

# **Shock Absorption, Fiscal Sustainability and Financial Stability in Small Open Economies**

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## Abstract

*This presentation offers a model of output, prices, public finance and the balance of payments of a small open economy. Output growth depends on the competitiveness of exports of goods and services; domestic prices deviate from international prices to an extent that varies with changes in the exchange rate; and government's expenditure and financing policies have critical implications for exchange rate stability. The model is used to analyse responses to macroeconomic shocks, the restoration and maintenance of fiscal sustainability, and the assessment and maintenance of financial stability.*

For the management of any economy, one needs a model which accurately reflects the way policy tools affect the economy, and which also measures the impact on the outcomes that are of interest, such as output and inflation. This presentation presents such a model, specifically designed to be applicable to small open economies (SOEs), and illustrates how this model may be used to design policy responses to shocks, to restore and maintain the sustainability of public sector finances, and to assess the health of the financial sector.

The distinguishing feature of an SOE is the fact that all economic activity is fuelled by foreign exchange: the level of domestic output depends on the inflow of earned or borrowed foreign currency, and economic production grows in line with increases in foreign currency inflows. This is because all domestic consumption and investment, exports and domestic transactions, use foreign inputs. The appropriate analogy for the SOE is the household: just as the household sells labour services to the community and supports all household activity - including unpaid household work - with the wages earned, in similar fashion the SOE finances all production, for export as well as for domestic consumption and investment, with foreign currency earned from exports of goods and services. There is a continuum from large self-sustaining economies to SOEs that depend entirely on foreign currency; the larger the economy, the greater the capacity for self-sustaining production. However, all Caribbean countries are so small that they have no capacity for self-sustaining activity beyond a primitive subsistence level that uses no electricity or modern tools.

In this presentation we outline a simple model whose uniqueness lies in the fact that the economy is fuelled by the inflows of foreign currency. The GDP is a multiple of the income generated by the foreign inflows, thanks to a wealth of nontradable transactions, but ultimately the entire amount of the foreign currency inflow is needed to procure foreign inputs for the total of domestic production. Following the outline of the model, it is used to inform discussion of three of the issues with which this conference is concerned: what options do SOEs have to adjust to external shocks, policies to ensure that public sector finances are sustainable, and the assessment of financial stability.

## *A model of the SOE*

We begin with the production of exports of goods and services, which provide the fuel for the economy. The supply of foreign currency depends entirely on the capacity to produce competitive exports and tourism and other tradable services; there is a limitless international market for competitive products and services offered by the SOE. Nor is there any shortage of finance for investment in well-run hotels and for export production that yields a competitive rate of return. Such investment will attract funding from abroad, providing the foreign currency needed for the imported inputs for the investment. The only local savings contribution needed is to fund the purely domestic inputs for the investment. That proportion is typically small, and if local saving proves insufficient, that portion can also be funded from the unlimited supply of foreign finance.

A critical relationship in the model is therefore the investment equation, and the key variable in the investment equation is the competitiveness indicator. Competitiveness, as any businessman knows, is not a matter of the lowest price, but of the best value for money. Economics 101 teaches us that the small producer has no control over the price at which they sell; it has therefore always been a puzzle to me that macroeconomists in general, and the IMF and central bankers in particular, seem to believe that SOEs can increase their competitiveness by devaluing their currencies.

A more practical assessment of competitiveness may be had by comparing the SOE's share of an export market with the price of its products relative to competitors. This is a measure I use in assessing Caribbean tourism in a paper published in [\*The Handbook of Caribbean Economies\*](#) (Routledge, 2021). A country which is able to maintain or increase its market share even though its prices are high or rising compared to rivals is clearly outperforming them.

There are other factors which attract the attention of potential investors. Countries where hotel occupancies are at full capacity year after year and where there are similar indicators of success in the international market will usually attract increased investor interest. Other competitiveness indicators include the quality and availability of financial services, transportation, infrastructure, health and educational services, public utilities and public services. The World Economic Forum provides a composite [index of competitiveness](#) which incorporates a wide variety of these items.

A critically important factor for international competitiveness is the management of the finances of the public sector. Because the supply of foreign currency is so critical to economic activity in the SOE, shortages in the market for foreign exchange are extremely disruptive, and can threaten the viability of financial institutions and businesses. As a result, whenever there is apprehension that the financing of public sector activities may impact the availability of foreign currency, investment inflows may be paused or even reversed. Foreign reserves may decline, the interest premium demanded on funds invested in the country may rise and/or the exchange rate may depreciate. That combination of circumstances is often referred to as exchange market pressure (*emp*). An increase in exchange market pressure is to be avoided by the exercise of fiscal prudence, as a vital element in ensuring and maintaining the competitiveness of the SOE.

