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Foreign Capital Flows, Uncertainties of Exchange Rates and Central Bank Independence: Implications for Emerging Economies

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Abstract Utilizing time series data for a panel of 22 emerging countries and applying Granger causality tests, this paper extends the relationship between central bank independence (CBI) and uncertainties of inflation by including the phenomena of exchange rates and foreign capital flows. There are two specific objectives of this investigation. The first objective is to see whether uncertainty of inflation induces volatility of exchange rates, and vice versa, under differing degrees of CBI. The second objective is to explore whether the dynamics of the former relationship influence foreign capital flows in turn and, if so, whether the extent of CBI plays any role in shaping that influence. The period of study spans the years 1968 through 2013. Conditional variances for inflation and exchange rates define proxies for uncertainties of inflation and exchange rates in the empirical analysis. Additionally, annual inflows of foreign direct investment (FDI) provide measures for foreign capital flows in the analysis. Results of causality tests for high and low CBI country subgroups show interesting differences. For the high CBI countries, uncertainty of inflation and uncertainty of exchange rates do not share any causal relationship whatsoever between them. However, a weak link runs from FDI to uncertainties of inflation in the long run. This may be indicative of the disciplined monetary policy and tamed inflation in these countries. Contrastingly, for the low CBI countries, there

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is strong evidence of causal links running from uncertainties of inflation to uncertainties of exchange rates on the one hand and to FDI flows on the other. In addition, there is indication of a bi-directional causal link between FDI flows and exchange rates for these countries.

Keywords Uncertainty of inflation · Uncertainty of exchange rates · Foreign capital flows · Levels of central bank independence · Emerging countries

JEL E31 · E58 · F21 · F31

Introduction

The purchasing power hypothesis provides a theoretical framework to examine the relationship between inflation and exchange rates. The economics and finance literatures are replete with research works that present empirical results in support of the hypothesis. This paper extends the existing literature by focusing on the relationships between uncertainties of inflation and exchanges rates in the context of foreign capital inflows, and then examines the nature of the relationship between these variables under differing degrees of central bank independence (CBI). The interest in this line of research is motivated partly by empirical evidence suggesting an inverse relationship between the degrees of CBI and the moments of inflation in an earlier paper (Sintim-Aboagye et al. 2012). Additionally, the research is inspired by the following questions: does credibility of CBI influence the known connections between inflation and other macroeconomic phenomena such as exchange rates and foreign capital flows? If so, what is the nature of those relationships between uncertainties of inflation, uncertainties of exchange rates and foreign capital flows under different levels of CBI? Finally, is it possible for increased foreign capital flows to render CBI ineffective for certain countries? This paper attempts to investigate these questions for a panel of 22 emerging countries by subjecting a traditional empirical model to Granger causality tests.

A Brief Review of the Literature

Underscoring the growing interest in this subject matter, central banks in both developed and emerging countries have been adopting measures to enhance the levels of their independence over the recent years. A material motivation for this trend is the widely published empirical evidence linking relatively high levels of the independence of central banks to lower and stabilized inflation rates (Crowe and Meade 2008; Jácome and Vázquez 2005; Parkin 2014). Additionally, this move can signal, for emerging countries in particular, a commitment toward the pursuance of a disciplined monetary policy and establishment of a stable and enabling business environment. Such commitments are considered critical for potential international investors. Polillo and Guillen (2005) find empirical evidence in 70 countries to support the hypothesis that countries revamp the levels of independence of central banks as they become more exposed to global financial markets and foreign trade. The growing importance

and influence of emerging economies in global financial and economic matters add not only to the interest of this study, but also make it a contemporary and important policy concern.

