



## Working Paper



# **A New Approach to Exchange Rate Management in Small Open Financially Integrated Economies**

by

DeLisle Worrell, DeLisle Worrell and Associates, Inc., [info@delisleworrell.com](mailto:info@delisleworrell.com);

Winston Moore, University of the West Indies, [winston.moore@cavehill.uwi.edu](mailto:winston.moore@cavehill.uwi.edu);

and

Jamila Beckles, Central Bank of Barbados, [jamila.beckles@centralbank.org.bb](mailto:jamila.beckles@centralbank.org.bb).

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# **A New Approach to Exchange Rate Management in Small Open Financially Integrated Economies<sup>1</sup>**

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## **Abstract**

*We propose an integrated fiscal and monetary approach to economic stabilisation policy in small open financially integrated economies (SOFIEs), using fiscal policy to achieve external balance at a targeted exchange rate. This approach overcomes the conundrum of the conventional Mundell-Fleming view in today's world of international financial integration, where capital controls do not insulate the small domestic economy, and where local authorities cannot be indifferent to the volatility of the exchange rate of local currency, and the potential harm to savings, investment, capital flight and domestic financial stability. In today's world, the standard prescription of flexible exchange rates and independent monetary control targeting inflation presents challenges with which SOFIEs have struggled, with little success. We describe the framework for an alternative which suits the circumstances of SOFIEs.*

Keywords: Exchange rate; Small Open Economy; International Financial Flows

## **1. Introduction**

The disconnect between the views of economists and ordinary folk with respect to exchange rate policy is one of the most universal and enduring characteristics of small open economies. Ordinary folk are preoccupied with maintaining the value of local money in terms of US dollars or whatever is the international trading currency that matters most to them; economists see the exchange rate primarily as the price of foreign currency, to be adjusted flexibly in order to clear the foreign exchange market. A higher price of foreign exchange, in this view, provides an incentive to switch from imports to cheaper domestic goods and services, and increases the returns to exporting, stimulating the export sector. Devaluation of the local currency leads to reduced demand for foreign exchange, increased demand for local substitutes, and, with time, increased capacity in export activity, bringing with it an increased supply of foreign exchange. Devaluation therefore seems the appropriate action for a slowly growing economy, boosting output of import substitutes and exports, and bringing the demand and supply of foreign exchange into equilibrium. However, this conclusion depends on three crucial assumptions that cannot be fulfilled in small economies that are integrated into the world of international finance and commerce: one, that there exists the domestic capacity to produce substitutes for imports in sufficient quantity at an internationally competitive price; two, that there is a relatively low pass-through from import prices to domestic inflation and production costs; and three, that foreign

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<sup>1</sup> This paper has evolved out of ideas presented at seminars hosted by the IMF, the Bank of England, the Peterson Institute, the Chinese Academy of Social Sciences, and the Central Bank of Barbados. We are grateful to our colleagues for their comments and suggestions. We are fully responsible for the views in this paper.

currency inflows and outflows on the financial account are unaffected by the volatility of the exchange rate.

This paper defines a category of economy where these three conditions do not hold, and we show empirically that countries with small populations which have economies below a certain size fall within that category. We then develop a measure of exchange rate volatility for these small economies based on the international currency of greatest interest to them; for most this turns out to be the US dollar, but that is not the case for small European countries. We compare the volatility of local currencies, measured in terms of the dollar or euro as appropriate, against indices of economic performance over time, for all the countries that fall within the "small open financially integrated economy (SOFIE)" category.<sup>2</sup> If currency flexibility does provide a tool for growing the economy through import substitution and increased export capacity, then countries with more flexible exchange rates will be expected to show better performance; conversely, if the popular view is indeed the correct one, then the countries with little or no volatility will be the best performers.

We then go on to explain how the three structural features of small open economies modify the expected effects of exchange rate changes, and what are the implications for economic policies for stabilization and development. The analysis will demonstrate that, in economies with these characteristics, an exchange rate peg, with zero volatility, is the ideal to which policy makers should aspire.

If that is the case, why have so many small economies embraced exchange rate flexibility? The answer, we argue, is that they did not find a policy framework that afforded them a decisive influence over the balance of inflows and outflows of foreign exchange. We conclude with a description of the policy framework used in Barbados, which is designed to equip economic policy makers with the tools to achieve the external balance that is crucial to the stability of the exchange rate and the maintenance of investor confidence.

This paper focuses on small open financially integrated economies (SOFIEs), which are characterised by a) high export concentration; b) a limited range of competitive tradeable production, compared with import needs; and c) a domestic financial system which is fully integrated into world financial markets. We explain why these structural characteristics render exchange rate adjustment ineffective as a tool for increasing international competitiveness. We provide evidence that confirms the widespread conviction that SOFIEs that have successfully anchored their exchange rates have achieved greater economic prosperity. And we describe a framework for anchoring the exchange rate through the use of fiscal policy to manage aggregate demand.

## **2. The literature**

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<sup>2</sup> I owe this term to Mar Gudmundsson, Governor of the Central Bank of Iceland. I first heard it from him at a meeting of the Official Monetary and Financial Institutions Forum (OMFIF) in London, April 2017.

In recent years, the economics community has come to appreciate the reasons why small economies cannot be indifferent to volatility of their exchange rates. In a policy paper issued by the IMF in 2010, the Fund's then Chief Economist Olivier Blanchard and two colleagues wrote: "For smaller countries, however, the evidence suggests that, in fact, many of them paid close attention to the exchange rate and also intervened on foreign exchange markets to smooth volatility and, often, even to influence the level of the exchange rate. ... "Their actions were more sensible than their rhetoric." The paper acknowledged that exchange rate volatility could occasion disincentives for exportables (in case of unwanted appreciation), as well as financial and economic instability due to the impact on the balance sheets of firms with contracts in foreign exchange.

This view is already a considerable advance on the prevailing opinion of only a few years earlier, reflected in Frankel (2004) and Obstfeld and Rogoff (1995). However, it does not fully represent the reality of the small economies which are our concern. The record shows that countries that are defined by the characteristics that are typical of SOFIEs all clung to an exchange rate peg for as long as they were able. In every case the peg was abandoned very reluctantly, and in the face of the uncontrollable growth of an informal foreign exchange market with a heavily depreciated exchange rate. In these circumstances the adoption of a flexible rate regime is seen as symptomatic of economic policy failure, a failure which depresses investor confidence and inhibits potential growth.

The conventional interest rate defence of the exchange rate in the face of speculative currency attack seldom is effective in small economies. The case of Thailand in the mid-1990s is instructive: rather than stimulate the intended inflow of foreign currency, interest rate increases led to a shift of capital flows towards unhedged short term debt, and inflation in the prices of real estate and other nontradables (Furman et al., 1998). All too often, resort to the interest rate defence is seen as a desperation measure, which undermines public confidence and leads to capital flight, the opposite of what was intended.

The earliest failures among small economies attempting to sustain exchange rate pegs were seen in the 1970s and 1980s, when small economies in many developing countries attempted to ration foreign exchange using controls on current account transactions. These were a universal failure, and by the 1990s it was widely accepted that foreign exchange rationing was not feasible for most, if not all, open economies.

