Journal of Economics & Finance
Volume 25, 2001, Pages 358-368

Error Correction Exchange Rate Modeling: Evidence for Mexico
JEL Category F31: Foreign Exchange

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Key Words: Mexico, error correction modeling, nominal exchange rates

Acknowledgments: Partial funding support for this research was provided by El Paso Electric Company, the Fulbright Council for International Exchange of Scholars, the Center for InterAmerican & Border Studies at the University of Texas at El Paso, and the Federal Reserve Bank of Dallas. Econometric research assistance was provided by David Torres and Roberto Tinajero. Helpful comments were provided by two anonymous referees, Joachim Zietz, Luis Bernardo Torres, and participants at the 2001 American Statistical Association meetings in Atlanta.

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Abstract

A set of error correction models are proposed for the nominal exchange rate between the Mexican peso and the United States dollar. The basic theoretical frameworks utilize balance of payments and monetary constructs. Empirical estimation results are fairly weak for both specifications irrespective of the interest rate variable selected. Although dynamic simulation properties of the equations are acceptable, in no case do they generate levels of accuracy that exceed those associated with a random walk.

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Introduction

Nominal exchange rate analysis continues to be an area of strong interest for applied econometric research. In spite of many years of theoretical and statistical modeling efforts, numerous conceptual and empirical mysteries remain prominent within this particular field of economic analysis. Among developing economies, Mexican currency movements continue to receive enormous amounts of attention from scholars as well as policy analysts and market traders. The latter is reflective of both Mexico's importance in global financial markets as well as its periodic large-scale devaluations during the past quarter century.

The objective of this paper is to examine the empirical behavior of the peso/dollar exchange rate during the 1976 – 2000 era in which Mexico abandoned its traditional fixed peg approach to currency policy. Because exchange rate markets exhibit both short-run and long-run behavioral characteristics, an error-correction modeling framework is utilized. Although the analysis is carried out with respect to Mexico, regional moves toward flexible exchange rates imply that the topic is also of interest to other economies in Latin America. Data availability will influence the ultimate applicability of the steps taken herein with respect to other currency markets in the hemisphere.

Organization of the paper is as follows. Section two provides a brief review of the literature. Section three summarizes the theoretical models underlying the econometric analysis. Data and empirical results are reviewed in the fourth section. A summary and suggestions for future research comprise the conclusion of the study.

Literature Review

As discussed by Isard (1987) numerous factors affect nominal exchange rate movements. Examples include national price levels, global interest rates, and international balances of payments. Cointegration and error-correction theory suggest that short-run as well as long-run factors also play potentially important roles in developments observed in currency and other financial markets (Engle and Granger, 1987; Modeste and Mustafa, 1999). Under such a framework, long-run forces on the dependent variable of interest are represented by variables in level form. System short-run dynamics are captured by the error-correction mechanism built into the model.

With respect to non-random components of exchange rate behavior, Macdonald (1995) argues that a substantial body of empirical evidence supports the existence of some form of long-run relationship between relative prices and exchange rates. The former frequently does not conform to traditional purchasing power parity (PPP) constructs and imply that successful modeling efforts must generally be carried out within a dynamic context. His findings are incorporated with a discussion of the applicability of dynamic exchange rate modeling in conclusion. Along these lines, Baillie and Selover

(1987) test whether a version of the sticky price variant of the monetary model can produce a valid cointegrating vector. Similarly, McNown and Wallace (1994) find partial empirical support for PPP for countries that have experienced high rates of inflation. In particular, models combining monetary and PPP characteristics are found to provide plausible specifications for exchange rates in Latin American countries with high rates of liquidity growth relative to the United States.

In general, most evidence favorable to PPP has involved either extensive time periods or large differences in price movements between country pairs except for the notable cases presented by Choudhry, McNown, and Wallace (1991). Formal recognition that exchange rate behavior is also influenced by variations in international balance of payments trends has long characterized much of the work in this field. Models developed by Dornbusch (1976) and Dornbusch and Fischer (1980) involve simultaneous determination of the exchange rate, prices, and the current account. These studies indicate that long-run equilibrium exchange rate levels are dependent upon stationary net foreign asset positions, i.e., balanced current account positions.