Notwithstanding the growing scholarly interest on the impact of CBI on inflation and its impact on foreign investible funds, the effect of exchange rates on foreign direct investments (FDI) has also been extensively researched. Froot and Stein (1991) conducted one of the most frequently referenced works in this area. Their paper examines the relationship between FDI inflows and exchange rates in an information imperfect integrated global economy. Focusing on the U.S. economy, the paper finds FDI inflows to be statistically negatively correlated with the U.S. dollar. The susceptibility of FDI inflows to real exchange rates is described as "pervasive". Other studies along similar lines of research include Klein and Rosengren (1994), Blonigen (1997, 2005), and Kosteletou and Liargovas (2000). In the latter paper, the authors provide results of a causality test which shows that in large countries like the U.S., UK, and Japan, real exchange rates induce FDI inflows.

In addition to examining the link between levels of exchange rates and FDI inflows, a number of studies have also looked at the uncertainty of exchange rates and their impact on FDI inflows. These include Cushman (1985), Kiyota and Urata (2004), Schmidt and Broll (2009), and Becker and Hall (2009). An additional study by Goldberg and Kolstad (1995) used quarterly FDI data for comparing the United States on one hand and Canada, Japan, and the UK on the other to empirically prove that increased variability of exchange rates caused multinationals to increase exporting their operations abroad. Using data on uncertainty of exchange rates and FDI inflows from aggregated and disaggregated industry sectors in Japan, Kiyota and Urata (2004) also report that the exchange rate uncertainty dissuades FDI inflows to the country. In sum, it is apparent from the existing research that the volatility of exchange rates tends to affect FDI inflows. In regard to the role of CBI in understanding the relationship between exchange rates and FDI inflows, Lane (1999) sheds light on the relative importance of factors influencing long-run behavior of nominal exchange rates. Utilizing data from a group of industrialized and developing countries, results of this study suggest that along with other factors, such as nominal government debt and openness, CBI plays a relatively weaker role in determining the rate of currency depreciation.

As suggested by the discussion above, the literature provides disjointed evidence on three sets of relationships: the relationships between (a) CBI and variability of inflation, (b) the variability of inflation and exchange rate volatility, and (c) the exchange rate volatility and FDI inflows. Given the connection between inflation, exchange rates, and foreign capital inflows and the expected differences in their behavior pattern under varied degrees of CBI, this paper deviates from the above cited studies and plans to explore all possible relationships between the referred variables together within a selected panel of emerging countries. Most importantly, the paper explores the impact of CBI on these relationships by separating the panel by the achieved level of CBI in the included countries and comparing the differences in the results. The relevance of this attempt seems obvious when seen from the perspectives of the increasing adoption of measures to enhance the

levels of CBI in emerging economies,[1] the growing importance of the flow of direct investment in the development efforts of these countries,[2] and the growing role of these countries in global financial and economic matters. In addition, the outcome of the planned investigation may be of critical importance for formulating economic policies.

The empirical analysis in this paper follows a panel cointegration framework developed by Pedroni (1999, 2001). As already mentioned, the analysis has been completed by subdividing the country panel into three groups: (1) the entire sample, (2) the high CBI countries, and (3) the low CBI countries. The test results confirm the cointegration between the selected variables for the full panel of countries, as well as for the sub panels used in the analysis. The results of the full panel causality tests provide no significant evidence of causal links between uncertainty of inflation and uncertainty of exchange rates. With regard to the relationship of these variables with FDI flows, the results are insignificant for the short run. For the long run, the link between FDI flows and uncertainty of inflation, however, is unidirectional and runs from the former to the latter. The, link between FDI flows and uncertainty of exchange rates, on the other hand, is bidirectional. With regards to the subdivided panels, we find some differences in the response between high and low CBI countries. For the high CBI countries, uncertainty of inflation and uncertainty of exchange rates do not share any causal relationship in the short run or long run. This may be indicative of the disciplined monetary policy and the resulting tamed inflation in these countries. However, FDI inflows induce uncertainties of exchange rates in the short run and uncertainties of inflation in the long run. Probably because of the targeted inflation control, the long-run causal link from FDI to exchange rates appears weak for these countries. Contrastingly, for the low CBI countries, there is strong evidence of causal links running from uncertainties of inflation to uncertainties of exchange rates on one hand and to FDI flows on the other. In the absence of rigid inflation control, the low CBI countries also indicate a bidirectional causal link between FDI flows and exchange rates. These variations in results seem to reflect the temporal influence of relative levels of CBI on the uncertainties of inflation and exchange rates with potential PPP implications.