However, the notion persisted that controls on the financial account of the balance of payments were effective, and offered an avenue for the central bank to insulate the domestic money supply from unwarranted or destabilizing foreign exchange flows, occasioned by misinformation, misinterpretation, inadequate information and other market frictions. The existence of restrictions on financial flows is often given as the explanation of the persistence of long-standing exchange rate pegs in such small economies as Barbados and the countries of the Eastern Caribbean Currency Union.

The effectiveness of controls on the financial account of the balance of payments is not borne out by the evidence, however. A majority of the very small countries which have unequivocally pegged exchange rates in fact have no exchange restrictions of any kind (Bermuda, Cayman,

Turks and Caicos), and in all others the restrictions are loosely applied, for good reason. Apprehension about profit and capital repatriation is a sure way to deter foreign direct investment in countries that always need foreign capital to finance the import content of fixed capital formation. What is more, the trading conglomerates which have a prominent role in every small economy can very easily affect inflows and outflows through Treasury management of the several currencies they deal in daily. This point is made in Worrell (2000). In effect, the well-known Mundell-Fleming trilemma (free capital flows, a fixed exchange rate, and independent monetary policy cannot coexist) reduces to a dilemma: monetary independence is impossible if the exchange rate is pegged.

This fact is now widely recognised, and it is accepted that, in the context of currency unions such as the Euro Area and the Eastern Caribbean Currency Area, monetary policy cannot be used to stabilise the individual economies. We will argue that small very open economies are no different, even if they are not formally part of a larger currency area.

Does this mean that small open economies have no prospect of a combination of monetary and exchange rate policies that will stabilise their economies and promote growth? We argue that such is in fact the case. Economies such as Barbados and Greece must react to international economic downturns by procyclical adjustment of aggregate expenditure, except to the extent that they have the capacity for additional foreign borrowing. Even in that case, foreign borrowing that is not directed to increasing productive capacity should be used to buy time to effect the needed adjustment measures in a less disruptive manner (Worrell, 2012).

The consensus among economists does not yet go this far. It is reflected in Ostry et al. (2012), who argue that for countries with significant currency mismatches, high pass-through of devaluation to inflation, and limited inter-sectoral factor mobility, dual inflation-exchange rate targeting is recommended, using sterilised exchange intervention to stabilise the exchange rate and inflation targeting via monetary policy. Their rationale is that if target inflation is consistent with a zero output gap, under inflation targeting the policy interest rate would fall if there is capital inflow (with exchange rate appreciation) or with a negative aggregate demand shock (along with a depreciation of the exchange rate). However, policymakers may want to avoid an appreciation which makes exports less competitive. Therefore, they would lower the interest rate in the case of the negative demand shock, and would intervene in the case of a capital inflow.

However, in practice there remains the problem of fiscal dominance, the ever present danger that inappropriate fiscal policy will derail monetary policy (BIS, 2012). In that case, the apparent conflict between monetary and exchange rate policy undermines the overall credibility of the monetary and exchange authorities, and may provoke a flight of capital, frustrating both monetary and exchange objectives.

We know of only two ways of anchoring the exchange rate in circumstances of small very open economies, where the impossible trilemma is reduced to a dilemma between the exchange rate anchor and monetary policy. One of these is a strict currency board arrangement, where the central bank does no lending of any kind from its own resources. It advances only such funds as are deposited on the accounts it holds with the government and financial institutions which are

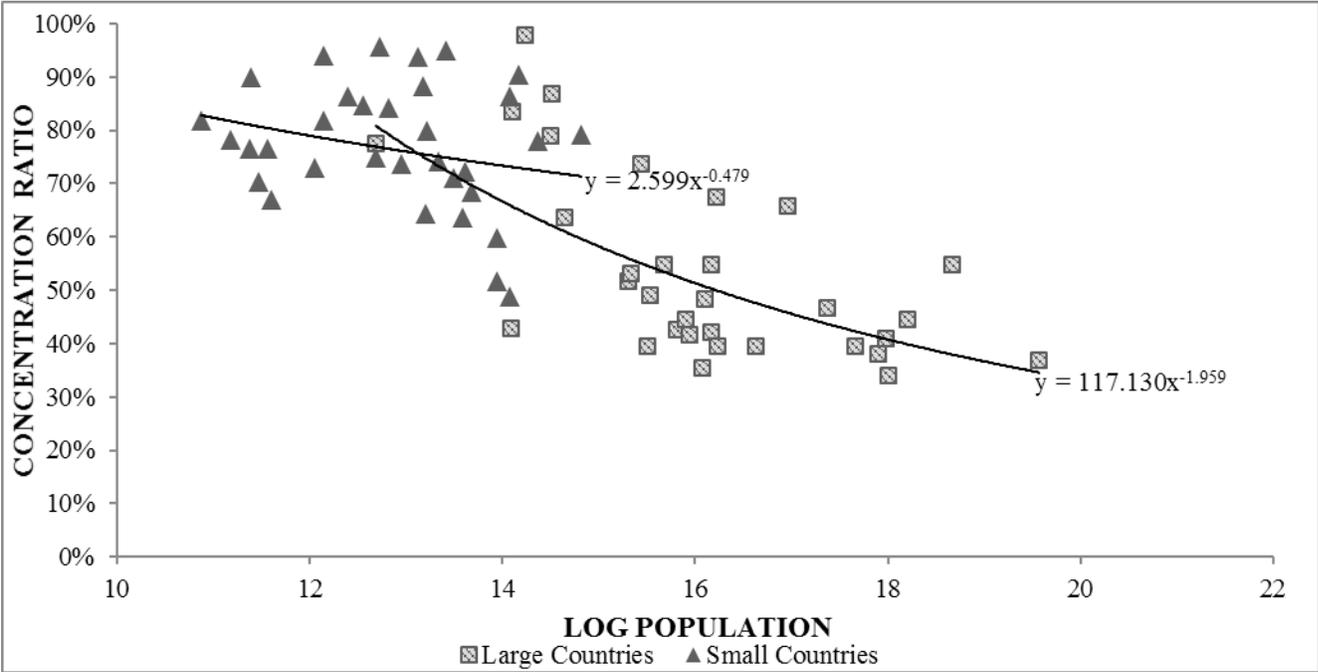
its clientele, whether those deposits are in domestic money or foreign exchange. There is no money creation by the central bank (Hanke, 2003).

The second option, which we will illustrate by drawing on the policy framework in use in Barbados, is to actively use fiscal policy to secure the external balance of the economy at the target exchange rate. In this framework, the central bank's store of foreign reserves is used as a buffer, to buy the time needed to make fiscal adjustments in line with the expected capacity to import.

