

Panel Data: Exchange Rates

Ciam Chooi Chea

Cluster of Business and Management, Open University Malaysia, chooi_chea@oum.edu.my

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Abstract

Numerous specialists and policymakers are concurring that strength in the swapping scale advances financial extension and improved welfare in the nation today. There are restricted investigations that have been directed dependent on the analyst information. This paper looks to consider the powers driving the developments in the RM conversion scale in light of the fact that there is a developing enthusiasm for swapping scale steadiness. Along these lines, this task means to look at the pertinence of the financial model to the swapping scale assurance for RM/US\$ and RM/Euro on the grounds that regardless of the developing significance of Euro, there isn't a lot of concentrates on fiscal model utilizing RM/Euro.

Keywords: Exchange rate, panel data, Johansen modeling

I. Introduction

Malaysian Dollar (M\$) on 12 June 1967 is the previous forex of Malaysia Malaysian Ringgit (RM) as so far. The antique Sterling-associated Malayan/Straits Dollar turn out to be changed with the aid of dollars of Malaysia and the unit of Malaysian Dollar became brought on 15 August 1971. The Malaysian Dollar changed into at M\$7.3469 in step with Sterling Pound and on 20 December 1971, M\$2.81955 in keeping with U.S. Greenback which primarily based definitely at the Malaysian Dollar's unchanged gold content material cloth changed into regular in a while 25 June 1972. On 21 August 1975, Malaysian Dollar (M\$) changed into formally renamed as Ringgit (RM). Due to the 1997 catastrophe, The Central Bank introduced that the alternate fee of the Ringgit might be pegged in opposition to the U.S. Dollar at RM3.Eighty consistent with U.S. Dollar on 2 September 1998. In July 2005, the fixed alternate fee gadget with US as abolished because of the prefer of managed floating device. This paper will embody introduction of the test and variables identified in particular, massive cash inventory (M2), interest rate and Consumer Price Index (CPI) with its mounted variable as alternate

Rates. Objectives and the importance of the have a study is probably highlighted as nicely. Nevertheless, quick specs of the version could be covered as well following with the assessments which can be performed and the belief may be provided.

II. Objectives

Many researchers and policymakers are agreeing that stability in the exchange rate promotes economic expansion and improved welfare within the United States nowadays. There are limited examine that have been achieved based definitely on the researcher understanding and the only that may be highlighted right right here are Chua and Bauer (1995) and Lee et al. (2007) for RM/USD; Husted and MacDonald (1999) for RM/yen, and Baharumshah et al. (2002) and Chinn (2000) for each RM/USD & RM/Yen. This paper seeks to observe and recognize the forces driving the actions within the RM exchange charge due to the fact there can be a developing interest in alternate fee stability. Therefore, this undertaking interests to test the relevance of the financial version to the trade fee determination for RM/US\$ and RM/Euro because notwithstanding the developing significance of Euro, there can be no a whole lot check on monetary version the use of RM/Euro. Data for this study are gathered from numerous

problems of the International Monetary Fund's International Financial Statistics yearbook. It is a month-to-month facts where the information changed into collected at the month-to-month frequency from 1998:M1 to 2002:M12. Exchange fees are monthly common in phrases of RM/US\$ and RM/Euros. The selected financial aggregates are widely coins stock (M2). The information are amassed primarily based at the three hundred and sixty five days 2000. The monthly enterprise manufacturing index is the actual home incomes at the equal time as the monthly average coins marketplace rate is the interest expenses. All corresponding remote places magnitudes are marked with an asterisk and are expressed in herbal logarithms.

This panel information set consists of a time collection of go sections, with statistics at the same humans, throughout time. According to Gujarati, 638, with repeated observations sufficient flow-sections, panel analysis permits the check to study the dynamics of change with short time collection. The combination of time series with bypass sections can enhance the excellent and amount of records in ways that could be now not viable the use of only such a two dimensions Firstly we are capable of run the constant effect, random impact and pooled OLS assessments to make sure the best estimator. Then we continue with pooled imply-organization method and sensitivity evaluation might be performed as well. Other than that, balance takes a look at and co integration test might be performed as nicely for this information set. Panel GMM test could not be completed because of incapacity to fulfil the requirement for panel GMM test ($N > T$). Therefore, panel Autoregressive Distributed Lag (ARDL) model may be carried out as an opportunity. This entire check could be conducted using E-view 6.Zero software program software.

