A Policy Model for Stabilisation and Growth in the Small Open Economy (SOE)

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Abstract

This paper presents a behavioural model which incorporates the distinguishing features of small open economies (SOEs): their growth depends on investment in the capacity to produce internationally competitive tradable goods and services, sold abroad at ruling world prices; there is no substitutability between the tradables they sell to earn foreign exchange, the imports they need to sustain production and lifestyles, and government services and other nontradables; and their financial markets cannot be insulated from the international financial markets which enable their external commerce, the lifeblood of their economies. The key to successful policies for stable growth and long term prosperity in SOEs is fiscal policy designed to manage aggregate demand with a view to external balance and a stable exchange rate, while at the same time deploying tax, expenditure and government borrowing policies to sustain and improve international competitiveness. The effectiveness of this strategy is brought to light with the use of the SOE-specific model, and its conclusions are compared with conventional wisdom.

Despite decades-long efforts to increase their appeal and acceptance, programmes of financial assistance offered by the IMF are regarded with suspicion, even fear, by most of the Fund's member countries. Perhaps the most disliked feature of the standard suite of IMF conditionalities is that the exchange rate should be managed flexibly, instead of being anchored on the US dollar or other internationally acceptable currency. The reason for this recommendation, which is inappropriate for the small open economy, lies with a crucial weakness in the economic model which is at the heart of standard IMF analysis. This weakness, pointed out by Agenor and Montiel (2008), requires a modification of the standard Mundell-Fleming model, with the introduction of a Salter-Swan modification, with three goods - exports, imports and nontraded goods. The present paper describes a 3-goods model, with structural equations for output and prices, the balance of payments, finance and investment, and the accounts of the public sector. The model is articulated to highlight the tools available to policy makers, including government's tax, expenditure and financing policies, interest and exchange rate policies, and direct intervention in the trade, labour and financial markets. We evaluate the impact of each policy on economic outcomes, and deduce what are the most effective tools for growth and stabilization in small open economies.

What people care about is their economic well-being

Economists are aware that GDP growth is not really reflective of the quality of life in any society. For many years the GDP was the only metric we had of the economy as a whole, that was widely available for all countries. However, for the past three decades we have had a superior measure, published every year for all countries, in the form of the *Human Development Index*. Economic policy should aim to improve the material well-being of the population, and the *HDI* is the best measure of material well-being we have, so that needs to be the indicator by which the success of economic policy is gauged.

The real per capita GDP is one of three elements in the *HDI*; the reported GDP figure is adjusted for the fact that the same income purchases different amounts of any basket of goods in different countries.

Beyond the impact of economic policies on the real GDP per capita at purchasing power parity, the policy maker needs to take account of the impact of policies on educational achievement and on health services, the two other elements of the *HDI*.

The model presented in this paper is behavioural. Every economy is the aggregate of the production and exchange of all goods and services among the population and with the rest of the world. How much is produced and the prices at which exchange takes place depend on the behaviour of economic agents and the factors that motivate that behaviour. The objective of economic policy should be to influence the behaviour of economic agents in ways that result in an improved quality of life.

The model presented in this paper does not intend to represent market equilibrium of any kind. Modern economies operate by fixed price contracts, explicit or implicit, of varying lengths. The price of bananas in the supermarket should be considered an implicit contract, to sell the product at the advertised price so long as that price is displayed. Very little business in a modern economy is conducted in markets where negotiations between agents with equal economic power and with full information about the product by all parties, produces an agreed price.

An intuitive summary of the model

How do we improve the material well-being of the population of an SOE? By enhancing the economy's capacity to produce internationally competitive goods and services, to be sold to provide foreign currency income, while at the same time monitoring health outcomes and educational achievements to ensure there is improvement in both. The foreign currency income allows the population to purchase the range and variety of imports a modern SOE needs for consumption and investment.

We will return to the health and educational elements when we come to discuss the tools available to the policy maker, for achieving and maintaining a prosperous economy. Ours is an economic model, to elaborate on policies to grow real GDP; the relationships between government expenditure and health and education are direct, and there is not much that an economist can contribute to their evaluation, other than from the point of view of value for money. The relationship between economic policy and the growth of real income, in contrast, is the subject of ongoing controversy and debate among economists and economic policy makers. That relationship needs therefore to be fully elaborated.

The key to growth in an SOE is to nurture and develop the products and services in which the country has an established international competitive advantage and to follow up selectively on clues as to coming activities which show promise for sales to foreigners, given the society's endowments. International competitiveness is the key. The SOE is an atomistic producer of any product or service offered to the rest of the world. It may sell an unlimited amount at the ruling international price, and it will do so, up to the point where marginal sellers fail to make a profit sufficient to keep them in business. The way to increase sales and foreign currency earnings is by increasing the productivity of labour and other domestic factors, and by adding value to established products that are being sold competitively at ruling world prices.