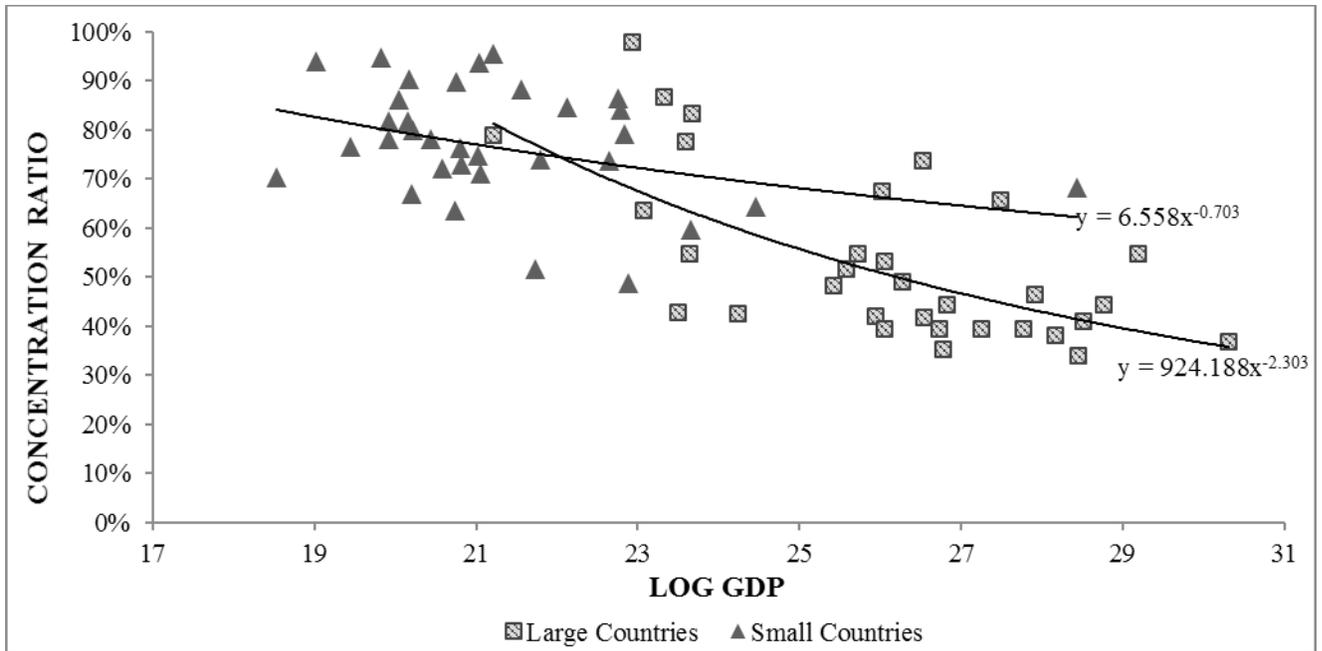
**3. What is different about SOFIEs?**

The defining characteristic of SOFIEs is the fact that their physical and human resources permit only a limited range of internationally competitive production. We use this characteristic, matched against population and economic size, to categorise the economies that are considered "small". Figures 1 and 2 show the relation between population size and size of GDP on the horizontal axis, and the percentage of total exports accounted for by the five largest items on the vertical axis. It is apparent that SOFIEs have higher concentration ratios and that the relationship between size and concentration is less variable than for larger economies.

**Figure 1. Population and Export Concentration**

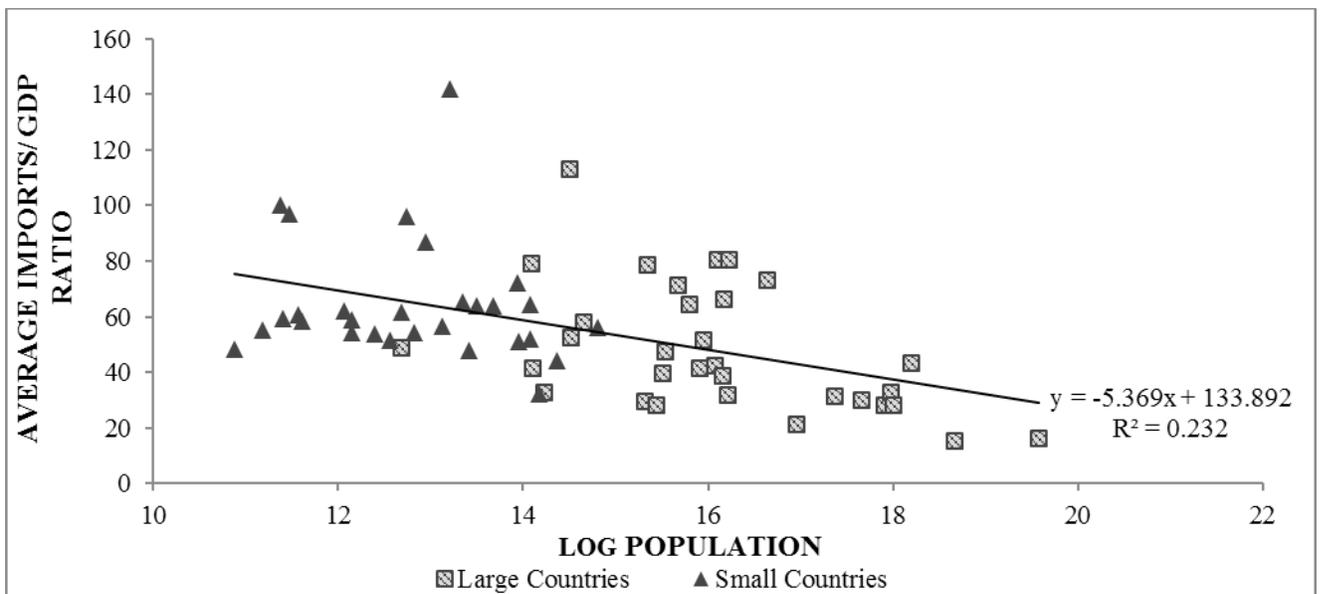


**Figure 2. GDP and Export Concentration**

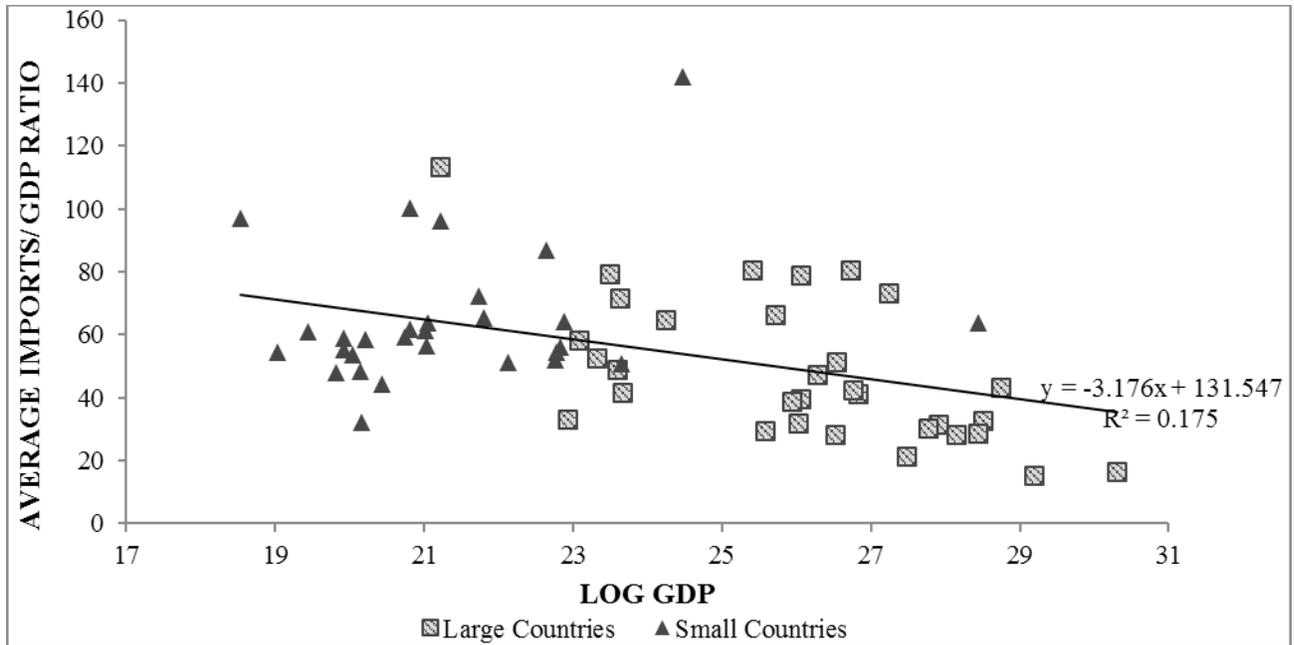


This distinction allows us to define thresholds for small size, based on the apparent relationship between size and export concentration. Based on the relationships shown in the figures, we arrived at thresholds for small size of populations of 1.2 million or less, and GDP of US\$8 billion or less. Figures 3 and 4 show that the small economies so defined have relatively high import ratios, compared with large economies.

