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A comparison of exchange rate regime choice in emerging markets with advanced and low income nations for 1999–2011

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ABSTRACT

The recent global financial crisis has sparked a renewal of debate on the choice of exchange rate regimes. Creating a tripartite regime classification, the present study examines their determinants for 137 nations spanning the period 1999–2011. I find that trade openness, economic development, foreign-currency liabilities, and foreign exchange reserve holdings increase the likelihood of choosing a fixed-type regime in emerging markets while economic size, export concentration ratios and financial development lower such a chance. Capital controls, inflation differential with an anchor nation and land size significantly influence regime-choice in advanced and low income countries, but are largely insignificant in emerging markets.

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1. Introduction

One of the most debated and controversial topics in international finance is the choice of exchange rate regimes. The issue has been a core component of the discipline for as long as the subject exists. Regime choice has a profound influence on the efficacy of key economic policy objectives like financial stability, economic growth, low inflation, sustainable trade balance and international capital flows (see Chen, Kim, & Thompson, 2013; Giannellis & Koukouritakis, 2013; Kim & Hammoudeh, 2013; Kodongo & Ojah, 2012; Verheyen, 2012).

The recent global financial crisis (henceforth GFC) has sparked a renewal of debate on the choice exchange rate regimes (Aizenman & Hutchison, 2011). The debt crisis in Europe has shown the constraints of policymaking in common currency areas while the financial meltdown in the US has exposed the fragility of the greenbacks as the world's leading anchor currency. As the process of restructuring the international financial architecture gains momentum, nations need to reconsider key policy issues like the extent of financial account liberalization, banking sector regulations, and for some, choice of regimes itself. The latter requires an understanding of its underlying economic determinants. The present study provides this.

The analysis contributes to the literature in several aspects. I first provide a tripartite regime classification for 137 nations spanning the period 1999–2011. This time period coincides with the introduction of the euro while several other nations changed their exchange rate regimes in the aftermath of the currency crises of the 1990s. Secondly, regimes are identified according to economic development as the influence of the underlying macroeconomic factors on regime-choice could differ across income

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groups. No attempt has been made in earlier literature to examine the choice of exchange rate regimes within a framework disaggregated to the level of income of countries. For instance, advanced economies (AEs) are more prone to flexible regime while low income countries (LICs) tend to use more fixed regimes. Emerging market economies (EMs) on the other are characterized by using more varied regimes. To the best of my knowledge, this study is the first to take this comparative approach. The topic is particularly important for EMs as they were characterized by episodes of economic crises over the last two decades (Patnaik, Shah, Sethy, & Balasubramaniam, 2011). Thirdly, drawing on an estimation equation that encompasses several complementary theories on regime choice and employing different econometric models, I examine its underlying determinants for these three groups of nations.

The issue bears even more relevance as the existing literature is marked by a disconnection between the theoretical determinants of regime-choice and the corresponding empirical evidence. A survey of recent studies reveal that no result appears to be reasonably robust to changes in country coverage, sample period, estimation method, and regime classification (e.g., see Bleaney & Francisco, 2008; Daly, 2011; Juhn & Mauro, 2002; Kato & Uctum, 2008; Markiewicz, 2006; Papaioannou, 2003; Poirson, 2001). A conspicuous absence is the lack of studies for the new millennium, which provides an added incentive to revisit this issue.

Previewing the results, I find that trade openness, economic development, foreign-currency liabilities, and foreign exchange reserve holdings increase the likelihood of choosing a fixed-type regime in EMs while economic size, export concentration ratios and financial development lower such a chance. Capital controls, inflation differential with an anchor nation and land size significantly influence regime-choice in AEs and LICs, but are largely insignificant in EMs.

The remainder of the paper proceeds as follows. Section 2 succinctly synthesizes the different theories on regime choice that provide a guiding framework for the ensuing empirical analysis. Section 3 describes the data and estimation model. Section 4 discusses the results. Section 5 provides several robustness checks. Finally, Section 6 concludes.

2. Synthesis of theories on exchange rate regime choice

The theories on the determinants of regime choice are both vast and controversial. These competing theories can be broadly grouped under six categories — optimum currency area criteria, policy trilemma, crisis models, balance sheet effects, Mundell–Fleming–Dornbusch (henceforth MFD) model and geo-political features. The initial determinants of regime choice have been carefully culled in the seminal works of Kenen (1969), McKinnon (1963) and Mundell (1961) that point nations with more trade openness and greater export concentration are more likely to choose a fixed regime. On the other hand, greater economic size and economic development support choosing a flexible regime. Moreover, higher is the inflation differential of a nation with its potential anchor greater the likelihood of choosing a flexible regime.

The OCA theory was born in an era when international capital movements were relatively limited. International capital flows have been a key feature of most nations, especially in EMs over the last two decades. The policy trilemma paradigm suggests that nations with capital controls are more likely to choose a fixed regime, since this allows preserving monetary policy autonomy. A related argument is that countries with high financial development are more likely to adopt a flexible regime as nations with less developed or immature financial markets lack in short-term financial instruments to purse open market operations.

Recent literature (Bleaney & Francisco, 2008) has underscored the importance of balance sheet effects on regime choice. This claims that countries with a greater share of foreign currency denominated liabilities are more prone to a “balance sheet problem” with flexible regimes as sharp depreciations worsens their balance sheet by raising the costs of debt servicing and tightening credit constraints for domestic agents. Such nations will choose a fixed regime. Turning to the currency crises literature (Krugman, 1979), nations with high international reserves are better able to sustain a peg and thus more likely to choose a fixed regime.

Another issue that has gained recent prominence is the role of shocks. As captured in the MFD model, countries where real shocks are more dominant than nominal, would use the exchange rate as a shock absorber and therefore are less likely to fix. Conversely, countries where nominal shocks are more dominant, a fixed regime enables to reduce or even obliterate their effects on domestic output by inducing a corresponding change in the domestic money supply. So, they would lean towards choosing a fixed regime.

Finally, both bigger population and geographic size undermine the importance of international trade relative to internal trade and hence minimize the need for currency stability. Thus they are both negatively associated with the tendency to adopt a fixed regime. Additionally countries with better quality institutions are more likely to choose flexible regimes, since fixed exchange rates limit the scope for influencing the economy.

3. Data description and methodology

3.1. Data description

The full dataset encapsulates 137 countries for the entire first decade of the new millennium (1999–2011). These nations are categorized under AEs, EMs and LICs following the World Economic Outlook (2012) of the IMF. The Appendix A enlists the complete set of nations.

3.1.1. Exchange rate regime classification

Exchange rate regime classification for each country-period is based on the information provided by the IMF in its *Annual Report on Exchange rate Arrangements and Exchange Restrictions* (AREAER).[1] Their regime categorization comprises of eight categories till 2007. I treat no separate legal tender, currency board and conventional fixed pegs under fixed regimes; pegged regimes within horizontal bands, crawling pegs and crawling bands under intermediate; and finally both managed floating with no predetermined band and independently floating under the flexible category. From 2008 onwards, the Fund introduced three new categories: stabilized arrangements, pegged-exchange rates with horizontal bands, and other managed arrangements that I club under intermediate regimes. Both managed and independently floating were further renamed by the IMF as floating and free floating, respectively, that I aggregate under flexible regimes. I assign a value of 0 for flexible, 1 for intermediate, and 2 for fixed regimes in any year for a nation.