Granger (1981) provides some of the initial evidence on the implications of cointegrating and error correction relationships for econometric model specification. Subsequent work by Engle and Granger (1987) offers time series insights into the reasons why simple models may fail to provide statistically defensible equation fits, or forecasts, of nominal exchange rates. Reinton and Ongena (1999) take advantage of these advances to design structural exchange rate models for the Norwegian currency market. Results for both flexible- and sticky-price monetary constructs indicate that error correction equations incorporating long-run proportionality between exchange rates and money growth differentials will outperform random walk currency predictions in statistically significant manners.

Kim and Mo (1995) utilize a multivariate cointegration technique to generate long-run forecasts of the dollar/Deutch mark exchange rate. Empirical results suggest that a random walk outperforms short-run monetary model forecasts, but that error-correction formulations of the structural model generate superior long-run out-of-sample predictions of this exchange rate relative to the random walk. Fritsche and Wallace (1997) also employ cointegration methods in comparing forecasts of error-correction versions of the PPP hypothesis to a random walk. Mixed results obtained therein partially support PPP.

The literature to date shows evidence in favor of several different approaches with respect to nominal exchange rate modeling in Latin America. Monetary factors often influence currency market valuations in this region (Ortiz and Solís, 1979; Khor and Rojas-Suárez, 1991). Additionally, the prominent role played by balance of payment fluctuations with respect to Latin American currencies received increased attention during the debt crisis years of the 1980s (Obstfeld, 1984; Blanco and Garber, 1986). Widespread recognition now exists that both short-run and long-run market forces can lead to deviations from implied PPP values. Perhaps most importantly, there appears to be no single modeling strategy that will apply universally well to all national currencies.

Accordingly, independent empirical testing is likely to be required in order to assess what approach, if any, is most useful for analyzing any individual exchange rate (Fullerton and Araki, 1996).

To examine the specific case of Mexico, a set of error-correction models are proposed and estimated for the peso/dollar nominal exchange rate using annual data for 1976 – 2000. The sample period selected corresponds to the era during which Mexico abandoned its traditional fixed nominal exchange rate peg vis-a-vis the U.S. dollar. Macroeconomic data from Mexico during this period have been shown to be non-stationary and contain unit roots (Fullerton and Tinajero, 2001; Ying and Kim, 2001). Accordingly, the error-correction methodology provides a useful platform from which to examine exchange rate behavior in this economy. Long-run forces in these models are represented by variables in level form. System short-run dynamics are captured by the error-correction mechanisms in each theoretical construct.

Theoretical Models

The change in international reserves from year-to-year is equal to a country's international balance of payments. Given that, the first model is based upon an approach of which different variants have proven helpful in analyzing exchange rate movements in other Latin American economies (Fullerton, 1993a, b). The basic arrangement incorporates the hypothesis that both long-run and short-run forces may influence changes in the peso/dollar exchange rate (Rogoff, 1996). Variable definitions and data sources are provided in Table 1.

$$s_t = a_0 + a_1(p - p^*)_t + a_2(r - r^*)_t + a_3IR_t + U_t \qquad (1)$$

$$ds_t = b_0 + b_1d(p - p^*)_t + b_2d(r - r^*)_t + b_3dIRt + b_4ds_{t-1} + b_5U_{t-1} + v_t \qquad (2)$$

Equation (1) describes a long-run peso/dollar equilibrium provided by the balance of payments approach (Dornbusch and Fischer, 1980). a_1, a_2, and a_3 are coefficients that represent the response of the nominal exchange rate to differences between the price levels of the two nations, short-term interest rate differentials, and movements in Mexico's international reserves. All three of the later received varying levels of scrutiny by market participants during the simultaneous 2000 electoral cycles in both nations (Fuentes, 2000). The short-run behavior of the peso/dollar exchange rate is represented by Equation (2). Changes in the peso/dollar exchange rate are determined by short-run and long-run forces through the error-correction term U_{t-1}, which measures the equilibrium error term from the previous time period.

Writing Equation (1) at time t-1 and solving it for U_{t-1} yields the following result:

$$U_{t-1} = s_{t-1} - a_0 - a_1(p - p^*)_{t-1} - a_2(r - r^*)_{t-1} - a_3IR_{t-1} \qquad (3)$$

Substitution of (3) into equation (2) and rearrangement generates the balance of payments error-correction equation:

$$ds_t \;=\; (b_0 - b_5a_0) \;+\; b_1d(p - p^*)_t \;+\; b_2d(r - r^*)_t \;+\; b_3dIRt \;+\; b_4ds_{t-1} \;+ b_5s_{t-1} \;+$$
$$b_5a_1(p - p^*)_{t-1} \;+ b_5a_2(r - r^*)_{t-1} \;+ b_5a_3IR_{t-1} \;+\; v_t \qquad (4)$$