**Figure 3. Import Ratio Relative to Population Size**

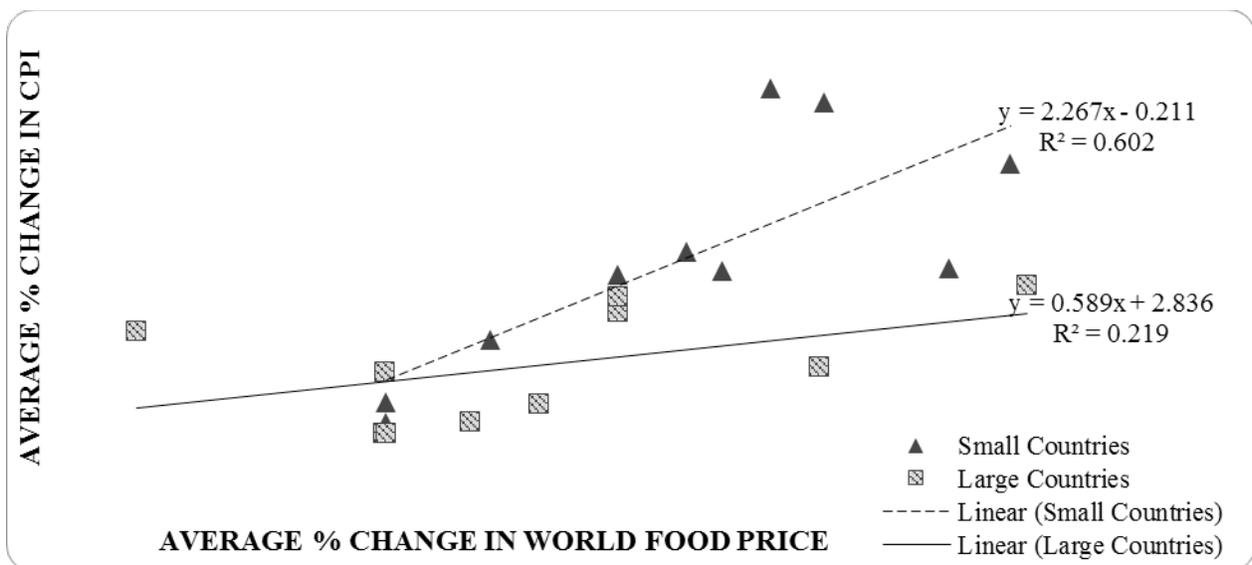


**Figure 4. Import Ratio Relative to GDP**



The SOFIEs high import propensity is reflected in a high pass-through of import prices, both of consumption goods and via imported intermediate and capital goods. Figures 5-7 illustrate small countries' higher sensitivity of domestic prices to foreign prices. They compare domestic price responses of small economies to those of large economies, for changes in world food prices, international oil prices, and changes in the value of the domestic currency.

**Figure 5. Import Pass-through from World Food Prices**



**Figure 6. Import Pass-through of Oil Prices**

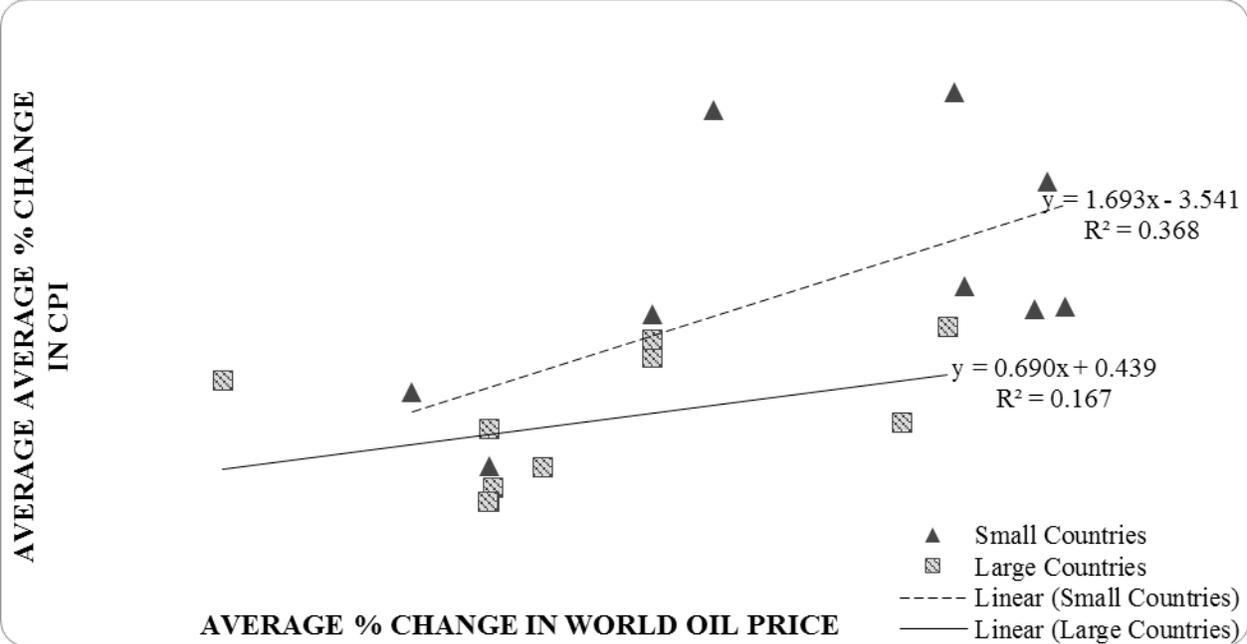
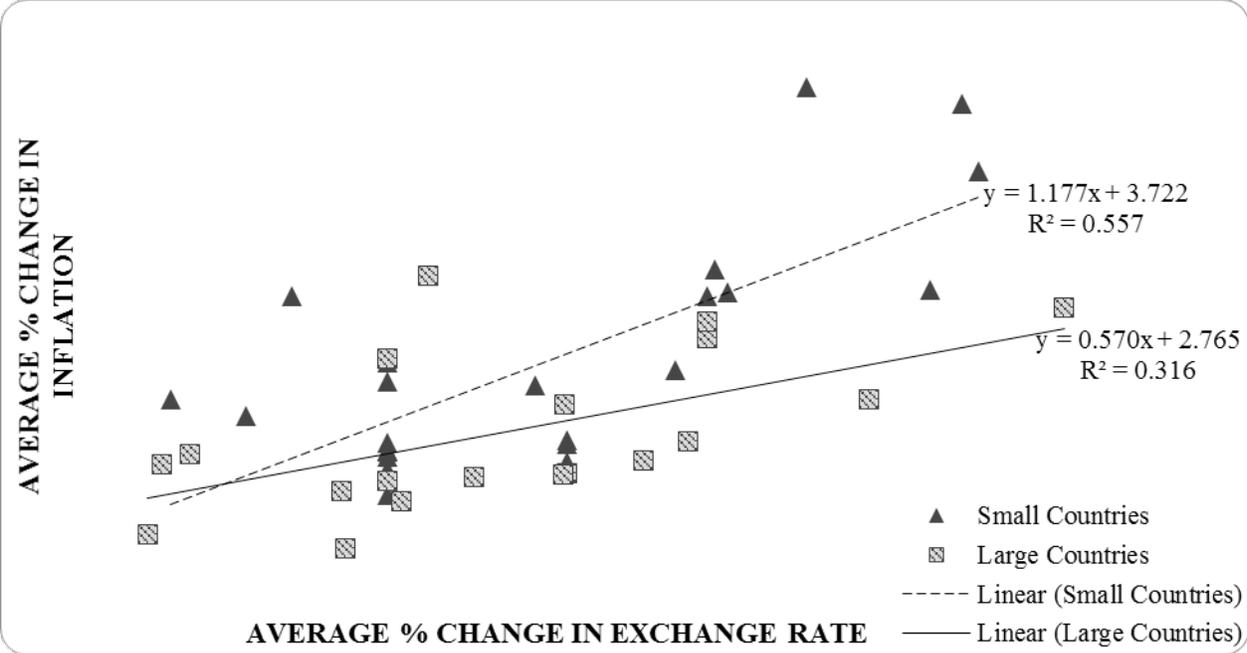