We should dispense with two common misperceptions before moving on. Competitiveness is about giving value for money; it is not about price. The reason wealthy US customers purchase German and Japanese luxury cars in preference to domestic brands, notwithstanding the price, is that they believe they are getting better value for money. Most consumers will purchase the most expensive cell phone they can afford, not the cheapest on offer, for the same reason. The notion that a lower price makes a product - or an economy - more competitive is as erroneous as it is pervasive.

A second common misapprehension is that SOEs may increase foreign earnings by diversifying their economies away from traditional exports and tourism. This is almost never a realistic option, for obvious reasons. If exporters and providers of tourist and other services cannot succeed in the international markets they know well, the chances of successfully making inroads with unfamiliar products and services in the face of established competition are low. The key to continuing growth of faltering foreign exchange sectors is investment in productivity increases and value enhancement in well-established activities. Healthy and growing foreign currency sectors can provide the resources for exploration of ancillary activities and new directions for exports. In time these may grow to importance, and official policy in support of selective initiatives of this kind is fully justified. However, to suggest that any such investments will offer a new major stream of foreign earnings within the medium term is unrealistic, in most circumstances.

The investment equation is central to the economic model, particularly investment in the tradable sector, because investment in increasing labour productivity in the tradable sector, and in widening the market appeal of tradables, increases the supply of growth-enhancing foreign currency. The observation of full capacity in tourism, exports and other foreign earning sectors is a signal that attracts potential investors. Whether their interest materialises into actual investment depends on the cost of inputs, unit labour costs, labour productivity and finance costs, all things which determine whether the investor's return will be competitive with alternative uses of his funds. In addition, the investor is always betting on an uncertain future, so he values low inflation and stable labour and financial markets, things which help to minimise investment risks.

Next we move on to output of tradables, the bulk of which will be exported. The world will buy as much as the SOE can supply of products and services that are appropriately priced for the services they offer. That amount, with the existing capacity of hotel accommodation, and available production facilities, depends on labour, material and finance costs. The amount produced of tradables is fully determined on the supply side.

In contrast, the amount that is produced of nontradable services, such as the distribution of consumer goods, construction and personal services, depends on the producers' expectations of what domestic consumers will set out to purchase in the coming financial year, and how much they can afford to pay for each item or unit of service. Producers set a target output, explicit in the budgets of larger and better organised firms, implicit for most small enterprises and sole proprietors, and prices are advertised, in expectation that all that is produced can be sold at that price.

The price that is set depends on the amount to be supplied, and costs for labour, supplies and finance to supply that output. If the projected demand is very high it may be necessary to hire extra staff, buy additional equipment, extend working hours, and take other measures to ramp up production, all of which will incur additional cost. Conversely, weakening demand may lead to layoffs and idling of equipment, in order to cut costs and secure the continuing viability of the business. In this way, the amount actually produced and sold is determined by both demand and supply. Notice that this realistic behavioural relationship does not require any appeal to notions of markets or equilibrium.

Our next task is to find out whether the external accounts will be in balance with the expected levels of investment and output. The principal inflows are tourist spending, revenue from the sale of exports and foreign finance for investment. Tourist spending and export receipts are derived directly from the output of tradables, multiplied by the established international prices (in US dollars) at which these products and services are sold. The foreign finance for investment, as we shall explain later, is equal to the value of

equipment, materials and other imported inputs for investment projects. Other inflows that are of major significance in some countries are workers' remittances and income of retirees who have lived and worked abroad.

External payments will be in balance if these inflows are sufficient to pay for imports which consumers are expected to purchase and which producers will require, as well as to cover service costs on foreign loans and accumulated foreign investment.

If inflows are larger than outflows, the surplus accrues to the country, usually via the central bank (where there is one) in the form of foreign reserves, which are invested with the Federal Reserve Bank of New York, on deposit or for investment in obligations of the US Treasury. The anomaly that SOEs so often celebrate the volume of foreign currency they lend to the US Government, surpluses that would be better employed in creating additional export capacity, is one of the great puzzles of economics. In reality, those funds would be more productively employed in investment in tradables, apart from a minimum amount needed to maintain stability in the market for US dollars.

In the event that inflows of foreign currency fall short of payments for imports, foreign debt service and other outflows, by a substantial amount or over several successive years, economic policy makers in SOEs need to take action. In such cases there is a danger that the country's foreign reserves held with the US Fed will eventually be exhausted, no matter how large they might be. What is more, any unexpectedly large fall in reserves creates apprehension about the value of the local currency among agents in the foreign exchange market; in these circumstances, the defensive financial strategies which banks, investors and international companies adopt add to the pressure on the foreign exchange market. This attracts the attention of speculators, who see a sure thing in betting against the local currency. The inevitable result is to exhaust the foreign reserve stockpile, much sooner than the economic circumstances warrant.

