SECOND THOUGHTS ON THE PERRINGS MODEL

October 14-25, 1983.

Geoff Bertram, using ideas from Merv Pope

The model set out by Charles Perrings, to elucidate the debate over whether New Zealand is constrained by the balance of payments or by domestic savings, was reproduced (with inevitable typos) in my paper of October 5. After some reflection , and debate with colleagues at Vic (notably Merv Pope, whose ideas dominate this paper), I have come to the conclusion that although Charles' model was helpful in setting up a methodological approach, it is not quite the model within which my earlier arguments were set, and they do not fit satisfactorily into an investment/foreign borrowing space. In terms of the Perrings model, I see the cow as tethered (or lying dead, depending on your degree of pessimism) somewhere out in the middle of the paddock. The fences around Charles' paddock don't really matter until we get the beast on its feet and willing to travel again. To understand our present problems, one must pass through a time-warp or something into a different reality - one in which effective demand and current employment/output are related to profitability (competitiveness).

In this paper, I shall first rework the Taylor model presented by Charles. I then find that, reformulated or not, this particular model does not answer the questions that I want to ask. I go on, therefore, to set out more clearly what I mean by the balance-of-payments constraint discussed in my paper of September 14.

A word of warning at the outset: this is a paper written for economists, not the lay public. Laypersons are welcome, but will need to wear their gumboots.

I. REWORKING THE TAYLOR MODEL

In my last paper on Charles Perrings' seminar (October 5) I made passing reference (p.12) to the likelihood that economists would not be altogether happy with the specification of the balance of payments constraint in Lance Taylor's 1971 paper, which Charles used with only minor modification. Here I shall try a critique.

The four-constraint Taylor model,[1] as set out by Charles (and using his notation) is:

1) Balance of payments:

$$a(I)[I_1 + I_2] + a(X)[X_1 + X_2] - X_1 - F \leq 0$$

2) Savings:

$$[I_1 + I_2] - s[X_1 + X_2] \qquad - F \leq 0$$

[1] Taylor (1971) actually has five constraints - he places a minimum "floor" under investment, so that it is always greater than some fixed proportion of GDP. This minimum-investment constraint seems neither relevant nor useful in the context of the present debate.

3) Foreign-exchange, or overseas-borrowing, constraint:

$$F - b[X_1 + X_2] \leq 0$$

4) Absorptive capacity:

$$[I_1 + I_2] - c[X_1 + X_2] \leq 0$$

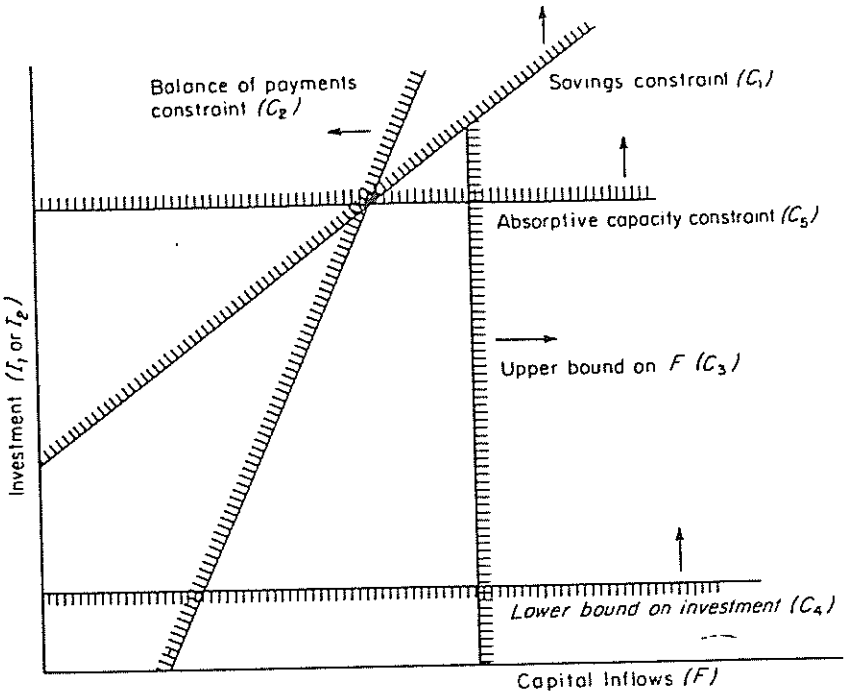

Figure 3.1 Problem constraints. Arrows indicate probable direction of movement of the constraints over time.