Figure 7. Pass-through from Devaluation



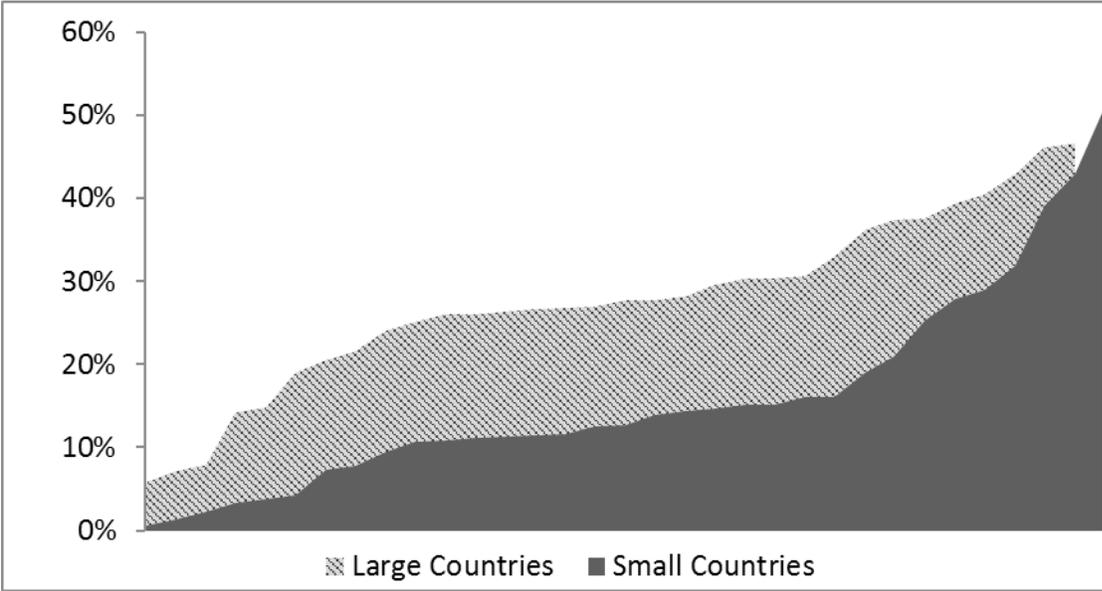
The SOFIEs' limited range of internationally competitive production means that there is little substitutability between local production and imports, or between local consumption and imports or exports. Domestic producers may not switch from exporting to supplying the local market, because the local market is too small in relation to their production capacity. There are no

domestic substitutes for the overwhelming majority of imports. And the small country does not have the capacity to produce a range of import substitutes at internationally competitive prices. Table 1 and Figure 8 are a first crude attempt to explore the limits to production and expenditure switching from foreign to local sources. We compared the values of imported items with the values of domestic production of comparable items, to gain a rough approximation of the extent of possible import substitution. The mean values and ranges for large and small countries are reported in Table 1. In Figure 8 large and small countries are ranked by size, to illustrate the fact that import substitution possibilities for large countries are greater, throughout the range.

**Table 1. Crude Indicators of Max. Import Substitution Potential (Percentage of Imports)**

	<b>Range</b>	<b>Weighted Average</b>
<b>Small Countries</b>	1%-43%, Excluding Bahrain	12%
<b>Large Countries</b>	6%-47%	14%

**Figure 8. Max. Import Substitutes as % of Imports**



**4. Why do SOFIEs prefer an exchange rate anchor?**

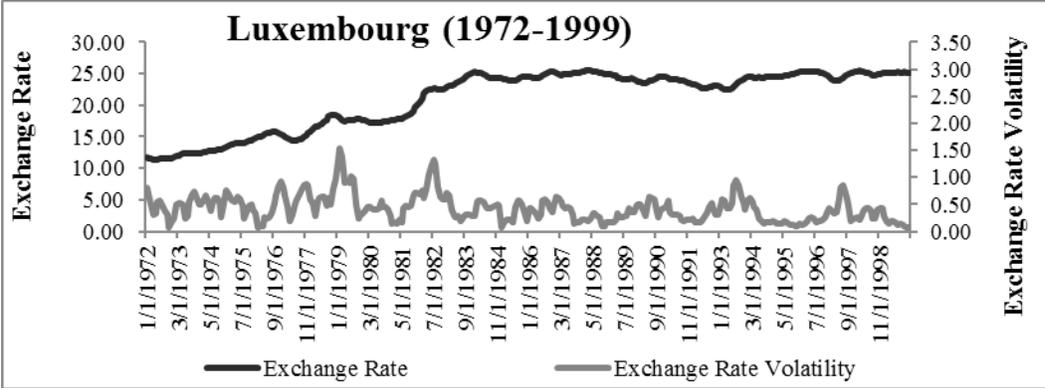
**4.1 Exchange rate variability in SOFIEs**

In order to investigate whether SOFIEs do have a preference for predictable exchange rates, we need first to infer what each country regards as their international reference currency, i.e the