The latter equation can be simplified for the sake of exposition such that:

$$ds_t \;=\; c_0 \;+\; c_1d(p - p^*)_t \;+\; c_2d(r - r^*)_t \;+\; c_3dIRt \;+\; c_4ds_{t-1} \;+ c_5s_{t-1} \;+$$
$$c_6(p - p^*)_{t-1} \;+ c_7(r - r^*)_{t-1} \;+ c_8IR_{t-1} \;+\; v_t \qquad (5)$$

Equation (5) includes the effects of both short-run and long-run forces on changes in the peso/dollar nominal exchange rate. Expected coefficient signs from Equation (1) are $a_1>0$, $a_2<0$, and $a_3<0$. From Equation (2), expected parameter signs are $b_1>0$, $b_2<0$, $b_3<0$, $b_5>0$, with an ambiguous sign resulting for b_4. In combination, the preceding imply that the coefficient signs for Equation (5) will be $c_1>0$, $c_2<0$, $c_3<0$, c_4 ambiguous, $c_5>0$, $c_6>0$, $c_7<0$, and $c_8<0$.

A second framework which has also been shown to be useful in exchange rate determination is provided by the monetary approach to exchange rate determination (Baillie and Selover 1987). Such a model emphasizes the role played by exchange rates in equilibrating money demand and supply. Variable definitions and data sources for this approach also appear in Table 1.

$$s_t \; = \; f_0 \; + \; f_1(p - p^*)_t \; + \; f_2(r - r^*)_t \; + \; f_3(m - m^*)_t \; + \; f_4(y - y^*)_t \; + \; W_t \tag{6}$$

Expected coefficient signs from Equation (6) are $f_1>0$, $f_3=1$, and $f_4<0$ (Baillie and Selover, 1987). The sign for f_2 is unclear. An increase in domestic interest rates generally leads to currency appreciation, implying that $f_2<0$. In the Dornbusch (1976) sticky price model, however, $f_1>0$ and $f_2=0$. Alternative model structures give rise to other possibilities. Kim and Mo (1995) develop a flexible price framework in which $f_2>0$.

Equation (6) is specified so as to describe the long-run peso/dollar equilibrium (Baillie and Selover 1987). Coefficients f_3 and f_4 capture the response of the nominal exchange rate to movements in national money supplies and real incomes, respectively. Equation (7) represents the short-run behavior of the nominal exchange rate. Similar to the corresponding variable in Equation (2), the W_{t-1} error-correction term captures the effects of both short-run and long-run forces.

$$\begin{aligned} ds_t \; = \; & g_0 \; + \; g_1 d(p - p^*)_t \; + \; g_2 d(r - r^*)_t \; + \; g_3 d(m - m^*)_t \; + \; g_4 d(y - y^*)_t \; + \\ & g_5 ds_{t-1} \; + \; g_6 W_{t-1} \; + \; z_t \end{aligned} \tag{7}$$

Expected coefficient signs from Equation (7) also include some ambiguity. Dornbusch (1976) indicates $g_2<0$, while for Kim and Mo (1995) $g_2>0$. As was the case in the balance of payments framework, the expected parameter sign for g_5 is unclear on an a priori basis. For the remaining parameters in Equation (7), expected signs are $g_1>0$, $g_3>0$, $g_4<0$, and $g_6>0$.

Re-writing Equation (6) at time t-1 and solving for W_{t-1} yields:

$$W_{t-1} = s_{t-1} - f_0 - f_1(p - p^*)_{t-1} - f_2(r - r^*)_{t-1} - f_3(m - m^*)_{t-1} - f_4(y - y^*)_{t-1} \qquad (8)$$

By substituting (8) into Equation (7), an error-correction equation results:

$$ds_t = (g_0 - g_6 f_0) + g_1 d(p - p^*)_t + g_2 d(r - r^*)_t + g_3 d(m - m^*)_t + g_4 d(y - y^*)_t + g_5 ds_{t-1} + g_6 s_{t-1} + g_6 f_1(p - p^*)_{t-1} + g_6 f_2(r - r^*)_{t-1} + g_6 f_3(m - m^*)_{t-1} + g_6 f_4 d(y - y^*)_{t-1} + z_t \qquad (9)$$