The way to avert this sequence of events is to take decisive fiscal action, no matter the source of the shock that caused the foreign reserves to fall in the first place. The fiscal contraction, by way of tax increases, cuts in expenditure and/or – if the country's external credit rating is strong – foreign borrowing, must be sufficient to fully restore the level of foreign reserves, through a large enough cut in imports. It is wise to make the calculation under pessimistic assumptions; if things turn out as expected, there will then be some extra fiscal space to ramp up tradable investment directly or through incentives to private investors. This course of action immediately stabilises foreign currency markets, which is essential if policy makers are to avoid uncertainty and contentious foreign exchange behaviour which ultimately cause a sacrifice of investment and economic growth.

We need now to consider which fiscal tools to employ, and what magnitude of fiscal contraction is called for. The ways in which government taxation, spending and financing affect the economy's appetite for aggregate expenditure and imports are complex, and in practice the fiscal strategy must be executed via a process of action, review and assessment, with corrective measures as necessary. Factual information on progress to the stabilisation goals should be provided to the public at regular intervals, to reassure market agents that adjustment is being diligently pursued and that balance can be restored to the external accounts within the stated time frame.

This procyclical fiscal approach seems much harsher than the standard prescription. In fact, it is not. The reality for the SOE is that imports have to be accommodated to the available foreign exchange, if the country is to avoid impairing its growth potential. If the country borrows to finance consumption imports, from whatever source, whether from the IMF, other international financial institutions or private markets, it does not add to its capacity to service the new debt. In the short run, debt-financed countercyclical

policy will be used to pay for consumer imports, for the most part. It will be impossible to ramp up government investment in the short run, and in any case, the places where the foreign currency shortages are showing up will be supermarkets, petrol stations and other consumer distribution services, not in demand for inputs for investment.

The great value of a procyclical policy response to an adverse shock is that it relieves foreign currency market pressure and stabilizes expectations, thereby nipping in the bud any incentive for defensive stances against the local currency. Once market agents are reassured the fiscal adjustments are sufficient to restore external balance, the central bank can fend off speculation against the domestic currency by supportive monetary policy. With the passage of time, the fiscal corset may be loosened by ramping up government investment in infrastructure, skills enhancement and other activities that increase the country's international competitiveness, and by strengthening incentives for private investment in the tradable sector. If, on the other hand, government fails to act decisively to cut aggregate demand and consumer imports in the short run, uncertainty about the exchange rate, capital flight and speculation may result in devaluation, inflation, and economic and financial instability, circumstances which will prejudice the prospects for public and private investment in the medium term.

A similar sequence of events and circumstances will usually characterize shocks caused by natural disasters, except that no procyclical fiscal policy is needed, because the disaster will have destroyed sources of income and the capacity to import. However, just like in the case of procyclical responses to other shocks, the initial import contraction is followed by foreign investment inflows for reconstruction and rehabilitation.

The link between fiscal policy and the balance of payments via aggregate spending and imports provides us with guidelines for the conduct of fiscal policy. In effect, the public sector needs to design its strategy to accommodate to the private sector's intended spending, so as to ensure that aggregate spending and imports do not exceed expected inflows of foreign currency. Government does have influence over private spending, through taxes, spending and the impact of its domestic borrowing on the country's interest rate premium, so in preparing the public sector budget, the forecast of aggregate expenditure needs to take account of any policy changes. The forecast, thus amended, should then be used to determine whether the fiscal stance should be neutral or contractionary. Should this exercise throw up a need for further adjustment, a second iteration of the aggregate forecast will be needed, and further rounds, until the budget is consistent with a projected balance in the external accounts.

The fiscal-balance of payments relationship also provides us with a practical measure of fiscal space. In foreign currency markets everywhere, there is usually an understanding of what is the value of local currency in terms of the relevant international currency, and what level of foreign reserves the central bank needs to maintain in order to keep the rate stable in that vicinity. It used to be thought that the equivalent of three months' worth of imports was an adequate level, and many countries do target this as a minimum level still, even though many others insist on much higher minimums. Whatever is the market sentiment on the minimum level of foreign reserves, that data can be used to measure how much space the public sector has for expansion. The available fiscal space is defined by the impact of any government expansion on aggregate expenditure and imports, thereby depleting the foreign reserves. So long as government proceeds in an orderly and predictable way, fiscal expansion is possible until foreign reserves fall to a level equivalent to three months of imports, or whatever level is accepted as the minimum locally.

The final set of relationships needed for this (policy maker's) version of the model have to do with the behaviour of the financial sector. Some of the most damaging effects of fiscal expansion result from the

financing of the public sector, particularly when expansion is financed by lending of local currency by the central bank. Fiscal expansion that is financed by prudent foreign borrowing by countries with good credit may be beneficial, particularly if the proceeds are used to improve the country's competitiveness. Fiscal expansion that is financed by the issue of marketable local currency instruments may not be a problem for a government that has plenty of fiscal space. Banks in most SOEs have idle funds placed with the central bank at below market returns, funds which they are happy to lend to government at prevailing interest rates. The use of these previously idle financial savings may provoke an increase in aggregate spending and imports, but there is a surplus of foreign exchange (our definition of fiscal space) to accommodate the additional demand. The corollary, naturally, is that local market borrowing cannot be sustained if there is insufficient fiscal space. Forecasts can be made, using the model suggested in this paper, to determine the circumstances of any country.