Given the concentration on the "balance of payments constraint" in my previous paper of October 5, it is obviously important to be sure that we have put this constraint in a form which is intellectually satisfactory, and which helps with the specific policy problems in New Zealand. My first step is to raise the quibbles which were foreshadowed but suppressed (for purposes of argument) in my previous paper (p.12).

Quibble 1. The distinction between X_1 and X_2 is clumsy and not very clear. Charles overcame this only partly by labelling the two, respectively, "tradeables" and "non-tradeables". As the constraint is formulated, it appears that all "tradeable" output can feasibly be exported, which is a very extreme assumption unlikely to hold in reality. More likely, there is a limit to the proportion of total tradeable output which realistically can be exported at any given set of relative prices; hence the constraint has been set too loosely, and in fact will be more restrictive than Charles' algebra suggests. Going back to Taylor's original 1971 paper, one finds that he used a different criterion for distinguishing between his two sectors (labelled V_1 and V_2 rather than Charles' X_2 and X_2). Taylor's two sectors are "regular (traditional, domestic) production $V_1(t)$", and "production for trade improvement $V_2(t)$".[2] In other words, he distinguishes between established lines of production, and new lines of production undertaken explicitly for the purpose of expanding exports. With these definitions, the constraint makes more sense - as Taylor formulates it,

Total imports - "traditional" exports - V_2 - $F \leq 0$

[2] Taylor (1971) p.49.

so that at each point in time, the position of the constraint is determined by the extent to which the economy has succeeded in expanding its export production in comparison with the starting-point.

To bring the constraint more into line with the approach taken in some recent economists' work in New Zealand,[3] we could use instead a three-way distinction among importables, exportables and non-tradeables. In addition, we then replace the X_1 export-ceiling term in Charles' constraint with a term which captures the actual feasible level of total exports, which I shall set at an arbitrary proportion of

total exportable production. (Subsequently, we may wish to make this proportion itself a variable.)

So we define:

X_1 Exportables production

X_2 Importables production

Therefore, $X_1 + X_2$ = total tradeables

X_3 Non-tradeable production

$a(E)$ Proportion of exportable production exported.[4]

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[3] Particularly Merv Pope and Bob Buckle. See their Monetary Propositions and Alternative Explanations of Inflation and Balance of Payments Adjustment (Discussion Paper No.23, Economics Dept, Victoria University, 1983.)

[4] Before ridiculing this phrase, the reader should note that the term "exportable" here refers to a type of output - e.g. wool, butter, carpets. Not all of the production of such goods could in fact be exported without throwing the New Zealand economy into a chilly, uncarpeted, cholesteral-starved tailspin.

and rewrite the constraint

$$a(I)[I_1 + I_2 + I_3] + a(X)[X_1 + X_2 + X_3] - a(E)X_1 - F \leq 0$$

Quibble 2. There is no obvious reason why imports should be restricted to capital goods and intermediate inputs. It helps to understand the policy issues if we explicitly allow for some imports of final consumption goods. So we define

C_1 Private consumption

C_2 Public consumption

$a(C)$ Import coefficient on final consumption

and rewrite the constraint

$$a(I)[I_1 + I_2 + I_3] + a(X)[X_1 + X_2 + X_3] + a(C)[C_1 + C_2] - a(E)X_1 - F \leq 0$$

Quibble 3. Is this really a "balance of payments constraint?". The question here is: what exactly is implied by the economy's being up against the line representing the constraint on our diagram? Certainly, the line indicates a trade-off between total domestic investment I and overseas borrowing F; to raise investment, the policymaker has to accept higher levels of capital inflow, unless the constraint can be shifted. (Note that I am here reading the line as a stable constraint, which stays where it is as the economy shifts from point to point over some range. The question of whether the jelly will set so obligingly is addressed in Quibble 4 below).