Table 1 shows the distribution of regimes. At the beginning and middle of the sample period, the polar regimes of fixed and flexible dominate in both EMs and LICs with fewer cases of intermediate ones. In AEs, flexible regimes are most prevalent throughout the time period as one would expect. However post-2007, the distribution is very symmetric across the three regime categories with a movement away from both fixed and flexible regimes towards intermediate ones that is primarily driven by both EMs and LICs. Clearly, there is a "crowding to the middle" across the spectrum of regime choices in the immediate aftermath of the GFC. Ironically, this mimics the "vanishing middle" hypothesis of the early 1990s.

The increase in intermediate regimes reflects the change in IMF's regime classification that was primarily motivated by a surge in the number of countries more actively managing their exchange rates in recent years by using increasingly complex intervention practices. Notably, after the GFC and till around September 2011, central banks, especially in major EMs like Brazil, Russia, India, and Indonesia, have intervened heavily in foreign exchange markets in a rather mad scramble for dollars to limit currency movements. Such actions typically help to contain depreciation pressures, which can pose significant inflationary problems, raise the costs of imports or increase the burden of foreign currency-denominated debt.[2] As Williamson (2000) suggests intermediate regimes allow nations to reap the benefits of both fixed and flexible rates without having to incur some of their costs.

3.1.2. Other variables

Capital controls are constructed using the information from the *AREAER* that is the premier source for *de jure* institutional measures. I assign a value of 1 if any restrictions are in place in any year in any country, zero otherwise, for each of the 13 categories under capital transactions as well as for five other categories to capture exchange-based controls that indirectly affect capital flows (presence of dual exchange rates, bilateral payment arrangements, controls on payments for invisible transactions and current transfers, repatriation and surrender requirements).[3] These 18 categories are then averaged for each year to construct the capital control index, very similar to Miniane (2004) who covers 14 categories. A higher value implies more capital restrictions. The currency crises of the 1990s, especially in EMs, have recently brought this measure to the forefront (see Glick & Hutchison, 2011; Yalta & Yalta, 2012).

The construction of all other variables follows existing literature and is explained in Table 2 along with their summary statistics.

3.2. The empirical model

The basic model for estimation is given by

$$y_{i.t} = \beta x_{it} + \mu_{i.t} \text{ for } i = 1, 2, \ldots, N. \; t = 1, 2, \ldots T \tag{1}$$

where $y_{i.t}$ is a discrete variable that describes the choice of exchange rate regimes and x_{it} is the vector of explanatory variables as described above. $y_{i.t}$ can take any of the following three values$y_{i.t} = 0$ if a flexible exchange rate regime is chosen by country i in year t.$y_{i.t} = 1$ if an intermediate exchange rate regime is chosen by country i in year t.$y_{i.t} = 2$ if a fixed exchange rate regime is chosen by country i in year t.with the probabilities p_i, where $i = 0, 1, 2$ and $\sum_{i=0}^{2} p_i = 1$.

A country chooses a certain exchange rate regime y^*_i if it is below a certain threshold level c_i where $i = 0, 1, 2$. The probabilities of $y_{i.t}$ being classified as either flexible, intermediate or fixed regimes are given as follows.

$$\Pr(y_{i.t} = 0) = \Phi(c_1 - \beta x_{it}) \tag{2}$$

[1] Since 1998 the IMF's exchange rate classification methodology has shifted to compiling more factual regimes of countries as determined by the Fund based on various sources, including information from their staff, press reports, other relevant papers, as well as the behavior of bilateral nominal exchange rates and international reserves.

[2] More recently, in April 2013, the US Treasury Department's semi-annual report on exchange rate policies also opines that among major EMs, many, especially in Asia, have more tightly managed regimes, with varying degrees of active management.

[3] The 13 categories include controls on capital market securities, money market instruments, collective investment securities, derivatives and other securities, commercial credits, financial credits; guarantees, sureties, and financial backup facilities; controls on direct investment, liquidation of direct investment, real estate transactions, personal capital transactions, commercial banks and other credit institutions, and finally controls on institutional investors.

Table 1
Distribution of exchange rate regimes.

	FS	AEs	EMs	LICs	FS	AEs	EMs	LICs	FS	AEs	EMs	LICs
	1999				2005				2007			
Flexible regimes	61	15	23	23	67	15	28	24	60	17	27	16
Intermediate regimes	15	3	8	4	8	3	3	2	12	2	6	4
Fixed regimes	59	3	30	26	62	3	31	28	65	2	29	34
Number of nations	135	21	61	53	137	21	62	54	137	21	62	54
	2008				2009				2010			
Flexible regimes	57	17	26	14	50	17	21	12	49	17	19	13
Intermediate regimes	36	1	17	18	41	1	21	19	44	1	24	19
Fixed regimes	44	3	19	22	46	3	20	23	44	3	19	22
Number of nations	137	21	62	54	137	21	62	54	137	21	62	54
	2011											
Flexible regimes	50	16	21	13								
Intermediate regimes	43	2	22	19								
Fixed regimes	44	3	19	22								
Number of nations	137	21	62	54								

Note: FS — full-sample, AEs — advanced economies, EMs — emerging markets, LICs — low income countries.

$$\Pr(y_{i.t} = 1) = \Phi(c_2 - \beta x_{it}) - \Phi(c_1 - \beta x_{it}) \tag{3}$$

$$\Pr(y_{i.t} = 2) = 1 - \Phi(c_2 - \beta x_{it}) \tag{4}$$

where Φ is the cumulative probability distribution function of the error term, which can be either a logistic or normal distribution. A positive coefficient implies that an increase of the relevant variable raises the probability of adopting a fixed-type regime over others.

Table 2
Overview of different determinants of regime choice and summary statistics.

	Description	Sources	μ	σ	n
OCA variables					
Trade openness	(Exports + imports)/GDP PPP current international $	DOTS, WDI	0.417	0.34	1703
Size of the economy	GDP PPP constant 2005 international $	WDI	422 trs.	1490 trs.	1730
Economic development	GDP per capita PPP constant 2005 international $	WDI	11332.99	12972.99	1730
Export concentration	Sum of exports to top 3 partners/exports to world	DOTS	0.463	0.181	1731
Inflation rate differential with base[a]	Difference in percentage changes in CPI with base nation	IFS	19.94	593.45	1696
Policy trilemma					
AREAER capital controls index	Index of capital controls	AREAER	0.56	0.282	1759
Financial development	(M2 − M1)/M1	WDI	2.20	2.66	1662
Balance sheet effect					
Foreign currency liabilities/GDP	(IFS lines 16 c + IFS line 26 c)/nominal GDP	IFS	3.37	31.62	1349
Currency crises					
International reserves-to-imports	Total reserves minus gold-to-imports ratio	IFS, DOTS	0.68	1.57	1650
Mundell–Fleming–Dornbusch					
Real shock	5-years moving standard deviation of G/GDP ratio	WDI	1.32	1.63	1688
Monetary shock	5-years moving standard deviation of M2 growth	WDI	11.2	14.19	1717
Geographic/demographic factors					
Population	Population	WDI	4.61 mns.	153 mns.	1767
Geographic size	Land area (in sq.kms)	WDI	859540.2	2152518	1768

Note: G/GDP: government expenditure to GDP ratio, μ — mean, σ — standard deviation, n — number of observations, trs. — trillions, mns — millions.