The model in detail

Investment creates the capacity to produce more goods and services, especially tradables, and the equipment and new technologies that allow local producers to supply them more productively, thereby growing the national income. The investment equation is the key relationship for the economy's sustained growth. What motivates the decision to invest? Investors' interest is piqued in the tradable sectors if there is persistent full capacity. If hotels are always full, bars, restaurants and other tourist facilities and attractions booming, financiers with an interest in tourism will take a closer look. Much the same is true for exports of manufactured goods and agricultural exports, when markets show potential for expansion. Whether a decision is taken to go ahead with a new project depends on the expected costs of production, as well as the economic, social and political environment. The potential investor will usually research the government's macroeconomic policies, the available infrastructure of roads, transport, ports, airports, public utilities and services. Investors will also be more forthcoming in countries with stable social and political systems and institutions. The success of government's policies for economic stability is reflected in the balance of payments and the resulting movements of foreign reserves. Successful policies will maintain an adequate level of foreign reserves, and downward pressure on the foreign exchange market is a warning sign. The policy makers may try alleviate that pressure by raising the premium on domestic interest rates or by allowing the currency to depreciate. To ensure early detection of *exchange market pressure (emp)* a composite index is used, with weighted values of a decline in foreign reserves (when that happens), increases in the domestic interest premium and depreciations in the value of the local currency. Where available the other social, economic and political influences may be captured by a qualitative index such as the *Global Competitiveness Index, GCI.*

The principal cost factors that will determine the profitability of the new investment venture are the *unit labour cost (ulc)*, the cost of machines, equipment, building materials and other inputs, all of which are imported (SOEs do not have the capacity to produce this variety of products at internationally competitive prices) at the international price, p_t. The benchmark against which the investor will assess the profitability of the investment is assumed to be the foreign interest rate, r_f, the opportunity cost of the investment.

The potential investor in nontradables such as public transport and electricity generation and distribution faces similar costs, and has the same concerns about macroeconomic, social and political stability. However, whether there is a need for new capacity in the nontradable sector depends on the growth of potential demand, the sources of that growth, and whether it can be sustained. Herein lies the crucial difference between the motivation for investment in the tradable and nontradable sectors: full capacity in the tradable sector, if persistent, is a clear signal that the potential investor can earn a competitive return, so long as he can match (or better) the costs of the highest-cost producer who remains in business. There

is infinite demand for the output internationally. In contrast, the potential investor in nontradables has to worry whether the demand for the product will be sustained. She will go ahead only if she has confident expectations that future aggregate demand will provide adequate sales to justify the investment. The composite investment equation presented below, covering both types of investment, includes both expected aggregate expenditure (which motivates nontradable investment) and a capacity variable for investment in tradables.

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

i: investment;

$-xcap_t(-1)$: full capacity variable for tradables, the negative of excess capacity;

a^*: aggregate expenditure, expected;

p_t: price of imported inputs, which are tradable by definition;

ulc: unit labour costs;

r_f: the foreign interest rate, the opportunity cost of investment;

emp: exchange market pressure variable, a weighted average of foreign reserve losses, domestic interest rate premium increases and exchange rate deterioration;

GCI : the Global Competitiveness Index, or similar indicator of (non-price) competition.

The output of *tradables* is determined on the supply side: the producer in the SOE can sell to the limit of their capacity, so long as they are profitable at ruling international prices.

2. $q_t = f_2(pt, ulc, r)$

The costs of production are those anticipated in the investment equation, plus the cost of working capital for the business, provided by banks at the domestic interest rate, r. The new variables are:

q_t: the output of tradable goods and services;

r: the domestic interest rate, the cost of working capital.

Producers of *nontradable* goods and services will budget to produce a monthly, quarterly or annual output based on the previous year's sales, their product quality and marketing strategy, the expected growth of the market, and the company's target share of that market.

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

q_n: output of tradables.

As this is, in conventional terms, a demand equation, some may question why there is no relative price term in the equation. However, in this model the alternative goods are tradables and imports, neither of which can be substituted for nontradables, by definition. A rise in the relative price of tradables may indeed reduce the demand for nontradables, but it will do so through a rise in domestic inflation, which

will reduce domestic purchasing power, and the amount of nontradables that can be afforded. Relative price changes have an income effect, but no substitution effect.

The budgeted output will be offered for sale at a price which provides normal profitability with the cost elements previously mentioned for the production of tradables; typically in SOEs wage costs are uniform across all sectors, when account is taken of productivity differentials.

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

p_n: the price of nontradables.

The remaining behavioural equations are for *imports* and *government revenue*. The import equation is:

5. $m = f_5(a)$ where

m: imports, in real terms.

There is no relative price term because in an SOE there are no locally produced substitutes that can be supplied at prices to compete with imports of equivalent products.