Empirical Approach

Data

The data set for our analysis consists of annual inflation rates, exchange rates, FDI inflows, uncertainty of exchange rates and uncertainty of inflation for the 22 emerging countries chosen for this study.[3] The time period for the data set spans

[1] For a detailed discussion on reforms in the operating structure of central banks in developing countries, see Pétursson (2000b) and Chinn (2014).

[2] The specific factors that caused rapid increases in FDI flows to the emerging market countries in the 1990s have been identified in the report of the Capital Markets Consultative Group, IMF (2003). The report also indicates that FDI flows defined the largest component of net capital flows for these countries in early 2000.

[3] Annual data is used to avoid significant gaps in our sample for both quarterly and monthly series. The span of years covered (1968 to 2013) provides enough data points for meaningful results. Empirical results on inflation and exchange rates impacts have been documented by Fountas (2010), Thornton (2008) and Caporale and Doroodian (1994).

from 1968 to 2013. The time series data sets on inflation rates and exchange rates were obtained from the International Financial Statistics (IFS) database provided by the International Monetary Fund (2014). The series on FDI flows was obtained from the World Development Indicators (WDI) database provided by the World Bank (2014). The data set for uncertainty of inflation and exchange rates (all against U.S. dollars) represents the time series on conditional variances of inflation and exchange rates constructed by using the GARCH model.[4] The specific model used for generating the conditional variances has been included in this paper as an online only supplemental appendix. Also, we use turnover rate data provided in Cukierman (1992) for subdividing the full country panel into high and low *cbi* groups.[5] The countries that are above the median turnover rate (0.22) have been included in the 'low *cbi*' group, and the rest have been included in the "high *cbi*' group. These sub-groups are listed in Table 1. Turnover rates for Jordan, Sri Lanka, and Jamaica are unavailable; therefore, these three countries have been excluded from the list.

Empirical Results

With data on uncertainty of exchange rates *(uncex)*, uncertainty of inflation *(uncfl)*, and *fdi* inflows from 22 emerging countries, we tested the unit root of the variables under two different model specifications.[6] Model 1: Intercept and heterogeneous trend with common time effect; and Model 2: Intercept and common time effect. Under both model specifications, the first difference of the three variables showed stationarity. The results of the tests for these two models are listed below in Table 2.

With confirmed unit roots in the variables, we proceed to test the cointegration between the three referred variables using the model with intercept and common time effects. The model takes the following form:

$$Uncflit = \alpha i + \partial t + \beta 1 itUncexit + \beta 2 itfdiit + \varepsilon it. \quad (1)$$

To start with, we look into the possibility of cointegration between the variables for the all-country panel. At the next step, we subdivide all of the country panel into high-

[4] The employment of a GARCH framework for this study is based on the methodology used in Grier and Perry (1998), Nas and Perry (2000), Kontonikas (2003), and Fountas et al. (2004). This methodology generates conditional variances that capture the extent of inflation and exchange rate uncertainty and is an improvement over the traditional measure of the use of standard deviation. The latter approach usually fails to discount the predictable aspects of the standard deviation of inflation and exchange rates and therefore provides an inaccurate estimate of uncertainties.

[5] A number of different measures of CBI have been proposed in the literature (Bade and Parkin 1988; Grilli et al. 1991; Alesina and Summers 1993; Cukierman et al. 1992). The consensus, however, is that the Cukierman et al. (1992) measures are the most comprehensive ones both in terms of the large set of countries for which the indices are computed and the subcomponents used to develop those indices. While the cited authors have proposed both a legal index and a turnover index, the latter index based on the turnover rates of the chief executive officer of banks has been found most effective for measuring CBI in developing countries as per the literature.