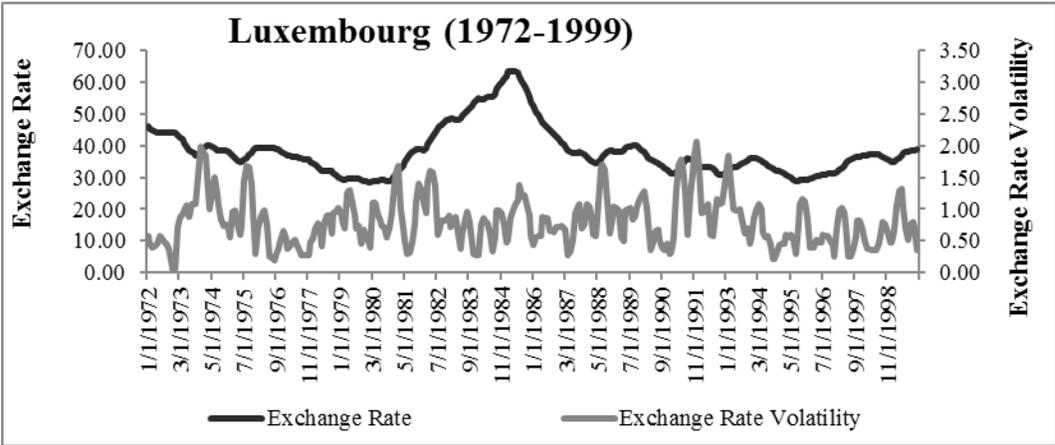
currency that people think of when they consider the long term value of their savings. Do Serbians worry about the value of their currency in terms of the euro or the US dollar? Are Fijians more preoccupied with the value of the Australian or the US dollar? We make inferences about the answer for each country by comparing the volatility of their local currency with the US dollar and the most obvious alternative. The comparison is illustrated using the example of Luxembourg in Figure 9. The volatility of the local currency is plotted against the US dollar and against the deutschemark and later the euro, using the same volatility scale. A preference for alignment with the euro is clear.

**Figure 9. Discovering the Reference Currency: Luxembourg**

*Denominated in euro*

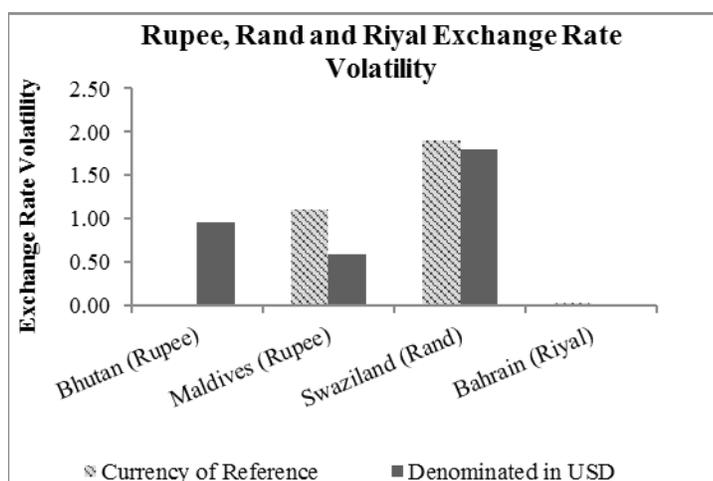
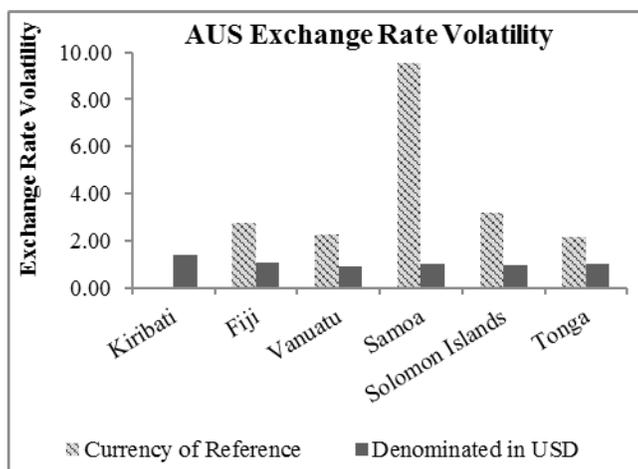
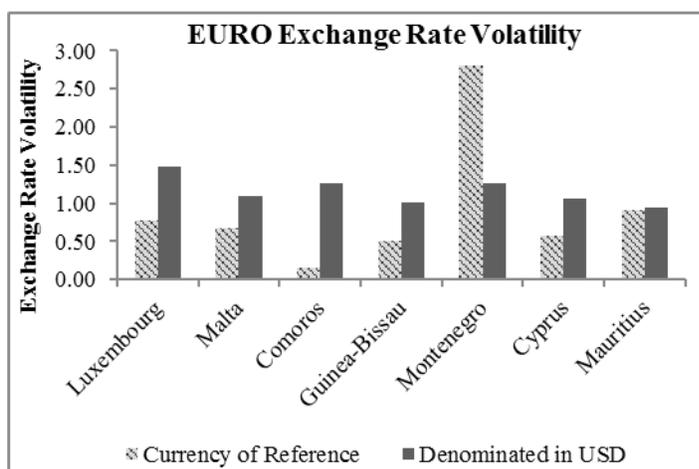


*Denominated in US dollars*



A similar exercise was carried out for other countries, and the results are summarised in Figure 10, which compares, for each country, the local currency volatility with respect to the US dollar and with respect to the largest neighbouring currency of importance in world trade. A clear preference for the US dollar is present in all countries, except for SOFIEs in Europe, where there is a preference for the euro everywhere, apart from Montenegro.