[a] Unlike other recent studies (Daly, 2011; Markiewicz, 2006) that use one fixed nation (either Germany or the US) throughout as the base, I define the base country as the one with which a home country's monetary policy is most closely linked or the one used as the anchor currency in the case of fixed regimes, as in Shambaugh (2004). For the nations outside his analysis, I assign the base countries based on IMF's *AREAER*.

Table 3
Multinomial logit model results.

	Emerging markets		Advanced economies		Low income countries		Full-sample	
	Flexible to intermediate	Flexible to fixed	Flexible to intermediate	Flexible to fixed	Flexible to intermediate	Flexible to fixed	Flexible to intermediate	Flexible to fixed
C	−7.53	5.42	70.33	−10.01	**−43.5*** **	−10.76	2.17	**9.43*** **
	(−0.89)	(0.71)	(1.48)	(−0.4)	(−3.33)	(−1.22)	(0.63)	(2.82)
Trade openness	1.97	**2.90** **	−2.94	**−7.29*** **	**−2.77* **	1.57	0.01	0.01
	(1.46)	(2.36)	(−0.95)	(−2.94)	(−1.66)	(0.7)	(1.2)	(0.72)
Real GDP-PPP	0.26	−0.35	−0.81	0.2	**0.69* **	−0.24	−0.15	**−0.52*** **
	(0.56)	(−0.88)	(−1.32)	(0.31)	(1.89)	(−0.5)	(−0.75)	(−2.56)
Real GDP per capita-PPP	0.33	0.43	−2.17	**5.2** **	**2.55*** **	**1.84*** **	0.16	**0.47* **
	(0.8)	(0.88)	(−0.57)	(2.35)	(3.02)	(2.8)	(0.73)	(1.65)
Export concentration	−0.83	−1.72	−22.84	**36.4*** **	1.88	1.95	−0.44	0.12
	(−0.5)	(−0.85)	(−1.6)	(3.89)	(1.01)	(0.94)	(−0.48)	(0.11)
Inflation differential	0	−0.02	−0.01	−0.06	0.03	**−0.07*** **	0	−0.03
	(0.01)	(−0.59)	(−0.03)	(−0.38)	(0.97)	(−3.2)	(0.33)	(−1.04)
Capital controls index	−0.4	0.18	−3.4	0.46	**4.04*** **	**10.47*** **	0.2	**3.12*** **
	(−0.25)	(0.18)	(−1.05)	(0.18)	(2.91)	(5.36)	(0.23)	(4.08)
Quasimoney-to-money	−0.21	**−0.35** **	−0.09	−0.15	0.17	−0.4	−0.01	−0.15
	(−0.94)	(−2.01)	−(0.37)	(−0.95)	(0.86)	(−1.52)	(−0.06)	(−1.49)
Foreign liabilities-to-GDP	−0.2	0.31	**−2.73*** **	**−1.41** **	**7.65*** **	0.93	−0.8	**−0.01* **
	(−0.22)	(1.58)	(−2.53)	(−2.38)	(2.37)	(0.19)	(−1.13)	(−1.71)
Foreign reserves-to-imports	0.24	0.26	1.15	**−20.27*** **	−0.26	**3.41*** **	0.38	**0.76* **
	(0.51)	(0.67)	(0.35)	(−3.57)	(−0.26)	(3.09)	(0.86)	(1.68)
G-to-GDP volatility	−0.24	**0.36* **	**−1.32* **	**−4.58*** **	**0.45*** **	0.18	−0.18	−0.11
	(−0.59)	(1.65)	(−1.78)	(−4.62)	(2.43)	(0.76)	(−1.4)	(−1.51)
M2 growth volatility	0.02	0	0	0.01	**−0.04* **	**−0.07** **	0.01	0
	(1.41)	(−0.29)	(−0.02)	(0.49)	(−1.62)	(−2.16)	(1.05)	(0.15)
Land	−0.25	−0.05	−1.29	**−4.85*** **	0.26	**−0.47* **	−0.11	−0.24
	(−0.96)	(−0.25)	(−1.48)	(−4.21)	(0.78)	(−1.61)	(−0.78)	(−1.58)
N	579		197		438		1214	
Pseudo R^2	0.19		0.67		0.49		0.19	

Terms in brackets denote z-stats based on robust standard errors clustered in countries.
The coefficients in bold are the ones that are statistically significant.
* Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

4. Econometric results and discussion

4.1. Multinomial analysis

A multinomial framework allows the possibility that the influence of explanatory variables on regime choices is not monotonically increasing or decreasing in the underlying regime flexibility. With a tripartite regime classification, this non-ordered approach is based on the assumption that the two alternative regimes to, say, flexible, are not close substitutes. A positive (negative) coefficient means that an increase in a variable raises (lowers) the probability of adopting either an intermediate or fixed regime, relative to flexible (Table 3).[4]

For the FS as well as in EMs, the determinants were insignificant in the choice of an intermediate regime relative to flexible. Consistent with OCA fundamentals, trade openness enhances the chances of choosing a fixed regime instead of a flexible one in EMs. On the other hand it lowers the chances of choosing a fixed regime in AEs and intermediate in LICs. The result is at odds with the OCA predictions. However, it is consistent with the view that higher openness provides greater scope for a deep foreign exchange market in AEs, making it easier to have a flexible regime. More open economies are also subject to more foreign shocks. This further enhances the appeal of a flexible regime as a shock absorber (Eichengreen et al., 1998).

Greater economic size reduces the chances of choosing a fixed regime for the FS, consistent with OCA argument. It is insignificant in both EMs and AEs, and positively influences the choice of intermediate regimes in LICs contrary to OCA theory. Higher economic development increases the chances of choosing fixed regime for both the FS and AEs, contrary to OCA predictions. However, as argued in Shambaugh and Klein (2010), with higher economic development there is a greater demand for wider set of imported goods and services necessitating a more fixed type regime to reduce exchange rate fluctuations on the prices of importable. For LICs this is also confirmed in their choice of either intermediate or fixed regimes over flexible. Export concentration is significant only in AEs and increases the chance of choosing a fixed regime, in line with OCA fundamentals. Turning to the last OCA variable, inflation differential with a base country is insignificant for the FS as well as in both EMs and AEs.

[4] The final results presented exclude population as it is indirectly included in GDP per capita. When I excluded the latter and included population it was insignificant across the different groups and model specifications.

It reduces the chances of adopting a fixed regime in LICs, confirming OCA theory. This implies that LICs can reduce inflation by pegging its currency with an anchor nation.