III. Empirical Studies

The global sooner or later adopted the floating change fee. With the start of floating alternate

price, after the fall apart of Bretton Woods System at March 1973. The modeling and forecasting change price has come to be an vital problem in international finance. Due to the rapid significance of financial coverage to forex fee, many famous models of alternate rate developed to forecasting the nominal alternate charge. However, the monetary model turned into the most popular and dominant technique to the nominal trade rate at the time of the breakdown of Bretton Woods System. There are even a few versions of the models are pure flexible fee economic version of Frenkel (1976) and Bilson (1978), the sticky charge financial model of Dornbusch (1976) and the real interest rate differential model of Frenkel (1979). Exchange rate is defined because the price of one usa's coins in time period of that of any other, it make feel to research the determinants of that fee in term of the extraordinary shares of and call for for the 2 monies (Macdonald and Taylor (1992) . This brought a purpose assumptions right right here all financial fashions rely upon the dual assumptions of sturdy cash call for function for the domestic and remote places economics (Frenkel (1976), Kouri (1976), Mussa (1976, 1979). Macdonald and Taylor (1992) claimed that the empirical proof at the 3 formulations of the economic change fee model – the flexible charge, sticky rate, and real hobby differential specs may be divided into intervals. The first duration evidence relates to research of the inter-war duration and of the current floats up till approximately 1978 and is largely supportive of the economic version. The 2d period evidence, which covers the duration of the brand new float extending beyond the late 1970s, is not so supportive of the economic model.

IV. The Model of Monetary Model of Exchange Rate

All economic models rely upon the dual assumptions of buying power parity (PPP) holds constantly and the life of solid cash demand features for the home and foreign economies.

$$e_{it} = p_{it} - p_{it}^* \quad (1)$$

$$m_{it} = \gamma_1 p_{it} + \gamma_2 y_{it} + \gamma_3 r_{it} \quad (2)$$

$$m_{it}^* = \gamma_1 p_{it}^* + \gamma_2 y_{it}^* + \gamma_3 r_{it}^* \quad (3)$$

Equation (1) is the assumptions of purchasing power parity (PPP) that are held continuously over t-period and Equation (2) is the existence of stable money demand functions for the domestic for t-period and lastly Equation (3) is the foreign economies for t-period. All the equations are expressed above. In Equation (1) e_{it} is the spot exchange rate (defined as the price of a unit of foreign money in terms of domestic money) at t-period, m_{it} is the domestic money supply at t-period, p_{it} is the domestic price level at t-period, y_{it} is the domestic real income at t-period, r_{it} is the domestic interest rate at t-period, while an asterisk denotes the corresponding foreign variables, and all variables except for interest rate, are expressed in natural logarithms. In order to solve Equations (2) and (3) for the relative price levels, we have to substitute it into Equation (1), where it will yield the basic flexible-price monetary model and this is reflected in Equation (4). In Equation 4, it is assumed that there is an equality of identical demand for money coefficients across countries

$$e_{it} = (m_{it} - m_{it}^*) - \beta (y_{it} - y_{it}^*) + \lambda (r_{it} - r_{it}^*) \quad (4)$$

V. Discussion on Results

Table 1: Descriptive Analysis

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	
Constant	1.7012	1.33	4.9743	-0.162	1.99	0.7504	
In M2	9.0786	8.44	12.857	6.3770	2.40	0.5926	
In CPI	4.6085	4.60	4.6577	4.5358	0.02	-0.0797	
Observation	216	216	216	216	216	216	
	Kurtosis		Jarque-Bera		Probability	Sum	Sum Sq. Dev.
Constant	1.840		32.368		0.0000	367.46	856.81
In M2	1.8619		24.303		0.0000	1960.9	1246.9
In CPI	2.6078		1.613		0.4464	995.44	0.1293
Observation	216		216		216	216	216

Table 1 above shows the summary of the descriptive analysis for the panel data for total observations of 216. In summary the variable constant represents the dependent variable,

Due to the assumptions in Equation (4), the equation will be in an unrestricted form as shown in Equation (5)

$$e_{it} = \alpha_0 m_{it} + \alpha_1 m_{it}^* + \beta_0 y_{it} + \beta_1 y_{it}^* + \lambda_0 r_{it} + \lambda_1 r_{it}^* + \varepsilon_{it} \quad (5)$$

Theoretically, α_0 and α_1 should equal 1 and -1 respectively, β_0 and β_1 should be negative and positive, respectively, with values equal to income elasticity from domestic and foreign money demand functions, and λ_0 and λ_1 should be positive and negative with values similar to those of semi-interest rate elasticities in money demand functions.

