciating drift.

5. Summary

As noted by Reinhart and Rogoff (2004) and levy-Yeyati and Sturzenegger (2005), the classification of foreign exchange regimes should be based on observed movements rather than central bank declarations. The primary purpose of this paper was to apply the Reinhart-Rogoff taxonomy to the tenge-dollar rate during the period 2001-2008. The focus on the tenge-dollar rate was based on the importance of the dollar in the composition of Kazakhstan's external debt. Further research is needed to determine more precisely what types of events lead to a regime change and whether the regime change results in increased or decreased flexibility in the exchange rate. Additional, a breakdown of FCR into dollar and non-dollar components might shed more light on the tenge-dollar rate.

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