[6] The unit root test used in this study follows the procedure shown in Im et al. (2003).

Table 1 List of emerging countries.

High *cbi*		Low *cbi*	
Columbia	Nigeria	Argentina	Indonesia
Israel	Philippines	Brazil	Korea
Kenya	Portugal	Chile	Pakistan
Malaysia	South Africa	Egypt	Peru
Mexico	Thailand	Greece	Turkey
		India	Venezuela

Source: Authors' own computations based on the Cukierman (1992) index
Categorized by degrees of *cbi* based on turnover rates (Cukierman).

cbi and low-*cbi* country groups and repeat the test procedure for each of the subdivided panels. The test results for the full panel and the subdivided panels are shown in Table 3.

The reported results in all three tables provide strong evidence of cointegration between the variables in the both the full and the subdivided panels. The cointegration, however, does not unfold the causality, if any, between the pairs of

Table 2 Stationarity test

Variable	Levin-Lin rho stat	Levin-Lin t-rho stat	Levin-Lin ADF stat	IPS ADF stat
Model 1: Intercept and heterogeneous trend with common time effect				
uncex	3.21402	0.26871	0.47400	1.25887
uncfl	−3.91718	−3.80824	−3.67060	−3.06578
fdi	−1.45055	−3.11178	−2.62926	−9.78540
uncexdiff	−48.0838	−16.4505	−13.9026	−23.4993
uncfldiff	−38.4398	−14.6818	−10.8968	−22.0635
fdidiff	−40.2910	−14.3097	−10.2562	−18.6832
Model 2: Intercept with common time effect				
uncex	−0.69754	1.20501	1.57738	0.85509
uncfl	−1.17391	−3.31887	−2.94559	−3.33112
fdi	−3.13627	−3.14628	−2.70476	−3.36149
uncexdiff	−38.1786	−17.7023	−7.52960	−8.29678
uncfldiff	−34.4143	−18.1295	−20.3338	−42.7146
fdidiff	−36.2931	−17.6963	−13.1696	−19.7000

Source: Authors' computations from use of the Pedroni (1999) model with datasets (1968–2013) from the IMF (2014) and the World Bank (2014)

Table 3 Cointegration test

Test statistics	Full country panel	High-cb panel	Lo-cbi panel
Model 2: Intercept with common time effect			
Panel V-Stat	3.70124	6.28880	5.93386
Panel rho Stat	−1,100,467	−7.20445	−13.20019
Panel PP Stat	−17.47557	−16.36685	−23.15247
Panel ADF Stat	−18.10032	−14.75448	−15.60252
Group rho Stat	−9.73727	−6.25120	−12.55904
Group PP Stat	−20.11188	−16.78920	−27.94538
Group ADF Stat	−21.99496	−15.85226	−22.06078

Source: Authors' computations from use of the Pedroni's (1999) panel cointegration test on datasets (1968–2013) from the IMF (2014) and the World Bank (2014)

variables. We, therefore, proceed finally to test for bivariate causality in the cointegrated model referred above. With three different variables in the model, we utilize six different model specifications for the Granger causality test. The models are as follows.

Model Set I:

$$\begin{aligned}\Delta Uncflit &= \alpha 1i + \eta 1ieit{-}1 + \Sigma k\beta 1ik\Delta Uncfli, t{-}k + \Sigma k\beta 2ik\Delta Uncexi, t{-}k + \Sigma k\beta 3ik\Delta fdii, t{-}k + u1it \\ \Delta Uncexit &= \alpha 2i + \eta 2ieit{-}1 + \Sigma k\gamma 1ik\Delta Uncexi, t{-}k + \Sigma k\gamma 2ik\Delta Uncfli, t{-}k + \Sigma k\gamma 3ik\Delta fdii, t{-}k + u2it.\end{aligned} \quad (2)$$