Potential foreign currency supply is given by the production of exports of goods and services, with producers working at full capacity, plus the inflows of foreign finance, which, if directed to adding new capacity, will contribute to future growth of foreign incomes. Incomes earned by the foreign inflows stimulate an internal circulation through nontradable transactions - distribution, electricity and water, public, personal and business services, etc. - which adds up to a total GDP which is a multiple of the production of exportables. This multiple does not change noticeably over the medium term. Changes come about as a result of new technologies, such as we have witnessed with the birth of the digital age,

and with changes in lifestyles, such as the increase in travel and migration that the Caribbean has witnessed in recent decades. Because such changes are gradual the ratio of total GDP to tradable output will not change significantly within the usual time horizon of policy makers.

### *The model*

We begin with the investment equation, the equation of growth. The SOE grows with investment to add productive capacity and to increase productivity and quality. The factors that attract investment are:

- Whether exportable production is at full capacity;
- For nontradables, the anticipated domestic demand;
- The prices of imported input prices;
- Unit labour costs;
- World interest rates;
- The stability of the exchange rate; and
- Qualitative factors.

1.  $i = f_1(-xcap_t(-1), a^*, p_b, ulc, r_f, emp, GCI)$ , where

$I$  is the level of investment,  $-xcap_t(-1)$  is the full capacity variable,  $a^*$  is expected aggregate expenditure,  $p_b$  is the price of imported inputs,  $ulc$  are unit labour costs,  $r_f$  is the international interest rate, the opportunity cost of investment,  $emp$  is the exchange market pressure variable, and  $GCI$  is an indicator of non-price competition. The output of tradables is fully determined on the supply side. The small open economy exports all the goods and services it can supply profitably at the going international price. The amount produced is determined by the costs of production: imported input cost, cost of working capital and unit labour costs.

2.  $q_t = f_2(p_b, ulc, r)$ , where

$q_t$  is the output of tradable goods and services, and  $r$  is the domestic interest rate (the cost of working capital).

The output of nontradables is modelled as a two-stage process. We begin with the producers of nontradables. They have an expectation of the demand for their output, based on last year's production and the economic outlook. The intended output,  $q_n^*$ , is:

3.  $q_n^* = f_3(a^*, q_n(-1))$  where

That quantity is offered at a price  $p_n^*$ . However, both the offered supply and the price will be adjusted to the actual sales in the market, and the realized price and output of nontradables may be represented by:

4.  $p_n = f_4(q_n, p_b, ulc, r)$ .

That completes the production side of the model. We turn now to the tools for stabilizing the balance of external payments and containing domestic inflation.

In the equation for the balance of payments,

$$5. \Delta FXR = p_t(x - m) + FDI + B$$

both imports  $m$  and exports of goods and services  $x$  are bought and sold at ruling international prices  $p_t$ . Foreign investment  $FDI$  depends on the overall investment in Equation 1, and  $B$  is net foreign borrowing by government and the private sector. With given amounts of exports, foreign investment and net borrowing, the balance of external payments, which is reflected in the changes in foreign reserves,  $\Delta FXR$ , depends on the demand for imports.

The demand for imports is a function of aggregate demand only, because the coefficient of price substitution is zero:

$$7. m = f_5(a).$$

Aggregate demand is approximated by the total of output and additions to the stock of money, in real terms:

$$8. a = q_t + q_n + \Delta MB/p$$

where the last term is the real value of additions to the monetary base.

The monetary base changes in response to the public sector's borrowing requirement and the credibility of government's overall finances, which is the factor that determines whether and to what extent government can obtain credit from the private sector, domestically or from external sources, without resort to IMF assistance:

$$9. \Delta MB = - (FISC - B_f - B_d),$$

where  $FISC$  is the public sector deficit, and  $B_f$  and  $B_d$  are government borrowing from foreign and domestic sources, respectively.

The model sketched above is fully described in my recent book [\*Development and Stabilization in Small Open Economies\*](#). In what follows we use insights from the model to explore policy options for the SOE in face of an oil price shock, and a sudden fall in foreign earnings or investment from abroad. We also show how the model may be used to assess the sustainability of the management of the public finances, and the health of the financial system.

### *An oil price shock*

A large or sustained rise in the international price of petroleum products will be reflected in a worrying fall in the central bank's foreign reserves, in the first instance. If nothing is done, there is a risk of capital flight, as businesses become more and more apprehensive about the central bank's falling capacity to accommodate the foreign currency shortage. "Capital flight" is a handy but misleading description of what actually happens. Typically, the market movers are not greedy speculators operating out of dubious premises, but established banks and traders; for them it is only prudent to cover against avoidable future foreign exchange losses by liquidating their foreign currency obligations, to the extent that they are able to do so. The resulting cut back in foreign trade credit and other foreign currency obligations is a major component of the financial outflow that we describe as capital flight.