As in the prior framework above, Equation (9) can be simplified for the sake of exposition such that:

$$ds_t = h_0 + h_1 d(p - p^*)_t + h_2 d(r - r^*)_t + h_3 d(m - m^*)_t + h_4 d(y - y^*)_t + h_5 ds_{t-1} + h_6 s_{t-1} + h_7(p - p^*)_{t-1} + h_8(r - r^*)_{t-1} + h_9(m - m^*)_{t-1} + h_{10}(y - y^*)_{t-1} + z_t \qquad (10)$$

Equation (10) embodies the effects of both short-run and long-run forces on changes in the peso/dollar nominal exchange rate. Expected coefficient signs for Equation (10) include $h_1>0$, h_2 unknown, $h_3>0$, $h_4<0$, h_5 ambiguous, $h_6>0$, $h_7>0$, h_8 unknown but the same as that of h_2, $h_9>0$, $h_{10}<0$.

Data and Empirical Results

Data for domestic (Mexico) and foreign (United States) variables are obtained from the International Monetary Fund database *International Financial Statistics 2001*. Descriptions of the time series taken from that source appear in Table 1. Real gross domestic products (GDP) for both countries serve as the respective proxies for real incomes. Yearly average nominal peso/dollar exchange rate estimates provide the level data form for the dependent variables in each equation estimated.

Annual data are utilized for the 1976 – 2000 sample period during which Mexico abandoned the fixed nominal exchange rate system it had utilized for the majority of the twentieth century. The application of time series methodologies to data sets with relatively few observations has been the subject of several studies (Shiller and Perron, 1985; Hakkio and Rush, 1991). Recent work indicates that empirical analyses that rely on limited time spans will experience pronounced losses in test power if higher lag orders are utilized (Zhou, 2001). As shown in theoretical models above, the frameworks developed in this paper are not anticipated to require lag lengths in excess of one. Care should, however, be taken with respect to interpretation of the econometric output obtained below. Given this concern, individual model results will also be subjected to out-of-sample simulation experiments to at least partially ensure reliability (Leamer, 1983).

General output results reported in Table 2 are fairly weak. Equations 5A and 5B are estimated following the balance of payments framework outlined above. 5A utilizes 1-month Treasury bill rates as the interest rate measure for each country, while 3-month certificate of deposit (CD) rates are employed in 5B. Although the model that employs 1-month Treasury bill interest rates (5A) obtains marginally better estimation results, neither equation appears to offer a viable means for empirically characterizing the exchange market in Mexico during the last portion of the twentieth century. Two sets of parameters in each equation also exhibit algebraic signs opposite of those hypothesized. In no case, however, do the t-statistics in these instances satisfy the 5-percent significance criterion.

Empirical traits associated with the monetary model framework also fail to provide convincing evidence either for or against that approach to the analysis of currency market valuations in Mexico (Equations 10A and 10B in Table 2). Similar to what is reported for the balance of payments models, sets of coefficients in each respective version of the monetary models carry signs that run counter to what is hypothesized for them. In each of these cases, however, the associated t-statistics fail to meet the 5-percent criterion, preventing any meaningful inferences regarding model applicability to the peso/dollar exchange rate. As also occurs with the balance of payments framework, marginally better results are obtained in the Equation 10B specification that employs the 1-month Treasury bill yield as its interest rate measure.

Although the estimation results are not encouraging, this does not necessarily imply that these equations cannot produce reliable simulation results. There are a number of documented instances for Latin American economies in which equations estimated with annual frequency data exhibit poor statistical traits but still render useful out-of-sample simulation output (Fullerton and Araki, 1996). To examine this possibility, all four models are re-estimated for five separate sample subsets of the available history. Two-year dynamic simulations are then generated and utilized to calculate Theil-inequality coefficients for forecast accuracy (Pindyck and Rubinfeld, 1998). The latter forecasts are then compared to the corresponding U-statistics for a random walk benchmark (Meese and Rogoff, 1983). Empirical outcomes from these steps are summarized in Table 3.

In all four cases, the error correction models meet with limited success with respect to forecasting the nominal exchange value of the peso. The variance proportions of their respective Theil inequality coefficients shown in Table 3 are all close to zero. That implies that each of the estimated equations does fairly well in terms of simulating the variability exhibited by the exchange rate (Pindyck and Rubinfeld, 1998). As shown in Column 4 of Table 3, more than half of the error present in each set of forecasts is also unsystematic. In overall terms, Equation 10B, the monetary model that utilizes the 3-month CD rates, exhibits the best prediction performance of any of the error correction models. Its performance is not, however, superior to that of a simple random walk. In contrast to empirical evidence for both categories of error correction currency models relying on higher frequency data (Edison, 1991; Tawadros, 2001), the U-statistic of the random walk benchmark is nearly one-third less than that of Model 10B.