Model Set II:

$$\begin{aligned}\Delta Uncflit &= \alpha 1i + \eta 1ieit{-}1 + \Sigma k\beta 1ik\Delta Uncfli, t{-}k + \Sigma k\beta 2ik\Delta fdii, t{-}k + \Sigma k\beta 3ik\Delta Uncexi, t{-}k + u1it \\ \Delta fdiit &= \alpha 2i + \eta 2ieit{-}1 + \Sigma k\gamma 1ik\Delta fdii, t{-}k + \Sigma k\gamma 2ik\Delta Uncfli, t{-}k + \Sigma k\gamma 3ik\Delta Uncexi, t{-}k + u2it.\end{aligned} \quad (3)$$

Table 4 Granger causality test for the full country panel

Hypotheses	Long run	Short run
Model Set I:		
Ho: Uncertainty of exchange rate does not cause uncertainty of inflation	F = 1.06	F = 0.11
Ho: Uncertainty of inflation does not cause uncertainty of exchange rate	F = 0.20	F = 0.09
Model Set II:		
Ho: *fdi* inflows does not cause uncertainty of inflation	F = 5.11[a]	F = 0.12
Ho: Uncertainty of inflation does not cause changes in *fdi* flows	F = 0.89	F = 0.65
Model Set III:		
Ho: *fdi* inflows does not cause uncertainty of exchange rate	F = 2.43[a]	F = 0.56
Ho: Uncertainty of exchange rate does not cause changes in *fdi* inflows	F = 1.74[b]	F = 1.09

Source: Authors' computations from applications of Granger causality tests on datasets (1968–2013) from the IMF (2014) and the World Bank (2014). [a] Significant at 1% level [b] Significant at 5% level

Model Set III:

$$\Delta Uncexit = \alpha 1i + \eta 1ieit{-}1 + \Sigma k\beta 1ik\Delta Uncexi, t{-}k + \Sigma k\beta 2ik\Delta fdii, t{-}k + \Sigma k\beta 3ik\Delta Uncfli, t{-}k + u1it \quad (4)$$

$$\Delta fdiit = \alpha 2i + \eta 2ieit{-}1 + \Sigma k\gamma 1ik\Delta fdii, t{-}k + \Sigma k\gamma 2ik\Delta Uncexi, t{-}k + \Sigma k\gamma 3ik\Delta Uncfli, t{-}k + u2it.$$

For each of these model sets, k refers to the optimal lag length for each country in the panel. $\eta 1i$ and $\eta 2i$ represent the long-run equilibrium path in the relationship between the variables chosen. $\beta 2ik$ and $\gamma 2ik$ represent the short-run adjustment along the long-run path in the chosen relationship. A simple F test is normally used to test the significance of these long- and short-run coefficients.

As is evident from the model choice forms, Model Set I traces the causal relationship between uncertainty of inflation and uncertainty of exchange rates. The variable *fdi* is treated as an exogenous variable in the model. Consequently, η_{1ieit} indicates the long-run effect of uncertainty of exchange rates on uncertainty of inflation, while η_{2ieit} reflects long-run effect of uncertainty of inflation on uncertainty of exchange rates. For Model Set II, $\eta 1i$ defines long-run effects of *fdi* inflows on uncertainty of inflation and $\eta 2i$ defines the reverse effect. Finally, for Model Set III, $\eta 1i$ defines long-run effects of *fdi* inflows on uncertainty of exchange rates and $\eta 2i$ indicates the effect in the opposite direction. We tested these model sets first for the all country panel and then repeated the tests for the subdivided panels of high *cbi* and low *cbi* countries. The test results are reported in Table 4.