The options facing policy makers in the face of a large oil price increase are:

- To take no action, in the hope that the higher oil prices will serve to reduce aggregate domestic spending sufficiently, and the resulting fall in the demand for imports will restore the balance of external payments. This is what happens in Panama, and countries that have no currency of their own. However, in a country like Jamaica, the risk is that the currency depreciates significantly during the period of adjustment. The resulting domestic inflation will aggravate the domestic loss of purchasing power, resulting in deeper contraction than for Panama.
- Alternatively, government may offer subsidies to alleviate the impact of the energy price increases. If such subsidies are significant, or sustained for some time, the resulting costs may raise questions about the sustainability of the public sector finances. In these circumstances, the risk premium on government debt may rise and government may find it necessary to resort to borrowing from the central bank. Targetted government subsidies may help in case of a temporary spike in prices, but if the subsidy period is prolonged the exchange rate and inflationary consequences will eventually impose severe contraction on the economy.
- The prudent response to an oil price increase is therefore to cut discretionary public sector spending and avoid additional borrowing, particularly from the central bank. The cuts should be sufficient to reassure buyers and sellers in the foreign exchange market that the central bank's war chest of foreign reserves will not be seriously depleted, and there is no risk of currency depreciation.

*An exogenous loss of foreign earnings, such as was experienced during the Covid pandemic*

A similar logic applies for any exogenous shock affecting foreign earnings. Attempts by government to avoid a loss of spending power will fail, because, apart from emergency grant funds from international organisations (during Covid, for example) government has only local currency resources, and the shortage is of foreign currency. Government initiatives to offer relief should be limited to the redistribution of some tax revenues to alleviate the impact on the most vulnerable segments of the population at the expense of other taxpayers.

It should be noted that hurricanes and other natural disasters in the Caribbean have seldom led to any lasting depletion of standards of living of the population. In the aftermath of the disaster, capital inflows are typically very high, due to insurance claim payments and disaster relief from private and official sources. In more severe circumstances, emigration has offered the only possibility for recovery and future development. In none of these circumstances were there any options open to government for policies that would have improved on the actual outcomes.

*A major decline in foreign investment*

A sudden fall-off of foreign finance is an early indicator of capital flight and declining confidence in the finances of the public sector. Measures for fiscal contraction are the appropriate remedy, in these circumstances, in the form of expenditure cuts and a reduction of government borrowing requirements sufficient to restore the confidence of traders in the foreign currency market.

A slide in annual foreign investment inflows that persists over time may well be evidence of declining competitiveness. Falling international competitiveness may be corroborated by data showing unused capacity, declining labour productivity and rising unit labour costs. Such a downtrend should also trigger

investigation of the quality of health and education services, market infrastructures and other non-price considerations included in indices such as the *Global Competitiveness index*.

### *Fiscal sustainability in the small open economy*

Fiscal sustainability may be defined objectively in the small open economy in terms of the impact of government's borrowing on the balance of external payments. A public sector deficit which government is able to finance fully with domestic and foreign borrowing at market rates may be sustained indefinitely. On the other hand, when governments that issue their own currency borrow from central banks to finance deficits in excess of what the private sector will fund at market interest rates, the expenditure which results causes a loss of foreign exchange, and precipitates capital flight. Such deficits are not sustainable. More prudent expenditure and financial management will restore sustainability when aggregate spending in the economy declines sufficiently to alleviate shortages on the foreign currency market.

### *Assessing the health of the financial system is a multi-faceted process*

The assessment of financial sector stability is a new and very dynamic segment of the economic discipline; its methodologies are still in an early phase of development. Worrell (2004, 2008) makes the case for an eclectic approach, in which forecasts of the real economy play an important role in benchmarking risks. A comprehensive assessment would include the following elements:

- Judgmental use of Financial Stability Indicators (FSIs);
- Combining FSIs in signalling models to highlight highest risks;
- Using logit, probit and discriminant models to evaluate the distance to default of important financial institutions;
- Stressing financial institution resilience to increasing stresses under different contingencies; and
- Exploring interbank contagion exposures, including via foreign ownership and correspondent links.

Although it is seldom reflected in current practice, it is very helpful to prepare forecasts of financial variables based on macroeconomic forecasts of the economy, such as may be prepared with the help of the SOE macroeconomic model outlined in this presentation. The forecasts

- provide benchmarks for ongoing assessment of the viability of financial institutions and the system as a whole;
- they help to identify important linkages, such as balance sheet effects of exchange rate changes, and possible contagion from external links; and
- they help with the early detection of irregularities, such as the effects of the introduction of new technologies.

### *Concluding remarks*

This paper demonstrates that a model incorporating the fact of the small open economy's dependence on foreign exchange is fundamental to the design and evaluation of economic performance and policy, public sector sustainability and financial sector stability. A full exploration of the model and its implications, together with a comparison with conventional approaches to these issues, may be found in Section B of [\*Development and Stabilization in Small Open Economies\*](#).

### **References**

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