The government revenue will rise or fall with the nominal national income, Y, and changes in tax rates, tx_i:

6. $Rev = f(Y, tx_i)$ where

Y: nominal national income;

tx_i: tax rates, $i = 1, 2, 3, ...$

Identities and balance equations

The total national output (real GDP) is the sum of the production of tradables and nontradables:

$$q = q_t + q_n$$

The price level is the weighted average of the prices of tradables (the world price) and the price of nontradables, using output weights:

$$p = p_{t \cdot}(q_t/q) + p_{n \cdot}(q_n/q)$$

National income is the value of national product:

$$Y = p.q$$

The foreign reserve movements reflect the external balance: when inflows exceed outflows the reserves increase, and vice versa:

$$\Delta FXR = p_t(x - m) + FDI + B_f, \quad \text{where}$$

Δ: change in the variable;

FXR: foreign exchange reserves;

x: exports of goods and tourist and other services sold abroad;

FDI: foreign direct investment;

B_f: foreign borrowing by the public sector.

To a useful approximation, all tradables produced are exported:

$x = q_t$

The fiscal balance, *FISC*, is:

$FISC = Rev - G_c - G_k,$ where

G_c, G_k: government current and capital expenditure.

Without much, if any, loss of generality, we assume that the only circumstance that occasions an increase in base money that is not the result of an increase in foreign reserves is a fiscal deficit that cannot be financed by foreign borrowing or by the issue of domestic debt to the private sector:

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

MB: base money;

B_d: new issue of domestic debt issue, net of redemptions.

The reason we may ignore the possibility of money creation for lending to banks or other financial institutions is that these institutions would never have a reason to borrow from central bank in the normal course of business. Debits that arise from overnight items in course of settlement are covered by banks' reserve balances with the central bank, while liquidity deficits of longer duration will be financed from abroad, rather than paying the central bank's penal discount rate. In practice, banks in emergent markets and developing countries more often than not find themselves with idle liquidity, over and above the reserve stipulations of the monetary authority.

Aggregate expenditure *a* (in real terms) is the sum of output and the real value of newly created money, $\Delta MB/p$:

$a = q + \Delta MB/p$

This is a simplification, which assumes that an extra dollar of income has the same effect on the decision to spend as does an additional dollar of wealth. That is probably not the case, but it is not unreasonable to suppose that the difference that a more sophisticated representation would produce is not significant in the aggregate.

Readers who are familiar with more conventional models of the balance of payments will notice the absence of an exchange rate variable in this model. The reason is that the model abstracts from the effects of capital flight and the related uncertainties associated with currency depreciation, purely for clarity of exposition. In practice, these flows will invariably overwhelm any effect that the exchange rate will have on the current account.

To illustrate, let us introduce the exchange rate variable and restate the balance of payments equation in local currency:

$\Delta FXR_d = e.p_t(x - m) + e.FDI + e.B_f - e.\Delta NFA,$

The exchange rate, e, converts all values to domestic currency (FXR_d is the domestic value equivalent of the foreign reserves) to be compatible with the rest of the model. Notice the introduction of a new variable, the change in the net foreign assets of the private sector (ΔNFA), to take account of capital flight. If there is a deficit on the current account of the balance of payments, the fall in the value of local currency worsens the overall balance, measured in local currency, while seeming to leave the current account unaffected in foreign currency. However, we now have to incorporate the effect of exchange rate volatility on NFA, as well as the impact of exchange rate depreciation on the volume of imports, which will have become less affordable. The current account may improve, not because of an increase in exports but because the fall in domestic purchasing power resulting from devaluation-induced inflation depresses the volume of imports, reflecting a contractionary real income effect, rather than an expansionary (counter-cyclical) relative price effect. Moreover, the inevitable capital flight which accompanies devaluation means that foreign reserves will decline in spite of the improvement in the current account. We do not need to explore these circumstances further, because we advocate an economic strategy which stabilises the balance of payments by anchoring on the exchange rate, which, if it changes at all, will do so in a predictable manner, thereby avoiding capital flight.

A second reason to omit the exchange rate is that we have established that the growth rate of the SOE depends on expansion of tradable output, up to capacity limits which are constantly pushed back by investment in new capacity and higher productivity. The output of tradables is unaffected by changes in the value of local currency, except possibly negatively, if labour market instability following a devaluation leads to a loss of productivity (Equation 2). Investment is also unaffected by a loss of value of local currency, except negatively, if there is destabilizing exchange market pressure (Equation 1).

The available tools for the SOE policy maker

The tools available in the model above are changes in tax rates and tax structure (tx_i), government expenditures (G_c, G_k), and foreign borrowing (B_f) by Government. These tools offer ample scope for the design of strategies for sustained growth and economic stability in all circumstances.