Moving beyond the OCA variables, greater capital controls positively and significantly affect the choice of both fixed and intermediate regimes relative to flexible in LICs, confirming the constraints imposed by the policy trilemma. It is however insignificant in EMs and AEs. Financial development is insignificant for all groups except EMs where it reduces the chances of choosing a fixed regime, in keeping with theoretical priors. Turning to the balance sheet effect, greater foreign liabilities-to-GDP increases the chances of choosing an intermediate regime relative to flexible in LICs. This underscores that foreign currency denominated debt, often a perennial problem of LICs, constrains them from choosing a flexible regime. However, it reduces the chances of a fixed regime for the FS. It also reduces the choice of both intermediate and fixed regimes in AEs, contrary to theory. It is insignificant in EMs. Foreign reserves-to-imports significantly raises the likelihood of adopting a fixed regime for both the FS and LICs confirming the crisis literature. It is insignificant in EMs and is of the opposite sign for AEs.

Real shocks significantly reduce the chances of choosing fixed-type regimes in AEs supporting the predictions of the MFD model. However, it changes sign for both EMs and LICs and is insignificant for the FS. Such insignificance also applies for nominal shocks in both EMs and AEs as well as for the FS. It significantly reduces the likelihood of choosing a fixed-type regime over flexible in LICs, contradicting theoretical priors. Finally, greater land size significantly reduces the likelihood of choosing fixed regimes in both AEs and LICs, confirming theoretical priors. It is insignificant for both the FS and EMs.[5]

4.2. Other model specifications

While the assumption of non-substitutability among the three broad regime categories is reasonable, one cannot exclude the possibility of substitution between two borderline regime options (e.g. crawling bands under intermediate category vis-a-vis managed floating under flexible category). I relax both the assumptions of non-monotonicity of the explanatory variables and non-substitutability in regime choices next, by using ordered limited dependent models. Table 4 presents the ordered logit and probit models, respectively, as the information criteria did not clearly indicate the superior model. I also estimate a linear probability (pooled OLS) model that offers a more direct interpretation of the coefficients.[6]

Trade openness, economic size and financial development exhibit consistent signs with theory for the FS and EMs. They are largely insignificant in influencing regime choice in both AEs and LICs. Economic development significantly increases the choice of a more fixed-type regime for all groups supporting the demand side argument of regime choice. Greater export concentration is insignificant for the FS but significantly increases the chances of choosing a fixed-type regime in both AEs and LICs, again confirming OCA predictions. However, it is negative in EMs. As espoused in Carmignani, Colombo, and Tirelli (2008), Poirson (2001) greater export concentration exposes nations to external shocks and therefore reduces the likelihood of choosing a peg. It is most likely that EMs are more subject to external shocks that lean them towards choosing a more flexible-type regime due to its shock absorbing nature. Inflation differential again reduces the chances of selecting a fixed-type regime both for the FS and LICs consistent with the multinomial results, but are insignificant in both EMs and AEs.

Much like the earlier results, capital controls significantly increase the choice of a fixed regime both for the FS and LICs. However, it is insignificant in both EMs and AEs. The rapid process of financial deepening and innovation is more likely to have reduced the effectiveness of capital controls in EMs, thus rendering them insignificant. Higher foreign currency denominated debt increases the likelihood of choosing a fixed-type regime in both EMs and LICs, again supporting the balance-sheet effect but somewhat surprisingly is negative for the FS. Greater foreign exchange reserves-to-imports raises the chances of choosing fixed-type regime not only for the FS and LICs but now also for EMs again supporting the currency crisis literature.

Real shocks significantly lower the chances of choosing a fixed-type regime for the FS confirming the MFD predictions. The same applies in AEs. But contrary to this it is positively significant in influencing a fixed-type regime in both EMs and LICs. Nominal shocks are insignificant for the FS, EMs and AEs, but reduce the chance of choosing of a fixed-type regime in LICs that is inconsistent with MFD model. Finally, greater land area is insignificant in EMs but reduces the chances of choosing a fixed-type regime for all other groups confirming theory.[7]

4.3. Issues of endogeneity and regime persistence

An econometric issue is potential endogeneity and simultaneity bias among the variables, especially between inflation, regimes and trade openness. To dispel such concerns I use an instrumental variable probit model where openness is instrumented by land size and the other variables with their lagged values (Specification 1, Table 5). Again confirming OCA predictions,

[5] Very similar results are mirrored when I use a multinomial probit model (not shown for brevity purposes). Additionally, I find that greater foreign liabilities increase the probability of choosing a fixed regime over a flexible one, both for EMs and the FS, confirming the balance-sheet effect. Higher GDP reduces the chances of AEs choosing an intermediate regime while land size is negative and significant in influencing a fixed regime over a flexible one.

[6] I do not introduce country fixed-effects to the pooled OLS results above. This is due to the fact that in qualitative limited dependent variable fixed effects models, the parameters of the explanatory variables cannot be estimated consistently because the estimators and error terms are not asymptotically independent.

[7] To control for the potential effect of institutional quality on regime choice, I used an average of the estimates on the six categories of Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence/Terrorism, Regulatory Quality, Rule of Law, and Voice and Accountability that are provided by the World Bank's *Worldwide Governance Indictors* (WGI) database. Each category for any nation is given a score ranging from −2.5 to 2.5 with a higher value meaning better institutional quality. The coefficient of this multi-faceted measure was negative and significant for the FS implying better institution lowers the chance of choosing a fixed regime. However, it was insignificant for the three sub-groups.

Table 4
Ordered non-linear and linear probability model results.