However, in this study, modifications are made and the variables tested are broad money stock (M2) and consumer price index (CPI) only.

Panel Data Equation:

$$Y_{it} = \alpha_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \varepsilon_{it}$$

$$\ln EX = \alpha_0 + \beta_1 \ln M2 + \beta_2 \ln CPI + \varepsilon_{it}$$

Where

EX = Exchange rate M2 = Broad money stock

CPI = Consumer Price Index ε = usual error term

$$(4)$$

exchange rate. It has a value of 1.7012 and 1.9962 for mean and standard deviations respectively. Meanwhile for the independent variables, broad money stock mean and standard deviations value

are 9.078620 and 2.408280 respectively. As for the other independent variable, consumer price index yields a value of 4.608551 and 0.024530 for its mean and standard deviations.

Table 2: Types of panel Analytic Models

	Pooled OLS	Random Effect	Fixed Effect
Constant	78.89641 (3.509522)	2.592180 (2.768150)	3.460940 (3.504929)
In M2	-0.377609 (-7.608434)	-0.315481 (-9.630989)	0.029845 (0.252648)
In CPI	-16.00655 (-3.285057)	0.387029 (1.773522)	-0.440626 (-1.203954)
Observation	216	216	216
Breusch and Pagan LM Test (pooled OLS vs RE)	2.009900841 (0.000)***		-
Hausman Test (RE vs FE)	-	532.265850 (0.0000)***	

Table 2 indicates the results acquired for various forms of panel analytic fashions in which it can be diagnosed whether the records set are of constant effect, random impact or pooled ordinary least squares (Pooled OLS). The Breusch and Pagan LM check can be performed using the components due to the fact this test can't be conducted in E-views software. However, it is able to be carried out in Stata without having to compute it manually. Refer to the appendices for the computation of Breusch and Pagan LM check the use of E-view and Stata software. It additionally suggests the coefficient values for the variables. Breusch and Pagan LM test is carried out to

determine either pooled OLS or random approach need to be used. The end result received is zero.000 and null hypotheses have to be ordinary, random impact approach is extra appropriate. When the Breusch and Pagan LM test is performed, the following step is to conduct the Hausman test to determine both the random impact and the constant effect is extra appropriate for this facts set. Based on Table 2 above, the t-records value is zero.000, hence fixed impact technique have to be adopted. However, on this records set, panel GMM take a look at could not be carried out because of lack of ability to fulfil the requirement for panel GMM test ($N > T$).

Table 3: Robustness test

	Pooled Robust OLS	Fixed Effect CS+ Year	Fixed Effect CS+ Year	Fixed Effect Year Robust	Two-way Fixed effect estimator
Constant	78.89641 (3.136606)	3.552587 (1.807701)	3.552587 (1.807701)	96.43238 (1.930939)	3.552587 (1.918236)
In M2	-0.377609 (-22.85417)	0.492624 (1.156164)	0.492624 (1.156164)	-0.393026 (-17.16255)	0.492624 (1.121287)
In CPI	-16.00655 (-2.935990)	-1.372164 (-2.658387)	-1.372164 (-2.658387)	-19.78127 (-1.822568)	-1.372164 (-2.117882)
Observation	216	216	216	216	216

Table 3 is the robustness conducted for the variables for the data set. The dependant variable is insignificant for the entire robustness test conducted. Meanwhile, for variable M2, in the robust test and effect year robust is significant.

Other than that, for variable CPI, all the values show significant to the data set.

VI. Conclusion

The precept shortcoming in Johansen's showing technique is its to a great extent obscure little

example properties. A better prerequisite in Johansen's estimation method for the quantity of perceptions than within the Engle-Granger technique usually calls for the utilization of quarterly or month to month time association, which are not in every case directly handy. Issues in distinguishing (various) cointegrating vectors with hypothetical economic connections are additionally manageable when making use of the Johansen method.

In this paper, we have inspected the money associated version for Malaysia utilising unit root tests, cointegration and compelled barriers. The effects show that all association are incorporated for request one, $I(1)$. The discoveries exhibited that Japan is cointegrated with 3 cointegrating vectors while European is cointegrated with 1 cointegrating vector. Given the locating of several cointegrating vectors, we compelled independent immediately obstacles on them. In view of the chance proportion assessments, we acknowledged the example of adaptable value economic model for RM/Euro however we disregarded to distinguish the recounted cointegrated vectors as depicting the adaptable fee economic version and the coins request situations for RM/Yen.

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