Growth-oriented fiscal policy involves stimulating investment and productivity in the tradable sectors of the economy. The specifics must be tailored to each economy's structure of production and economic circumstances, but some generalizations may be offered, based on Equations 1 and 2. The variables that can be influenced by Government policies may include *ulc*, *EMP*, and a range of socio-political and infrastructural variables, including the efficiency of public administration and the delivery of public services. Tax incentives and government support for the adoption and adaptation of new production and organisational technologies are important for raising unit labor productivity. The tax system as a whole should be biased in favour of foreign-exchange earning activities, including incentives for reinvestment, product upgrades, enhancement and marketing. SOEs should embrace the concept of the *entrepreneurial state*, drawing on the experiences of the Asian Tigers. Immigration policies can also contribute significantly to the improvement in labour productivity, providing a way to better align varying levels of skills needed in an economy where living standards are rising, with the endowments and expected wages in the host country.

A summary of the tools available to government to improve the material well-being of the population appears as Exhibit A.

Exhibit A. Fiscal Tools and Their Effects on Material Well-being

Tax systems that are biased in favour of tradables => investment in tradables, enhanced competitiveness, higher productivity

Government investment in infrastructure, public utilities, transport and communications => investment, enhanced competitiveness, higher productivity

Expenditure on upgrades to health and education systems => investment, improvement in the HDI score

State entrepreneurship (Mazzucato) => investment in tradables, upskilling, technology adaptation and adoption

Expenditures to address challenges of inequality and the environment => investment, improved well-being

Expenditure to ensure and maintain a framework for social and political stability => investment, improved well-being

Public service efficiency and effectiveness, and public sector accountability via timely publication of audited annual reports => investment, improvements in material wellbeing

Achievement of macroeconomic stability, over the course of international economic cycles => investment, enhanced competitiveness

How to use fiscal tools to stabilise the economy

Policy makers in the SOE can use Equations 2 to 6 to design, implement and monitor strategies to stabilise the economy on an ongoing basis, to inform markets and support predictable behavior in tranquil times, and to detect and address potential economic challenges at an early stage. The balance of payments identity is the place to start; the level of foreign reserves, which should be reported daily to the economic policy team, is an immediate, up-to-the-minute signal of overall surpluses and deficits in the market in foreign currency. By observing it continuously, making allowances for seasonalities and special occurrences such as debt servicing, policy makers can detect underlying trends, and compare actual outcomes with expectations. A regular monitoring and decision meeting of the policy team, on a monthly basis, is able to detect deviations from expected foreign reserve levels at an early stage, assess the reasons for the discrepancy, decide if and when corrective policies are warranted, and recommend on the size of adjustment. In crisis situations more frequent meetings will be necessary.

The balance of payments gives information for the direction and speed of adjustment, as well as the mix of policy tools in the overall strategy. Consider the circumstance when foreign reserves are well in excess of expectations. Conventional wisdom is that the authorities should take no corrective action and allow foreign reserves to accumulate without limit. However, foreign reserves are a low-interest loan to the US government, and a build-up beyond what is needed for daily and seasonal fluctuations, and to reassure foreign currency markets of the soundness of local currency, may not be optimal if the unexpected windfall can be put to more productive use, such as investment in tradables. The factors that would have to be taken into account include whether the windfall persists or is likely to be reversed, the time that would be necessary to prepare productive investment projects as an alternative use of the funds, and

whether the investment would be by way of direct government investment or incentives for the private sector, which would use up the foreign currency surplus indirectly, via imports.

In the alternative case where an unexpected fall in foreign reserves is deemed to require a reduction in imports, either because the fall is large and likely to persist, or out of an abundance of caution, the balance of payments identity will give a working estimate of the reduction to be aimed for. Judgments can also be made whether additional foreign borrowing is warranted, to alleviate the burden of contraction, depending on the capacity to service additional debt, under pessimistic assumptions about the economic forecast.

The reduction in aggregate expenditure needed to achieve any desired contraction in imports is derived from Equation 5. A useful way to design a package of fiscal measures sufficient to secure the cut in aggregate expenditure is to begin with the monetary base. If the entire amount were to be cut purely by a reduction in the money supply, what size of reduction in the fiscal deficit would be necessary to reduce ΔMB by that amount? There are other possibilities, however: tax rates may be adjusted, and expenditure programmes may be postponed or abandoned. To the extent that expenditure and tax measures impact directly on aggregate expenditure, the burden of overall fiscal contraction and in the money supply, is reduced.

A role for monetary policy

Monetary policies cannot match the power of the fiscal tools. Domestic interest rates cannot deviate radically from the international rate, r_f. The country risk premium, the difference between the domestic and international rates, is proportional to the cost of foreign exchange transactions c_x, and it widens dramatically when there is apprehension about the value of the local currency, which we represent with the *emp* variable:

7. $r - r_f = f_7(c_x, emp)$

In a scenario where the economic policy team detects a need for adjustment, there is imminent danger of increasing market pressure.