	Emerging markets			Advanced economies			Low income countries			Full-sample		
	Ordered logit	Ordered probit	Pooled OLS	Ordered logit	Ordered probit	Pooled OLS	Ordered logit	Ordered probit	Pooled OLS	Ordered logit	Ordered probit	Pooled OLS
C			**2.82*** **			**−2.49***			**−2.25***			**3.68*** **
			(3.25)			(−1.77)			(−1.94)			(10.5)
Trade openness	**2.47*** **	**1.41*** **	**0.86*** **	−1.42	−0.66	**−0.40*** **	−0.06	0.03	0.19	**0.436***	**0.242***	**0.22*** **
	(3.7)	(3.7)	(4.16)	(−1.55)	(−1.58)	(−3.97)	(−0.06)	(0.05)	(1.14)	(1.61)	(1.62)	(2.38)
Real GDP-PPP	**−0.31*** **	**−0.18*** **	**−0.14*** **	−0.43	**−0.26***	0.03	−0.06	−0.03	0.02	**−0.48*** **	**−0.28*** **	**−0.16*** **
	(−2.42)	(−2.54)	(−3.22)	(−1.57)	(−2.03)	(0.91)	(−0.35)	(−0.33)	(0.44)	(−6.79)	(−7.12)	(−7.19)
Real GDP per capita-PPP	**0.41*** **	**0.23*** **	**0.17*** **	0.79	0.41	**0.48*** **	**1.64*** **	**0.97*** **	**0.30*** **	**0.42*** **	**0.25*** **	**0.15*** **
	(2.24)	(2.17)	(2.76)	(0.64)	(0.75)	(4.02)	(5.75)	(6.05)	(4.5)	(4.58)	(4.86)	(4.91)
Export concentration	**−1.58*** **	**−0.88*** **	**−0.52*** **	**12.43*** **	**7.32*** **	**1.97*** **	**1.26***	**0.77***	**0.29***	−0.04	0.02	0.02
	(−2.39)	(−2.32)	(−2.47)	(4.04)	(4.85)	(7.74)	(1.81)	(1.98)	(1.66)	(−0.09)	(0.08)	(0.12)
Inflation differential	−0.01	0	0	−0.08	−0.06	**−0.03***	**−0.04*** **	**−0.02*** **	**−0.01*** **	**−0.01***	**−0.01***	**−0.004*** **
	(−0.93)	(−1.04)	(−1.47)	(−0.66)	(−0.93)	(−1.6)	(−2.29)	(−2.49)	(−2.23)	(−1.66)	(−1.86)	(−2.89)
Capital controls index	0.25	0.12	0.09	−0.5	−0.2	0.18	**7.52*** **	**4.44*** **	**1.80*** **	**2.46*** **	**1.53*** **	**0.90*** **
	(0.74)	(0.6)	(0.68)	(−0.36)	(−0.31)	(0.92)	(9.97)	(11.05)	(13.26)	(10.28)	(10.89)	(11.08)
Quasimoney-to-money	**−0.25*** **	**−0.13*** **	**−0.09*** **	−0.06	−0.04	0.01	−0.16	−0.09	**−0.08*** **	**−0.09*** **	**−0.06*** **	**−0.04*** **
	(−2.69)	(−3.16)	(−4.1)	(−0.74)	(−1.11)	(0.85)	(−1.25)	(−1.27)	(−2.45)	(−3.54)	(−3.77)	(−3.83)
Foreign liabilities-to-GDP	**0.35*** **	**0.19*** **	**0.05*** **	−0.45	−0.33	**0.00*** **	**5.25*** **	**2.88*** **	**0.68*** **	**−0.01*** **	**−0.01*** **	**−0.001*** **
	(3.87)	(4.3)	(4.19)	(−0.61)	(−1.17)	(5.07)	(3.89)	(3.95)	(2.12)	(−5.84)	(−6.48)	(−5.42)
Foreign reserves-to-imports	**0.30***	**0.20*** **	**0.09*** **	−0.81	−0.28	**−0.43*** **	**2.37*** **	**1.47*** **	**0.53*** **	**0.71*** **	**0.41*** **	**0.21*** **
	(1.83)	(2.22)	(2.14)	(−0.34)	(−0.31)	(−4.11)	(4.42)	(4.58)	(3.31)	(4.22)	(4.51)	(5.21)
G-to-GDP volatility	**0.32*** **	**0.20*** **	**0.12*** **	−0.81	**−0.44***	**−0.07*** **	**0.19***	**0.10***	0.04	**−0.10*** **	**−0.06*** **	**−0.03*** **
	(3.34)	(3.31)	(3.33)	(−1.52)	(−1.81)	(−9.15)	(1.69)	(1.64)	(1.23)	(−2.63)	(−2.48)	(−2.11)
M2 growth volatility	0	0	0	0.02	0.01	0	**−0.05*** **	**−0.03*** **	**−0.01***	0	0	0
	(−0.51)	(−0.61)	(−0.75)	(0.59)	(0.51)	(0.16)	(−2.71)	(−2.84)	(−1.76)	(0.55)	(0.33)	(0.51)
Land area	−0.05	−0.03	−0.001	**−1.42*** **	**−0.8*** **	**−0.28*** **	**−0.29*** **	**−0.18*** **	**−0.07*** **	**−0.20*** **	**−0.13*** **	**−0.06*** **
	(−0.56)	(−0.69)	(−0.12)	(−4.64)	(−5.65)	(−9.89)	(−2.74)	(−3.06)	(−2.51)	(−3.53)	(−3.97)	(−3.16)
N	579	579	579	197	197	197	438	438	438	1214	1214	1204
Wald χ^2 or F-stat	147.08	176.01	45.52	918.38	110.89	43.41	173.53	208.76	82.87	375.86	486.18	179.27
Pseudo R^2 or R^2	0.18	0.17	0.29	0.52	0.52	0.64	0.36	0.36	0.47	0.18	0.18	0.29

Terms in brackets denote z-stats again based on robust standard errors.
The coefficients in bold are the ones that are statistically significant.
* Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

Table 5
Robustness checks using ordered probit models.