The results for the all-country panel reveal that uncertainty of inflation and uncertainty of exchange rates do not share any causal relationship between them either in the short run or in the long run. Also, *fdi* inflows do not influence uncertainties of inflation and exchange rates in the short run. In the long run, however, *fdi* inflows induce inflation with a unidirectional link running from the former to the latter variable. In contrast, *fdi* flows show a bidirectional link with uncertainty of exchange rates in the long-run. The link running from uncertainty of exchange rates to *fdi* is somewhat weaker. As we see it, these results fulfill the normal expectations for emerging countries. In general, increased *fdi* flows, through impact on investment and growth, increases demand and thereby induces inflation in the long run. This inflation in its turn impacts exchange rates over time. The impact of varied CBI, however, remains unclear with these results. As mentioned earlier, our interest is focused on uncovering the differential impact that *fdi* flows may have on inflation and exchange rates in the high and low *cbi* countries. As such, we repeat the causality tests mentioned above for each of the subdivided panels included in the study. The results of the subdivided panels are shown below in Tables 5 and 6, respectively.

Evidently, the results are strikingly different for the two sets of countries. Results of the high *cbi* countries show a weak bidirectional link between *fdi* flows and uncertainty of inflation. While there is a strong link running from *fdi* to uncertainty of inflation, consistent with the full panel results, the evidence supporting the reverse link is rather weak. This may be taken to indicate that tamer inflation in these countries produces only a mild influence on *fdi* inflows. Interestingly, unlike the full panel outcome, there is only a weak evidence of a causal link running from *fdi* to uncertainty of exchange rates. Thus, increased *fdi* flows, do not create any major fluctuations in uncertainty of

exchange rates in these countries. This is reinforced by the observation that there is no causal link whatsoever between uncertainty of inflation and uncertainty of exchange rates in these countries. For the low *cbi* countries, on the other hand, we find relatively strong evidence of a bidirectional link between uncertainty of exchange rates and *fdi* flows in the long run. As is revealed by the results, *fdi* inflows induces uncertainties in exchange rates both in the short and the long run. The long-run changes in exchange rate uncertainty induce further changes in *fdi* inflows. Also, while we find no link between uncertainty of inflation and uncertainty of exchange rate in the high *cbi* countries, the results indicate a strong unidirectional link going from uncertainty of inflation to uncertainty of exchange rates for low *cbi* countries. This outcome takes on added significance when one considers empirical evidence in the economics literature showing that low *cbi* countries tend to have high inflation rates but also equally high variability in inflation rates. The preponderance of a high ubiquitous macroeconomic phenomenon like inflation and its volatility renders other macroeconomic variables like nominal exchange rates more susceptible to its influence. In contrast, the tamer levels of variability in high *cbi* countries may be interpreted to explain, at least partly, the lack of evidence of a connection between the uncertainty of inflation and uncertainty of exchange rates on one hand, and uncertainty of exchange rates and *fdi* flows on the other.

Discussion and Conclusion

The paper sets out to examine the potential influence of degrees of CBI on the relationship between *fdi* flows and the uncertainty of exchange rates. This extension of the literature has been motivated by a number of important factors. First, there is growing evidence of adoption of CBI in both the developed and emerging economies. Second, the benefits of inflation control in both groups of

Table 5 Granger causality test for the high-cbi country panel

Hypotheses	Long run	Short run
Model Set I:		
Ho: Uncertainty of exchange rate does not cause uncertainty of inflation	F = 0.01	F = 0.12
Ho: Uncertainty of inflation does not cause uncertainty of exchange rate	F = 1.08	F = 0.90
Model Set II:		
Ho: *fdi* inflows does not cause uncertainty of inflation	F = 12.64[a]	F = 0.17
Ho: Uncertainty of inflation does not cause changes in *fdi* flows	F = 1.15[c]	F = 0.92
Model Set III:		
Ho: *fdi* inflows does not cause uncertainty of exchange rate	F = 1.55[c]	F = 2.04[a]
Ho: Uncertainty of exchange rate does not cause changes in *fdi* inflows	F = 0.77	F = 1.21

Source: Authors' computations from applications of Granger causality tests on datasets (1968–2013) from the IMF (2014) and the World Bank (2014). [a] Significant at 1% level [b] Significant at 5% level [c] Significant at 10% level