Results reported herein indicate that an error correction modeling methodology will be of limited use with respect to analyzing annual frequency exchange rate changes in Mexico. The latter conclusion holds for two basic variants of commonly used equation specifications and financial yield measures. This raises an important question because the majority of most large-scale macroeconometric forecasting analysis in Latin America and other developing regions is still conducted with annual frequency data (Alemán, Andújar, and Fuentes, 2001; Lara and Beltrán del Río, 2001). Namely, what step, if any, can be taken in order to secure reliable estimation and simulation results for this key component of developing country economies?

A primary attraction of the error correction approach to modeling is that it directly incorporates both short-run and long-run variables into a single framework. It is not, however, the only dynamic specification strategy available to currency modelers. In particular, a variety of exchange rate models that incorporate lags have also been shown to obtain both favorable econometric traits as well as accurate prediction performance (Somanath, 1986; Fullerton, 1993a, b). Given the numerous external and domestic factors facing Mexico in the medium-term, such an approach would allow simulating the impacts of expected changes in overall market conditions (Fuentes, 2000; Ortiz, 2001).

Of course, it is widely recognized that sole reliance on structural specifications for exchange rates may not be advisable (Meese and Rogoff, 1983). Imbedding a random walk process into a system of simultaneous equations is easily accomplished, but will generally prove unsatisfactory in terms of anticipating the impacts associated with developments such as higher international interest rates, lower oil prices, or global business cycle contractions. One potentially viable alternative that has proven useful in other macroeconometric contexts is to combine the information provided by the two competing techniques (Cooper and Nelson, 1972; Granger and Ramanathan, 1984). Doing so goes one step beyond the simple lagged observation forecasting "sanity checks" normally used by business and policy analysts. Given the apparent inapplicability of the error correction approach to annual frequency currency data in Mexico, a composite strategy is probably a technique worthy of additional consideration.

Conclusion

Because it can simultaneously handle long-run and short-run forces, error-correction modeling has proven helpful in modeling a number of financial market variables. In this study, error-correction models for the Mexican peso/U.S. dollar nominal exchange rate are proposed under general balance of payments and monetary frameworks. Both constructs involve sets of regressors that represent partial extensions of the PPP hypothesis. Estimation is carried out using annual data for the 1976 – 2000 flexible exchange rate period in Mexico.

Estimation results for all specifications tested are weak. Most coefficients are statistically insignificant and a few carry arithmetic signs opposite of those hypothesized. Those observations hold no matter which interest rate measure is employed in estimation. In spite of the empirical problems encountered in estimation, the equations also exhibit fairly good out-of-sample dynamic simulation properties. In no case, however, do any of the error correction models generate forecasts that produce superior rates of accuracy than those associated with a simple random walk.

Much of the estimation problems detailed above are probably related to the limited number of observations available in the sample. Given that most large-scale macroeconometric analysis conducted for Latin America relies on annual frequency data, alternative currency specifications involving lags represent one alternative approach worth investigating. Because of the traditional difficulties associated with predicting exchange rates, it may also be useful to combine forecasts from such frameworks with those implied by random walk mechanisms. Such a step would go beyond merely using lagged observations as informal “sanity checks” for structural model simulation output. Within the specific context of Mexico, as new observations become available, it will be useful to monitor whether the empirical characteristics discussed above are maintained over time.

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Table 1
Variable Definitions and Data Sources