	EMs	AEs	LICs	FS	EMs	AEs	LICs	FS	EMs	AEs	LICs	FS
	Spec. 1	Spec. 1	Spec. 1	Spec. 1	Spec. 2	Spec. 2	Spec. 2	Spec. 2	Spec. 3	Spec. 3	Spec. 3	Spec. 3
C	1.532	11.434	**−19.75*** **	**5.105*** **								
	(0.88)	(0.25)	(−2.55)	(6.84)								
Trade openness	**3.729** **	5.226	−11.537	**0.018*** **	0.165	0.815	−0.093	0.15	0.170	**0.99** *	0.117	0.15
	(2.08)	(1.42)	(−1.2)	(4.27)	(0.35)	(1.58)	(−0.12)	(0.94)	(0.36)	(1.96)	(0.15)	(0.95)
Real GDP-PPP	0.302	−0.326	**8.355** **	−0.010	**−0.135** *	−0.081	−0.006	**−0.14*** **	**−0.131** *	−0.111	−0.018	**−0.14*** **
	(1.54)	(−1.24)	(2.08)	(−0.57)	(−1.88)	(−0.32)	(−0.04)	(−2.54)	(−1.81)	(−0.47)	(−0.13)	(−2.54)
Real GDP per capita-PPP	−0.001	1.188	0.011	−0.005	0.210	−0.314	**0.483** **	0.11	0.211	−0.433	**0.42** *	0.11
	(−0.07)	(0.96)	(0.18)	(−0.78)	(1.36)	(−0.49)	(2.05)	(1.53)	(1.37)	(−0.61)	(1.69)	(1.52)
Export concentration	−0.071	−0.195	−0.051	**−0.32*** **	−0.252	**3.236** *	**0.796** *	0.22	−0.248	1.026	**0.782** *	0.22
	(−0.79)	(−0.24)	(−0.31)	(−9.84)	(−0.56)	(1.76)	(1.8)	(0.77)	(−0.55)	(0.47)	(1.77)	(0.77)
Inflation differential	**−0.267*** **	−0.001	−0.342	**−0.097*** **	−0.004	0.045	**−0.024** *	−0.01	−0.004	0.052	**−0.025** *	−0.01
	(−5.71)	(−0.00)	(−1.28)	(−3.66)	(−0.55)	(0.54)	(−1.83)	(−0.94)	(−0.56)	(0.6)	(−1.95)	(−0.94)
Capital controls index	−0.066	−1.607	**2.728** **	**0.149** **	0.254	1.032	**2.057*** **	**0.71*** **	0.248	0.622	**2.065*** **	**0.73*** **
	(−0.22)	(−0.37)	(2.16)	(2.02)	(0.91)	(1.48)	(3.75)	(3.5)	(0.89)	(0.69)	(3.79)	(3.52)
Quasimoney-to-money	−0.295	8.236	**1.605** *	0.151	**−0.079** **	**−0.084** *	−0.17	**−0.04** *	**−0.079** **	−0.063	−0.181	**−0.05** **
	(−0.64)	(0.74)	(1.87)	(0.56)	(−2.15)	(−1.92)	(−1.48)	(−2.59)	(−2.10)	(−1.48)	(−1.55)	(−2.67)
Foreign liabilities-to-GDP	−0.031	−3.313	**6.112** **	**1.54*** **	**0.097** *	**−0.94** **	**2.25*** **	−0.01	0.096	**−1.129** *	**2.007** **	−0.01
	(−0.11)	(−0.47)	(3.59)	(7.91)	(1.62)	(−2.19)	(2.68)	(−0.89)	(1.60)	(−1.89)	(2.36)	(−1.04)
Foreign reserves-to-imports	0.117	3.195	−1.251	**0.363*** **	**0.202** *	**1.654** *	0.486	**0.28** **	**0.204** *	**1.655** *	0.544	**0.28*** **
	(1.11)	(0.83)	(−0.65)	(3.79)	(1.85)	(1.85)	(1.12)	(2.47)	(1.86)	(1.86)	(1.23)	(2.47)
G-to-GDP volatility	**0.184** *	−0.503	0.586	**−0.093*** **	0.011	**−0.086** *	0.005	−0.06	0.007	**−0.082** *	−0.003	−0.06
	(1.89)	(−1.02)	(1.54)	(−2.82)	(0.12)	(−2.12)	(0.06)	(−1.49)	(0.07)	(−1.95)	(−0.03)	(−1.43)
M2 growth volatility	0.002	0.090	**−0.094** *	0.005	0.002	**0.024** *	−0.023	0.003	0.002	**0.03** *	−0.022	0.002
	(0.4)	(0.62)	(−1.65)	(1.12)	(0.66)	(1.74)	(−1.35)	(0.89)	(0.77)	(1.66)	(−1.3)	(0.75)
Land					−0.021	−0.218	−0.048	−0.06	−0.023	−0.109	−0.058	−0.06
					(−0.31)	(−0.98)	(−0.61)	(−1.10)	(−0.33)	(−0.6)	(−0.72)	(−1.10)
Regime$_{(t-1)}$					**1.55*** **	**3.202*** **	**1.662*** **	**1.73*** **				
					(13.13)	(8.43)	(9.53)	(18.61)				
Fixed episodes$_{(t-1)}$									**3.102*** **	**7.247*** **	**3.301*** **	**3.46*** **
									(13.13)	(5.28)	(9.52)	(18.57)
Intermediate episodes$_{(t-1)}$									**1.492*** **	**3.062*** **	**1.887*** **	**1.8*** **
									(8.95)	(7.56)	(5.76)	(14.46)
N	526	180	396	1102	528	180	398	1106	528	180	398	1106
Pseudo R^2					0.54	0.76	0.65	0.60	0.54	0.77	64.85	0.60

The coefficients in bold are the ones that are statistically significant.
* Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

openness significantly increases the chances of choosing a fixed-type regime in both the FS and AEs, while inflation differential lowers such a chance. The other OCA variables are largely insignificant. Both higher capital controls and foreign liabilities increase the likelihood of choosing fixed-type regimes in both the FS and LICs but are insignificant in EMs and AEs. Foreign reserves-to-imports is positive and significant for the FS, consistent with the crisis literature but is insignificant for the other groups. Following the MFD model, real shocks negatively influence regime-choice for the FS, but are positive in EMs that contradict theoretical priors. Finally, nominal shocks are insignificant in EMs and AEs but lower the chances of adopting a fixed-type regime in LICs, opposite to the MFD model predictions.

Exchange rate regimes are highly persistent. If a country chooses a particular regime in a given year it is most likely to select the same one in the next than a nation that has not selected that regime (Hagen & Zhou, 2007; Meissner & Oomes, 2009). To capture such persistence I first use a lagged-regime variable (Spec. 2). The positive coefficient concurs with theory.

I next use lagged values of two dummies, representing intermediate and fixed regime-episodes, respectively (Spec 3). The positive and significant coefficients for the two past regime dummies indicate that countries that have adopted either intermediate or fixed regimes in the past are more likely to choose these two regimes in the current period than those that have adopted flexible regimes previously. The magnitude of these coefficients further indicates that being in a fixed regime in the previous year raises the chance for the same regime this year by a larger margin than for intermediate ones. Moreover, such effect is the strongest in AEs.

5. Further robustness checks

5.1. Alternative regime classification

Classification of regimes is far from unique. As a robustness check I categorize both conventional fixed pegs and managed floating types under the intermediate category. In general, results using an ordered probit model are not very sensitive to this reclassification. Most coefficients are qualitatively comparable to those in Table 6 for not only the FS but also across the three sub-groups. It is worthwhile to note that capital controls are now negatively associated with choosing a fixed-type regime in both EMs and AEs. This result suggests that with restrictions to borrow abroad, EMs may not need a hedging mechanism that a pegged regime provides to avoid exchange rate uncertainty. Thus they have fewer incentives to choose a fixed regime.

5.2. Using de facto exchange rate flexibility index

Finally, I move from using regime dummies towards a continuous variable to capture regimes. Following Calvo and Reinhert (2002), I construct an index ($FLEX_1$) based on observed movements in exchange rates per unit of USD, foreign exchange reserves and interest rates.[8]

$$(FLEX_1) = \frac{\Delta_E}{\Delta_{FER} + \Delta_r} \tag{5}$$

where $\Delta_E =$ changes in exchange rates, $\Delta_{FER} =$ changes in foreign exchange reserves, and $\Delta_r =$ changes in interest rates (all in absolute values). A higher value of $FLEX_1$ denotes a greater degree of de facto regime flexibility. A positive coefficient of any regressor now implies that it positively affects the choice of a more flexible-type regime, unlike the earlier estimations.

Trade openness, economic development, inflation differential with a base nation and real shocks are insignificant across all categories of nations. Capital controls significantly increase the chance of selecting more flexible regimes in both EMs and LICs. The results for capital controls in EMs are consistent with their signs using Regime 2 in the left panel. Foreign currency liabilities lower the chances of selecting flexible rates in EMs, in keeping with the balance sheet effect. Moreover, financial development and foreign exchange reserves-to-imports continue to exhibit signs consistent with both theoretical priors and the earlier results with regime dummies in EMs. Pointedly, land size positively and significantly affects the choice of a more flexible regime in EMs. Finally, nominal shocks positively affect the choice of a more flexible-type regime in LICs contradicting theoretical priors but are insignificant for others.