Table 6 Granger causality test for the low-*cbi* country panel

Hypotheses	Long run	Short run
Model Set I:		
Ho: Uncertainty of exchange rate does not cause uncertainty of inflation	F = 0.08	F = 0.50
Ho: Uncertainty of inflation does not cause uncertainty of exchange rate	F = 2.75[a]	F = 0.12
Model Set II:		
Ho: *fdi* inflows does not cause uncertainty of inflation	F = 0.45	F = 0.18
Ho: Uncertainty of inflation does not cause changes in *fdi* flows	F = 1.83[b]	F = 0.24
Model Set III:		
Ho: *fdi* inflows does not cause uncertainty of exchange rate	F = 4.17[a]	F = 2.98[a]
Ho: Uncertainty of exchange rate does not cause changes in *fdi* inflows	F = 2.27[a]	F = 0.56

Source: Authors' computations from applications of Granger causality tests on datasets (1968–2013) from the IMF (2014) and the World Bank (2014) (accessed at www.elibrary.imf.org and www.data.worldbank.org/products/wdi, respectively on 31st May, 2014). [a] Significant at 1% level [b] Significant at 5% level [c] Significant at 10% level

economies have been empirically supported in the literature over the past decade[7]. Third, there is a growing consensus that by attracting interest of the international investment community, a country's commitment to macroeconomic discipline acts as a signal for inducing foreign capital flows. Finally, the importance of foreign capital flows to emerging economies[8] and the surging influence of these economies on global financial and economic matters[9] has been documented by numerous researchers in the economic development literature. The combination of these factors makes it imperative to examine the possible influence of CBI on flows of foreign capital that defines the most important source of growth and development in the emerging countries.

Using conditional covariances of inflation and exchange rates as proxies for their respective uncertainties and central bank turnover rates as measures of CBI, the paper examined the causal links between uncertainties of inflation, uncertainties of exchange rates, and FDI inflows for high and low CBI country groupings. Granger causality tests within a cointegrated panel define the analytical framework of this examination. Conforming to our expectations, the results of Granger causality tests show differences along the lines of differing levels of CBI. The outcomes of low CBI country panel tests provide strong evidence of causality running from uncertainty of exchange rates to changes in FDI flows. The high CBI country panel, on the other hand, indicates a nonexistent relationship between the two variables. Also, and perhaps importantly, given the focus of this study, low CBI countries show strong evidence for uncertainty

[7] Hinkle and Montiel (1999) provides a survey of the literature on estimating equilibrium inflation and exchange rates in developing countries and builds a case to prove that crises in these countries can be managed with good macroeconomic management.

[8] OECD (2002) and Calvo et al. (1996) claim that the growing trends of integration of world capital markets and globalization of investments observed since the mid-1990s can be attributed to the adoption of sound economic policies and the resulting growth performance by many of the developing countries.

[9] Prasad et al. (2003) provides empirical evidence on the effects of financial globalization on developing countries. The evidence suggests that capital inflows have been associated with high growth rates in some of the developing countries.

of inflation influencing the uncertainty of exchange rates. In contrast, this phenomenon does not apply for the high CBI countries. In light of the existing evidence affirming an inverse relationship between degrees of CBI and the level and variability of inflation rates, the latter set of outcomes provides a basis to suggest that CBI may influence the long-run behavior of nominal exchange rates and their spillover impact on foreign capital flows.

We make the above observations and assertions within limitations on the scope of our study, which includes 22 emerging economies. Future studies should extend the number of countries to also include developed economies which experience substantial flows of FDI. Specifically, contrary to our sample of countries that included countries with notable differences along the lines of macroeconomic policy but more or less similar in development characteristics, it may be of interest to apply our hypothesis to countries in the European Union. The commonality of macroeconomic policies within the Union against disparities in stages of development of the member countries may set the stage for interesting observations and outcomes. Another potential extension of our study would be to incorporate recent efforts at measuring CBI as they become widely accepted as comprehensive and rigorous alternatives to Cukierman's *cbi* indices.

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