Monetary measures do have the advantage of speed. The central bank may intervene aggressively on the Treasury bill market to drive up interest rates, with instant impact on other rates. However, in circumstances where *emp* has increased, a large increase in interest will be seen as an act of desperation, and will trigger capital flight. This is where slow-acting but powerful fiscal measures come into play. A fully articulated adjustment package, explaining the nature of the problem, describing the fiscal package which is being implemented and showing that it is an adequate response, will reassure agents in the foreign currency market that the value of the local currency is protected, especially if the government's decision and monitoring framework is known and widely understood. That relieves the exchange market pressure, and a modest increase in the premium on holding local currency, via central bank intervention on the Treasury bill market, will provide an additional incentive to resist the temptation for capital flight, during the period when the impact of fiscal policy has not yet materialised. Other, more direct interventions such as global credit limits ordered by the central bank, have also proved helpful in these circumstances, so long as they are timed to expire when the fiscal measures are expected to take full effect.

Fiscal and monetary coordination is essential

The Treasury, the revenue authorities, the government debt managers, the economic forecasters and the monetary and financial authorities must work together on all aspects of the economic policy exercise,

including budgeting and forecasting, target setting, the design of economic strategies for economic prosperity (in the long run) and stabilization (short term), policy implementation, monitoring, correction and redesign if necessary. This allows the policy makers to depend on the great power of fiscal adjustment, reinforced by quick-acting monetary policy. Both arms of policy play crucial roles: without simultaneous announcement of sufficient fiscal adjustment, monetary policy fails; equally, in the absence of quick-acting monetary policy, the external financial situation may have deteriorated badly by the time that fiscal measures take effect, and an adjustment package that should have been adequate will need to be reinforced.

The economic policy team should monitor both short term stability targets, and longer term targets for improvement in national well-being, within the single decision making framework. In tranquil times, monitoring should be done on a monthly basis, with course corrections made quarterly in line with stability targets, and annually, to stay on course to hit the targets for improved well-being. When risks of economic dislocations arise, more frequent monitoring becomes necessary.

The need for coordinated monetary and fiscal policy has increasingly been recognised. The arguments in favour of coordination are strong in all countries. Uncertainty is the bane of all economic decision making and of all economic policy. Whenever there appears to be a disjuncture between the fiscal and monetary stance, in any country, financial markets, prices and output, and investment decisions are thrown into disarray. The fractures may not be apparent in tranquil times, but they surface inevitably during times of economic difficulty.

There is an additional reason why the notion of central bank policy to independently target inflation has no credibility in SOEs. Everyday experience, supported by theory and empirical evidence, makes it obvious that inflation is mainly driven by international prices[1]. While bad monetary policies are observed to drive high inflation, mainly through depreciation in the value of local currency, there is nothing that the central bank can do to reduce local inflation below international inflation, even with appropriate monetary measures. What is more, fiscal dominance is inevitable. In the event of an excessive fiscal deficit, if the monetary authority is unable to create money, there is build-up of government arrears, a deterioration of government services, ballooning of informal markets, including for foreign currency, and capital flight – in a word, an adjustment process that is disorderly and increases the country's international risk profile.

Why does the IMF get it wrong?

The basic IMF financial programming model has no growth engine. It is, in essence, a monetary model of price determination and economic fluctuations. The structure of investment, competitiveness, capacity building, and sectoral real growth does not appear in the standard IMF analysis. In general, there are three possible approaches to explaining the factors that influence changes in GDP: via the determination of what is produced, which is the approach taken in this paper; via the income earned by the factors of production; or via the elements of aggregate expenditure, which is the approach used by the IMF.

The IMF's choice of approach is consequential, because it renders the institution blind to the structural peculiarities of the SOE, in particular the fact that tradables, nontradables and imports are distinct nonintersecting commodity bundles. In the aggregate there is no substitutability among the three baskets in the SOE. Staycations offer a large measure of relief to the hotel sector in the US and China which are

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[1] Introducing a notion of "core" inflation that excludes the most influential items in the consumer basket implies that marginal items are the "core", which, apart from the obvious contradiction, undermines the credibility of the monetary authority.)

clearly not SOEs, but not in Jamaica or Kenya, which are. When the local prices of imported goods rise in the SOE, either because of international inflation or depreciation of local currency, consumers face shortages because there are no affordable local substitutes available in quantity, as there would be in a large relatively closed economy. Governments of SOEs and developing economies worldwide have discovered that compensating for a failing agricultural export sector by employing displaced labour in public services, or even trying to produce for local consumption, inevitably fatally impairs the country's growth potential and prospects, because foreign exchange reserves have to be depleted to finance the import needs of the newly employed workers and the additional imported inputs for production. In the SOE local sales cannot substitute for lost exports, there are no affordable local substitutes for imports that locals can no longer afford to buy, and those who lose their jobs in export industries cannot find employment in nontradable sectors because of the foreign exchange constraint.

The methodologies used for IMF forecasts do not recognize these realities of the SOE, and the implications they have for export growth and diversification, import substitution, exchange rate policy and potential growth. As far as one can tell, the IMF's country growth forecasts, issued twice a year, are based on a combination of *ad hoc* estimates, backstopped by models which incorporate an implicit assumption that domestic products, exports and imports are all perfect substitutes. That no doubt accounts for the fact that the immediate growth forecasts, which are heavily biased towards the *ad hoc*, garner all the public attention whenever a new version of the IMF's *World Economic Outlook* is issued. The longer term forecasts, which probably owe more to the economic model used by the Fund, have less credibility and are less interesting.