**Figure 10. Discovering the Reference Currency**

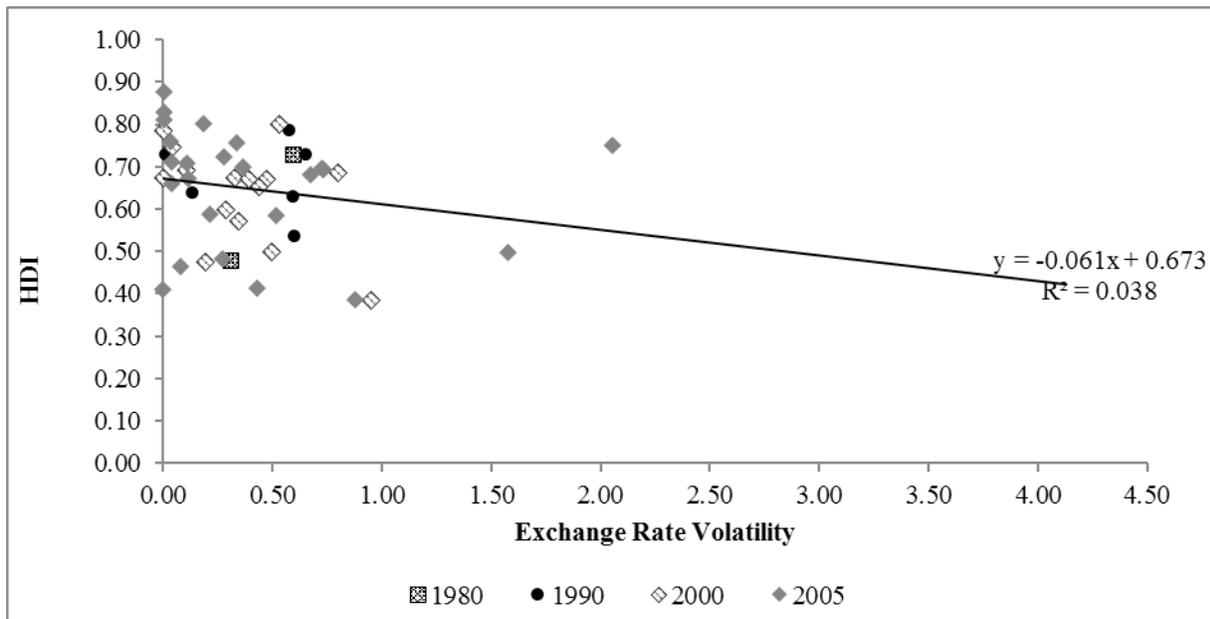


#### 4.2 Exchange rate variability in SOFIEs and economic performance

Our next task is to investigate whether countries that have a stable exchange rate anchor show evidence of better economic performance than those that do not. For this we use the Human Development Index as our measure of material well-being. The deficiencies of the more commonly used GDP measure are well known, and the HDI is the only superior indicator which is available on a comparable basis for countries worldwide. An exercise of this kind will not produce definitive results; there are, for every country, too many omitted factors which have a greater impact on overall economic performance and welfare than does policy with respect to the exchange rate. However, if the popular sentiment in favour of the exchange rate anchor has merit, we should expect to see an inverse relationship, however weak, between the volatility of the exchange rate and the country's HDI score. That is indeed what we observe in Figure 11. We do take account of just a handful of the omitted variables in the econometric test which is reported on in Table 2. Here we include the years of schooling for each country, the inflation rate and an indicator of the trade openness of the economy, along with exchange rate volatility, as factors influencing the HDI score. It may be seen that there is the expected negative relationship between exchange rate volatility and HDI performance, suggesting that countries with lower exchange rate volatility are observed to have somewhat better HDI scores. The relationship is

statistically credible, lying within the bounds of probability, which suggests there is an underlying relationship. However, the size of that impact is trivial, as measured by our test. That result is not unexpected, because there are many other variables of which we were not able to take account that would have had a material impact. Interestingly, the negative impact of exchange rate volatility on HDI performance does not show up if we do not recognize that the reference currency for European countries is the euro. In Table 3 we replicate the results of Table 2, using the US dollar as the reference for all countries, including European countries. As may be seen, the negative relationship between exchange rate volatility and the HDI score does not appear.

**Figure 11. Exchange Rate Volatility and the HDI Score**



**Table 2. Exchange Rate Volatility and Other Factors Affecting the HDI Score**

	(1) HDI	(2) HDI	(3) HDI	(4) HDI
ExchangeRa~R	-0.007 (0.004)	-0.003 (0.002)	-0.003** (0.001)	-0.002* (0.001)
Schoolenro~g		0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.000)

Inflationc~a			0.001 (0.001)	0.002 (0.001)
Merchandis~P				-0.000** (0.000)
_cons	0.675*** (0.001)	0.506*** (0.042)	0.495*** (0.045)	0.590*** (0.033)
N	201	138	136	135
R-sq	0.011	0.243	0.275	0.231
Standard errors in parentheses *p<0.05, **p<0.01, ***p<0.001				

**Table 3. Results with an Inappropriate Reference Currency**

	(1) HDI	(2) HDI	(3) HDI	(4) HDI
ExchangeRa~S	-0.005 (0.005)	0.005 (0.005)	0.005 (0.005)	0.005 (0.005)
Schoolenro~g		0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.001)
Inflationc~a			-0.000 (0.001)	-0.000 (0.001)
Merchandis~P				-0.000 (0.000)
_cons	0.656*** (0.003)	0.407*** (0.031)	0.409*** (0.036)	0.423*** (0.079)
N	181	119	117	116
R-sq	0.005	0.481	0.483	0.444
Standard errors in parentheses *p<0.05, **p<0.01, ***p<0.001				

The preference for an exchange rate anchor is economically sound, because devaluation does not make the SOFIE more competitive, and integration with the international financial market robs the SOFIE of an independent monetary policy. The standard policy suite of a flexible exchange rate and independent central bank with an inflation mandate is therefore not on offer. Fiscal policy is the sole tool of economic management in the government's armoury.

Because of the structural features that define the SOFIE, there is little substitutability between domestic and foreign goods, in either consumption or production. Very few of the items imported can be produced at home under any circumstance, and of the handful that it is physically possible to produce domestically, those that can be produced at competitive prices

form an even smaller set. The domestic market is so small in relation to the capacity of the export sector that a switch from domestic demand (for “staycations”, for example) adds nothing significant to the supply of exports. Exporters of goods and services will see no change in the demand for their output, which is priced in foreign currency. They may see an improvement in their profitability, to the extent that domestic costs rise by less than the amount of devaluation. Since the main domestic cost is for labour, this profitability improvement is at the expense of worsening inequality, with a transfer of some portion of labour’s share of the national income to the owners of capital. The improvement can therefore be expected to erode over time, and may not provide the anticipated incentive for investment in export capacity.

The foreign exchange markets of SOFIEs are driven overwhelmingly by financial flows in the short run, and not by the settlement of payments for traded goods and services. Trade volumes depend on decisions on investment in productive capacity and on contracts for delivery whose terms are agreed in advance. The critical factor for these transactions is the exchange rate which rules at the time of settlement, which may be months or years after the contract is signed or the investment decision made. What matters for the volume of trade, therefore, is the predictability of the exchange rate. The observed preference for an exchange rate anchor has a sound economic basis on these grounds (Pindyck, 1991).

The daily demand and supply of foreign exchange depends, not on these real factors, but on financial arrangements, such as the volume of trade credits, the extent of central treasury management by multinational corporations, the degree of financial integration with the wider world at the corporate and personal levels, and the extent to which domestic and foreign currencies are regarded as adequate inflation hedges. Whenever there is widespread apprehension about the possibility of devaluation, the supply of foreign exchange drains from the domestic market through these channels, and devaluation becomes a self-fulfilling prophecy, unless there is a credible framework for sustaining the exchange rate anchor.

## **5. Tools for anchoring the exchange rate**

The key to successfully anchoring of the exchange rate is to recognize that the foreign exchange market in the SOFIE is a fixed-price market, which achieves equilibrium by adjusting quantities rather than prices. The supply of foreign exchange is augmented by investment in the tradable goods in which the country is internationally competitive, and the demand is adjusted by reducing the fiscal deficit as needed, and by the choice of domestic and foreign financing of the deficit. There is the obvious problem that the supply-augmenting policies yield results three to five years into the future, and even the fiscal adjustment of demand takes some months to have its full impact. In the framework proposed in this paper, which is in effect in Barbados, monetary policy is used to fill the gaps, using a combination of foreign exchange intervention at the announced exchange rate, and intervention on the domestic market for treasury debt instruments, to provide market guidance on interest rates.