Variable	Definition and Source
s_t	Natural logarithm of nominal exchange rate (new pesos/dollar) at time t, annual averages. Data are from the September 2001 IMF *International Financial Statistics* CD-ROM.
p_t	Natural logarithm of domestic price level in Mexico at time t, annual averages. Gross domestic product implicit price deflator data, 1993 = 100, are from the September 2001 IMF *International Financial Statistics* CD-ROM.
rb_t	Domestic short term interest rate in Mexico at time t, annual averages for the 1-month Treasury Bill Rate. Data for 1978–2000 are from the September 2001 IMF *International Financial Statistics* CD-ROM. Data for 1976-1977 are from the Banco de México research department in Ciudad Juárez, Chihuahua.
rd_t	Domestic short term interest rate in Mexico at time t, annual averages for the 3-month Certificate of Deposit Rate. Data for 1977–2000 are from the September 2001 IMF *International Financial Statistics* CD-ROM. The missing 1977 observation is from the Banco de México research department in Ciudad Juárez, Chihuahua.
IR_t	Natural logarithm of liquid international reserves in Mexico at time t, end of year. Data are from the September 2001 IMF *International Financial Statistics* CD-ROM.
m_t	Natural logarithm of the domestic money supply at time t, end of year, millions of new pesos. Data are from the September 2001 IMF *International Financial Statistics* CD-ROM.
y_t	Natural logarithm of real gross domestic product at time t, using 1993 as the base year. Data are from the September 2001 IMF *International Financial Statistics* CD-ROM.
U_t , W_t	Long-run, or equilibrium, error terms.
v_t , z_t	Stochastic disturbances with zero means, constant variances, and serial independence.
d	First difference operator, also known as backshift or lag operator.
*	Denotes United States (foreign market) variable. Similar to the data for Mexico, the United States time series are from the September 2001 IMF *International Financial Statistics* CD-ROM.
Sample	Annual frequency data, 1977 - 2000.
()	Computed t-statistics reported in parentheses.
ws	Indicates coefficient sign opposite of that hypothesized.

Table 2
Error Correction Exchange Rate Empirical Output for Mexico

Variable	**Model 5A**	**Model 5B**	**Model 10A**	**Model 10B**
Constant	2.196502	1.857369	-9.884873	-10.33798
	(1.903015)	(1.504659)	(0.481221)	(0.662174)
$d(p - p^*)_t$	0.736264	1.799988	0.279468	1.237436
	(0.471839)	(0.895954)	(0.076816)	(0.387060)
$d(rb - rb^*)_t$	0.020047 ws		0.019196	
	(1.427627)		(1.226454)	
$d(rd - rd^*)_t$		0.005701 ws		0.006816
		(0.317203)		(0.380709)
$d(IR)_t$	-0.167473	-0.068306		
	(0.600201)	(0.219880)		
$d(m – m^*)_t$			0.233606	0.084990
			(0.121049)	(0.047697)
$d(y – y^*)_t$			-6.119662	-6.769210
			(0.756747)	(0.922819)
$d(s)_{t-1}$	0.355019	0.254809	0.346710	0.277345
	(1.389084)	(0.931289)	(1.251751)	(1.010596)
s_{t-1}	-0.052777 ws	-0.063925 ws	-0.117578 ws	-0.127481 ws
	(0.535792)	(0.588931)	(0.852768)	(0.951106)
$(p - p^*)_{t-1}$	0.400235	0.364581	-0.311898 ws	-0.370423 ws
	(2.225392)	(1.964212)	(0.138443)	(0.232688)
$(rb - rb^*)_{t-1}$	-0.004566		-0.002976 ws	
	(0.291692)		(0.086635)	
$(rd - rd^*)_{t-1}$		-0.015823		-0.012539 ws
		(0.682649)		(0.402433)
IR_{t-1}	-0.498283	-0.349058		
	(1.215450)	(0.740042)		
$(m – m^*)_{t-1}$			0.496699	0.573415
			(0.223222)	(0.358163)
$(y - y^*)_{t-1}$			-4.785974	-4.884794
			(0.859241)	(1.030039)
R-squared	0.526553	0.429135	0.581627	0.524347
Adjusted R-sq.	0.274047	0.124674	0.259801	0.158460
F-statistic	2.085314	1.409492	1.807273	1.433084
Log likelihood	-15.20291	-17.44825	-13.71891	-15.25869
DW	2.125394	1.895559	1.865148	1.820846

Table 3
Theil Inequality U-coefficients for Forecast Accuracy

Model	Theil U	Bias Proportion	Variance Prop.	Cov. Prop.
5A	0.130	0.389	0.091	0.520
5B	0.116	0.341	0.083	0.576
10A	0.122	0.402	0.060	0.538
10B	0.092	0.258	0.054	0.688
Random Walk	0.062	0.141	0.110	0.749

9 data points used to calculate each inequality coefficient.
Out-of-sample simulation periods: 1996-1997; 1997-1998; 1998-1999; 1999-2000; 2000.

5A: balance of payments specification using 1-month T-Bill interest rates.
5B: balance of payments specification using 3-month CD interest rates.
10A: monetary specification using 1-month T-Bill interest rates.
10B: monetary specification using 3-month CD interest rates.