In contrast, the model presented in this paper provides a medium term forecast that can be fully justified by the assumptions made about trends in international prices and interest rates, local productivity and fiscal policies. Within this framework, policies can be designed to target medium term objectives, related to the improvement of national well-being, as well as to keep the economy stable in the short run. Policy makers can then track progress with respect to investment, exports, fiscal balances, health and educational services, the development of public utilities and infrastructure – that is to say, all the factors that really matter for improving the well-being of the population – comparing their forecasts against actual performance, continuously. They can use the model to evaluate divergences between performance on growth, prices, foreign reserves, exports of goods and services, fiscal balances and other target variables. Depending on the source of the divergence, an appropriate policy response can be designed. If, for example, the divergence is as a result of an unexpected external shock of the magnitude of the Covid-19 pandemic, projections for foreign earnings will have to be drastically revised downwards, prejudicing the achievement of targets for improving material well-being in the medium and long term. Using the relationships of the model, the authorities can make estimates of the lower trajectories for the target variables, with current policies in place, before going on to explore policy changes that would serve to improve the prospects. At the end of this exercise policy makers are in a position to offer a convincing strategy for the way forward, showing the short and long term impact of the pandemic, the new policies which are being implemented, what are the expected results of the new policies, over what time period they are likely to appear, and what external factors and imponderables, such as oil prices, pose risks that have to remain the subject to constant scrutiny.

The treatment of inflation in the IMF approach is a self-evident weakness. It is not possible to close the external financial account in any modern economy, and it therefore follows that changes in the money supply of any country will have an impact outside of the domestic economy, via the financial account. If an SOE which issues its own local currency increases the supply of that currency, and if that increase were to provoke an increase in aggregate spending, there might be some upward pressure on the price of

nontradables (Equations 3 and 4), but the larger impact would be on the demand for imports (Equation 5). That, in turn, leads to a fall in foreign reserves, and eventually to a depreciation of the exchange rate. However, even though inflation in this case has its roots in monetary expansion, it cannot be tempered through monetary contraction, once there has been a depreciation of the exchange rate. To assign an inflation target to the central bank is to set the bank up for failure: in the first place, the target for domestic inflation cannot be lower than the international inflation rate because of the dominance of imports and exports, so the SOE's inflation rate has an unknown minimum value. Secondly, inflation appears via a depreciation of the exchange rate, which cannot be arrested with the use of monetary policy alone.

Our model provides a practical measure of fiscal space which can be used to define fiscal sustainability, replacing the IMF's flawed Debt Sustainability Analysis (DSA). A relationship may be established between money creation to finance a fiscal deficit, ΔMB, and the level of foreign reserves, using Equation 5, the identity for aggregate expenditure and the external balance identity. Using this relationship the authorities may estimate the amount of money creation that reduces the foreign reserves to the minimum which is considered adequate to protect the value of the local currency. This estimate is a good indicator of fiscal space for any country whose external credit which is rated below investment grade. Such countries cannot expand fiscal deficits beyond this point, because they will be unable to secure market finance, and any further borrowing from the monetary authority will unsettle foreign exchange markets and risk devaluation and economic instability. This provides a practical measure of the extent of fiscal space, with a threshold which, if breached, imperils the country's targets for economic stability, and, by extension, economic growth and general well-being.

Our model can also be used to debunk the fallacy that increases in domestic saving can be a spur to faster economic growth. It is no accident that no domestic savings variable appears in Equation 1. There is abundant foreign finance available for internationally competitive investment projects in SOEs, should there be insufficient domestic savings available. What is more, only a small percentage of the available savings in local currency can be for investment projects, because of the high import content of such projects. Imports of machinery, equipment, construction materials, fuels and supplies for the project have to be paid for in foreign currency, which local currency savers will need to purchase from banks, depleting the net foreign assets of the country, which are in effect accumulated foreign savings.

Concluding remarks

All too often, the celebration of the completion of a successful IMF-supported economic adjustment programme is not reflected in the sentiment of a majority of the population, who will have witnessed no improvement in the quality of their lives, nor do they have encouraging prospects for the future. Fiscal sustainability will usually have been achieved, but a depreciated exchange, a catastrophic decline in government investment in infrastructure and expenditure on public services, health and education, would all have impaired the well-being of the population. These growth-inhibiting costs of adjustment are not inevitable. The fault lies with the poor design of fiscal policy, the result of an economic policy framework which is not squarely focussed on material well-being, and the international competitiveness, tradables investment and sustained growth which provides the financial resources for improvements in well-being in the medium and long run. The use of a suitably structured and focussed macroeconomic model and framework of policy-making opens the way to tailored design of fiscal policy for the SOE, one which measures success in terms of the well-being of the population.