Changes in interest rates may capture general market conditions and not necessarily be used by central banks to manipulate movements in currencies. So I further create a second index by excluding interest rates, similar to Bayoumi and Eichengreen (1998).

$$(FLEX_2) = \frac{\Delta_E}{\Delta_{FER} + \Delta_E} \tag{6}$$

where $0 < FLEX_2 < 1$ and a higher number again denotes a greater degree of flexibility.

Results using this second measure of flexibility mirror very similar findings for capital controls, financial development, foreign liabilities-to-GDP, inflation differential and land size in EMs. Economic development negatively affects the choice of a more flexible regime in both AEs and LICs, again supportive of the demand side argument, but is insignificant in EMs. The variables measuring shocks seem to be less important than other variables as their signs are not consistent.

Table 6
Results for alternative regime classifications.

	REGIME2	REGIME2	REGIME2	REGIME2	$FLEX_1$	$FLEX_1$	$FLEX_1$	$FLEX_1$	$FLEX_2$	$FLEX_2$	$FLEX_2$	$FLEX_2$
	EMs	AEs	LICs	FS	EMs	AEs	LICs	FS	EMs	AEs	LICs	FS
C					**8.008***	−25.527	**8.038***	−6.556	**0.92*****	**1.75****	**0.81****	−0.08
					(1.87)	(−0.69)	(1.8)	(−0.88)	(2.87)	(2.34)	(1.99)	(−0.67)
Trade openness	0.51	0.341	**−0.79****	**0.003****	−0.328	−1.093	0.417	−0.452	−0.09	−0.09	0.11	**0.05***
	(1.56)	(0.93)	(−2.45)	(2.22)	(−0.74)	(−0.75)	(0.39)	(−0.46)	(−1.45)	(−1.58)	(1.19)	(1.84)
Real GDP-PPP	**−0.23*****	−0.166	0.009	**−0.15*****	**−0.428***	0.592	**−0.382***	0.355	**−0.05*****	0.01	−0.01	−0.02
	(−3.77)	(−1.23)	(0.15)	(−4.77)	(−1.8)	(0.87)	(−1.82)	(0.69)	(−3.10)	(0.69)	(−0.36)	(−0.2)
Real GDP per capita-PPP	**−0.196****	−0.326	**0.498*****	−0.056	−0.008	−0.077	−0.197	0.052	0.01	**−0.12***	**−0.09*****	0
	(−2.23)	(−0.82)	(4.01)	(−1.17)	(−0.04)	(−0.05)	(−1.06)	(0.43)	(−0.41)	(−1.74)	(−3.78)	(0.14)
Export concentration	−0.350	**10.39*****	−0.058	−0.059	**−1.524****	8.224	−0.016	−0.158	**−0.14****	−0.17	0.04	−0.07
	(−1.02)	(7.07)	(−0.18)	(−0.29)	(−2.41)	(0.72)	(−0.01)	(−0.17)	(−2.06)	(−0.95)	(−0.58)	(−1.49)
Inflation differential	−0.004	0.033	**−0.019***	**−0.006***	−0.001	−0.822	0.061	−0.003	0	−0.01	−0.00	0.00
	(−1.19)	(0.6)	(−1.71)	(−1.85)	(−0.11)	(−0.98)	(1.19)	(−0.21)	(−0.94)	(−0.54)	(−1.56)	(1.24)
Capital controls index	**−0.63*****	**−1.21***	**2.591*****	**0.75*****	**1.102****	12.585	**1.228***	0.563	**0.08***	0.01	0.05	−0.01
	(−2.98)	(−1.75)	(8.79)	(5.81)	(2.26)	(1.02)	(1.66)	(1.55)	(1.64)	(0.12)	(1.16)	(−0.17)
Quasimoney-to-money	**−0.15*****	**−0.14*****	−0.020	**−0.04****	**0.064***	−0.553	−0.184	−0.169	**0.02***	−0.01	0	0.01
	(−3.45)	(−3.22)	(−0.4)	(−2.27)	(1.66)	(−1.05)	(−1.26)	(−0.94)	(1.98)	(−1.51)	(0.32)	(1.48)
Foreign liabilities-to-GDP	0.027	**−0.96*****	**2.72*****	**−0.04*****	**−0.105****	−0.007	0.607	−0.001	**−0.02*****	−0.001	0.06	−0.001
	(1.54)	(−4.44)	(4.59)	(−2.92)	(−2.44)	(−0.86)	(0.3)	(−0.34)	(−4.31)	(−0.15)	(−0.49)	(−0.17)
Foreign reserves-to-imports	**0.14****	0.156	−0.104	**0.22*****	**−0.396****	13.301	−0.269	0.214	**−0.07*****	**−0.17****	**0.15*****	**−0.07*****
	(2.34)	(0.2)	(−0.37)	(4.49)	(−2.27)	(0.88)	(−0.47)	(0.34)	(−5.07)	(−2.27)	(2.67)	(−5.80)
G-to-GDP volatility	0.057	**−0.08*****	0.062	−0.006	0.156	−0.093	−0.012	0.002	−0.01	0	0.01	0
	(1.14)	(−2.74)	(1.15)	(−0.38)	(0.87)	(−0.81)	(−0.06)	(0.03)	(−0.65)	(0.19)	(0.95)	(0.9)
M2 growth volatility	**0.01*****	−0.011	−0.004	**0.014*****	−0.002	0.103	**0.041***	0.008	**0.00****	**0.01****	**0.00****	**0.00*****
	(3.58)	(−0.95)	(−0.49)	(5.16)	(−0.47)	(1.36)	(1.67)	(1.39)	(2.8)	(2.1)	(2.3)	(4.05)
Land	−0.042	**−0.94*****	**−0.085***	**−0.16*****	**0.323****	0.122	0.173	−0.118	**0.05*****	−0.02	0.01	**0.03*****
	(−1.03)	(−6.37)	(−1.94)	(−6.01)	(2.11)	(0.26)	(1.28)	(−0.34)	(−4.39)	(−1.06)	(0.88)	(4.63)
N	570	197	438	1214	575	197	438	1210	575	197	437	1210
Pseudo R^2 or R^2	0.15	0.59	0.24	0.16	0.069	0.084	0.055	0.006	0.14	0.15	0.19	0.09

The coefficients in bold are the ones that are statistically significant.
* Indicates significance at the 10% level.
** Indicates significance at the 5% level.
*** Indicates significance at the 1% level.

Table 7
Summary of the results.