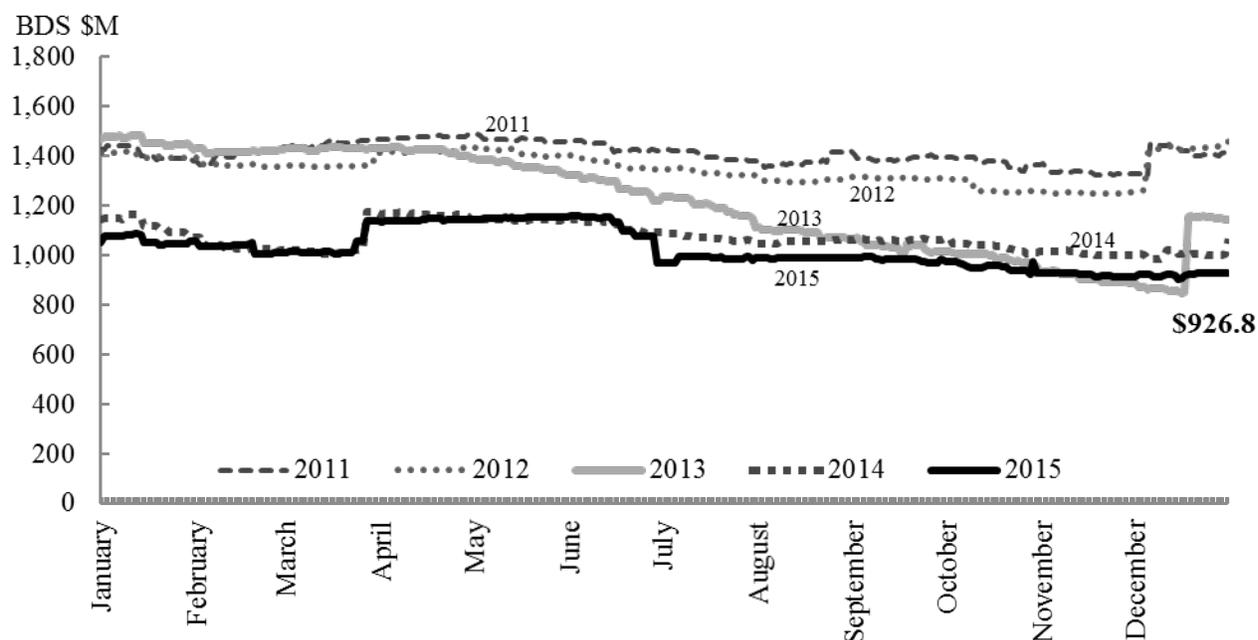
The process begins with a forecast of the supply of foreign exchange, based on productive capacity in exported goods and services, and policy measures to bring these activities up to full

capacity. The forecast demand for foreign exchange depends on national income, with the addition of a novel variable, the increase in national wealth. The reason is that it is plausible to argue that if there is an exogenous increase in wealth (not produced by an increase in income), aggregate expenditure will increase by some proportion of this exogenous gain. The source of the exogenous wealth increase is additional domestic money issued by the central bank, which may come from two sources: an accumulation of foreign reserves, when foreign currency receipts are sold to the central bank in exchange for domestic money; and central bank credit to commercial banks (rarely) and the government.

In a growing economy we may expect remunerative opportunities in the competitive tradable activities to attract investment to increase capacity, but the resulting increase in foreign exchange supply will not appear in the current policy period, usually the fiscal year. If the forecast demand for foreign exchange exceeds the supply, therefore, the fiscal deficit must be cut, and government borrowing requirements adjusted, so as to achieve the necessary reduction in aggregate demand and, as a result, imports. If the foreign reserves of the central bank are at levels that are considered adequate, this is the extent of fiscal adjustment that is required. If reserves are at excessively high levels, there is room for fiscal expansion, if that is appropriate to the economic circumstances. Conversely, if foreign reserves are considered to be at uncomfortably low levels, a target must be set to increase reserves to the required level, and an additional amount of fiscal contraction programmed in order to achieve that target.

The next element in the framework is a daily monitoring system for tracking the central bank's foreign reserves, to judge whether they are on course to meet the target for the end of the fiscal year. For this the Central Bank of Barbados uses a unique chart, illustrated in Figure 12, which allows policy makers to detect very easily when the foreign exchange market is out of equilibrium, and the foreign reserves target is unlikely to be met. Since the Central Bank always sells foreign exchange at the fixed rate whenever the market is short, a persistent foreign exchange shortage causes a depletion of the Bank reserves, as may be observed in 2013, in Figure 12. In these circumstances fiscal tightening was called for, and the Central Bank used a portion of its reserves to fund the foreign currency market until the expenditure-tightening measures could take full effect.

**Figure 12. Central Bank of Barbados, Daily Foreign Reserves, 2011-2015**



## Conclusion

It has become increasingly evident that the policy options implicit in the classical Mundell-Fleming trilemma of exchange controls, an exchange rate peg and independent monetary policy, are no longer available to small open economies in today's world of international financial integration. SOFIEs the world over find themselves struggling unsuccessfully to use the tools developed for use in relatively closed economies and countries with large diversified economies. Small countries purport to allow market-determined exchange rates in circumstances where there is little or no demand for local currency as store of value, meaning that the demand for foreign currency on the financial account is infinite, for all practical purposes. The only agents who will use local currency are those who have no access to foreign exchange. These countries develop monetary tools to target inflation, when in fact in the order of 80 percent of inflation is imported. The elephant in the room, which does not appear in the conventional policy equation, is fiscal policy.

We present a simple alternative framework for policy formulation which integrates fiscal policy tools, which are known to be the most powerful instruments available to open economies – some would argue to all economies – with monetary and exchange rate objectives. By calibrating the fiscal stance (the magnitude and direction of the fiscal balance, and how fiscal deficits are financed) to ensure external balance in a forward-looking policy framework, with up-to-date monitoring of targets and coordinated arrangements for policy implementation and correction, SOFIEs may attain a high degree of control over their economic fortunes, whatever the international economic circumstances they might encounter.

## References

Bank for International Settlements. (2012) *Fiscal Policy, Public Debt and Monetary Policy in Emerging Market Economies*. Basel: BIS Papers No. 67.

Blanchard, O. et al. (2010) *Rethinking Macroeconomic Policy*. Washington, DC: IMF Staff Position Note SPN/10/03.

Frankel, J. (2004) 'Experience of and Lessons from Exchange Rate Regimes in Emerging Economies', in Asian Development Bank (ed) *Monetary and Financial Integration in East Asia: The Way Ahead*, Vol.2: 911-938. New York: Palgrave Macmillan.

Furman, J. et al. (1998) 'Economic Crises: Evidence and Insights from East Asia' *Brookings Papers on Economic Activity*, 1998 (2): 1-127.

Hanke, S. (2002) 'On Dollarization and Currency Boards: Error and Deception' *Journal of Policy Reform*, 5 (4): 206-222.

Obstfeld, M. and K. Rogoff. (1995) 'The Mirage of Fixed Exchange Rates' *Journal of Economic Perspectives*, 9 (4): 73-96.

Ostry, J. et al. (2012) *Two Targets, Two Instruments: Monetary and Exchange Market Policies in Emerging Market Countries*. Washington, DC: IMF Staff Discussion Notes SDN/12/01.

Pindyck, R.S. (1991) 'Irreversibility, Uncertainty, and Investment' *Journal of Economic Literature*, XXIX: 1110-1148.

Worrell, D. (2000) *Monetary and Fiscal Coordination in Small Open Economies*. Washington, DC: IMF Working Paper WP/00/56.

Worrell, D. (2012) *Policies for Stabilisation and Growth in Small Very Open Economies*. Washington, DC: Group of 30 Occasional Paper No. 85.  
[http://group30.org/images/uploads/publications/G30\\_PoliciesforStabilizationGrowthSmallVeryOpenEconomies.pdf](http://group30.org/images/uploads/publications/G30_PoliciesforStabilizationGrowthSmallVeryOpenEconomies.pdf) (Accessed 26 June 2017).

Worrell, D. (2012) *Small Open Economies Have to be Managed Differently: Devaluation is Contractionary in Both the Short and Long Run*, <http://voxeu.org/article/why-devaluation-isn-t-viable-option-greece-insights-small-open-economy> Accessed 26 June 2017.