	Expected sign	Full-sample	EMs	AEs	LICs
OCA variables					
Trade openness	+	+[b,c]	+[a,b]	−[a,b]	−[a,c]
Size of the economy	−	−[b,c]	−[b,c]	−[b]	+[a,d]
Economic development	−	+[a,b]	+[b], −[c]	+[a,b,d]	+[a,b,c,d]
Export concentration	+		−[b],+[d]	+[a,b,c]	+[b]
Inflation rate differential	−	−[b,c]		−[b]	−[a,b,c]
Policy trilemma					
Capital controls index	+	+[a,b,c]	−[c,d]	−[c]	+[a,b,c]
Financial development					
Quasi-money-to-money	−	−[b,c]	−[a,b,c,d]	−[c]	−[b]
Balance sheet effect					
Foreign liabilities-to-GDP	+	−[a,b,c]	+[b,d]	−[a,c]	+[a,b,c]
Currency crises					
Foreign reserves-to-imports	+	+[a,b,c,d]	+[b,c,d]	−[a,b], +[d]	+[a,b], −[d]
Mundell–Fleming–Dornbusch					
Real shock	−	−[b,c]	+[a,b]	−[a,b,c]	+[a,b]
Monetary shock	+	+[c]	+[c], −[d]	−[c]	−[a,b,d]
Geographic/Demographic factors					
Land size	−	−[b,c,d]	−[d]	−[a,b,c]	−[a,b,c]

A positive (+) sign means that the variable is positively associated with the probability of adopting a fixed-type regime while a negative (−) implies that it lowers such a chance.
[a] Using multinomial logit models.
[b] Using either ordered logit, probit or pooled OLS models.
[c] Using alternative regime classification.
[d] Using exchange rate flexibility indices.

Greater economic size and export concentration ratios reduce the chances of selecting flexible regimes in EMs that are inconsistent with the results in Section 4. The same applies for trade openness in FS. Such discrepancies arise as this index is not a perfect dual of regime dummies and are only an imperfect proxy for the degree of de facto flexibility.[9]

Lastly, the results using different methodologies are summarized in Table 7. An overall impression is that regime determinants are usually robust to model changes with the ordered choice models yielding most statistical significance for the variables.

6. Conclusion

In the changed international financial landscape of the late 1990s, this paper compares the determinants of regime choice between EMs, AEs and LICs. The provided evidence serves as a policy guide in the choice of regimes by nations. The findings imply that greater trade openness, economic development, foreign-currency denominated liabilities and foreign exchange reserve holdings are conducive towards choosing a fixed-type regime in EMs while higher economic size, export concentration and financial development lower the probability of such a choice. The findings for international reserves confirm the recent surge in reserve accumulation by various EMs, and are consistent with the IMF's (2011) reserve adequacy metric that indicates major EMs have reserves in excess of levels adequate for precautionary purposes. Restrictions on cross-border capital flows increase the chances of choosing flexible regimes in EMs that is opposite for both LICs and the FS. Capital controls also reflect the institutional and political features affecting regime choice. EMs have better institutions in place that provide more prudent regulation and oversight of markets. Hence this reduces the necessity of adopting fixed-type regimes. Next, greater inflation differential with a base country lowers the chance of adopting a more fixed-type regime in AEs, LICs and the FS. From a policy perspective this implies that *ceteris paribus*, central banks, especially in LICs can peg their currencies to a potential anchor nation as an effective inflation abatement tool. The role of export concentrations in EMs contrasts the findings for other groups, and captures the increasing role of foreign shocks. Clearly, the influence of shocks on regimes requires deeper scrutiny in future work. Finally, time invariant country features like land size are consistently significant in favoring flexible regimes.

Based on the findings, one can conclude that the choice of regimes after the turn of the millennium has been consistently influenced by conventional economic determinants. In contrast to some of the earlier empirical literature my estimates indicate that the OCA fundamentals and other newer theories are adequate if not robust predictors of regime choice.

To close, future avenues of research can use this regime classification to examine their consequences on key macroeconomic policy outcomes. I hope to address these in future work.

[9] Monetary authorities often do not intervene through direct purchases or sales of reserves, which is assumed in this measure. Even if they do it is undertaken relative to several currencies and not just the US dollar. Moreover, it is difficult to distinguish movements in currencies associated with intervention from those due to exogenous shocks.

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Appendix A. List of countries covered[a]

Afghanistan (LIC), Algeria (EM), Antigua and Barbuda (LIC), Argentina (EM), Armenia (LIC), Australia (AE), Azerbaijan (EM), Bahamas (EM), The Bahrain (EM), Bangladesh (LIC), Barbados (EM), Belarus (EM), Belize (LIC), Benin (LIC), Bhutan (LIC), Bolivia (LIC), Bosnia and Herzegovina (EM), Brazil (EM), Brunei Darussalam (AE), Bulgaria (EM), Burkina Faso (LIC), Cambodia (LIC), Canada (AE), Chile (EM), China (EM), Colombia (EM), Costa Rica (EM), Cote d' Ivoire (LIC), Croatia (EM), Czech Republic (AE), Denmark (AE), Dominica (LIC), Dominican Republic (EM), Ecuador (EM), Egypt (EM), El Salvador (EM), Estonia[b] (EM), Ethiopia (LIC), Euro area (AE), Fiji (LIC), Georgia (LIC), Ghana (LIC), Grenada (LIC), Guatemala (EM), Guyana (LIC), Haiti (LIC), Honduras (LIC), Hong Kong SAR, China (AE), Hungary (EM), Iceland (AE), India (EM), Indonesia (EM), Iran (EM), Iraq (EM), Israel (AE), Jamaica (EM), Japan (AE), Jordan (EM), Kazakhstan (EM), Korea, Rep. (AE), Kuwait (EM), Kyrgyz Republic (LIC), Lao PDR (LIC), Latvia (EM), Lebanon (EM,) Lesotho (LIC), Libya (EM), Lithuania (EM), Madagascar (LIC), Malawi (LIC), Malaysia (EM), Maldives (LIC), Mali (LIC), Malta[b] (AE), Mauritius (EM), Mexico (EM), Mongolia (LIC), Morocco (EM), Mozambique (LIC), Myanmar (LIC), Namibia (EM), Nepal (LIC), New Zealand (AE), Nicaragua (LIC), Niger (LIC), Nigeria (LIC), Norway (AE), Oman (EM), Pakistan (EM), Papua New Guinea (LIC), Paraguay (EM), Peru (EM), Philippines (EM), Poland (EM), Qatar (EM), Romania (EM), Russian Federation (EM), Saudi Arabia (EM), Senegal (LIC), Serbia (EM), Seychelles (LIC), Sierra Leone (LIC), Singapore (AE), Slovak Republic[b] (AE), Slovenia[b] (AE), Solomon Islands (LIC), South Africa (EM), Sri Lanka (EM), St. Kitts and Nevis (LIC), St. Lucia (LIC), St. Vincent & the Grenadines (LIC), Swaziland (LIC), Sweden (AE), Switzerland (AE), Syrian Arab Republic (EM), Tajikistan (LIC), Tanzania (LIC), Thailand (EM), Timor-Leste (LIC), Togo (LIC), Trinidad and Tobago (EM), Tunisia (EM), Turkey (EM), Turkmenistan (LIC), Ukraine (EM), United Arab Emirates (EM), United Kingdom (AE), USA (AE), Uruguay (EM), Uzbekistan (LIC), Vanuatu (EM), Venezuela, RB (EM), Viet Nam (LIC), Yemen Rep. (LIC), Zambia (LIC), Zimbabwe (LIC).

[a]AE: Advanced economy, EM: Emerging market, LIC: Low income country.

[b]Data are prior to joining Euro area.

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