Now it is important to note, to begin with, that we have made things considerably messier by including consumption imports under Quibble 2 above. For consumption expenditure is a function, not simply of aggregate output X, but also of other elements in household budgets - including, for example, transfer payments through the social security system, and changes in asset holdings. With final consumption imports included in the intercept term, the constraint shifts down (tightens) whenever something happens to increase consumption expenditure - an effect which is familiar enough in real world experience, but which renders the constraint less of a real resource constraint in the strict sense of Taylor's article.

What the constraint says, in effect, is that with a particular level of export earnings, if we give the import content of consumption demand and intermediate goods demand the first call on available current foreign exchange income, then the import content of domestic investment can be "financed" domestically only to the extent that there is still some foreign exchange income "left over". The import content of investment above this level has to be provided by overseas borrowing. In other words, the "gap" which we are looking at is a "foreign investible resources gap". Or, to put the same thing another way, we are looking at the economy's ability to get its hands on those foreign-produced pieces of capital equipment without which domestic investment programmes cannot (profitably) proceed. It's not the need for foreigners' money that's crucial, but the need for foreigners' output of certain material things. If identical, or near-identical, things can be produced

locally at comparable cost (that is, if local output is a close substitute for imported equipment) then the "constraint" will be "soft" - that is, policy measures have a good chance of lowering a(I) at relatively low cost, and thus raising the rate of investment which can be achieved without resort to foreign "finance". (Success in this, of course, would bring the savings constraint into play, if the economy becomes stretched in the effort to service both consumption and investment at the desired levels.)

Quibble 4. Mathematics is beguiling and straight lines on a map have a comforting look of solidity to them. But the Taylor formulation actually tells us a rather odd story if we try thinking about what the constraint says or means. In order to draw the constraint on a two-dimensional map, Taylor holds constant everything except I and F in the equation.[5]

$$I = \frac{a(X)[X_1 + X_2 + X_3] + a(C)[C_1 + C_2] - a(E)X_1}{a(I)} - \frac{1}{a(I)} F$$

In particular, this means that we hold X_1, X_2 and X_3 constant, together with a(X), a(C) and a(E), and of course C_1 and C_2. And a(I)? Here's the rub.

[5] This is, of course, not Taylor's equation. But it's his approach.

Under these conditions, what does it mean to increase I? Domestic output and consumption are held unchanged; each dollar of extra investment must therefore be imported as we move up in the space, which is to say that a(I) must rise as I rises. (To put the same thing in other words, if investment is increasing and the domestic supply of investment goods is held constant, then the increased demand for investment goods must be supplied from overseas. If at the same time exports are held constant, then these extra imports must be entirely financed by overseas borrowing. The import content of investment thus rises, and F increases dollar-for-dollar with investment.)

There are, therefore, a minimum of three variables, not two, in the above equation: I, a(I), and F. If we wish to plot the constraint in a two-dimensional (I,F) space, we must do so by projecting onto that space a series of points running in a line across a plane in three-dimensional (I, a(I), F) space. In other words, to draw the constraint on our map, we need to put the economy against the constraint at one point, hold everything except our three variables constant, then increase investment and see what level of F emerges from the initial change in I and the resulting adjustment of a(I). With domestic output fixed, the model will then trace out a line with a slope of 45° - that is, F increases dollar-for-dollar with I, once we put the economy up against the constraint as formulated.

To draw the constraint, as Taylor does, on the assumption that a(I) can be held constant as I increases with no change in output, is to fall into the old trap of mistaking an equation for an economic relationship. One cannot map a real economy onto the two-dimensional plane without taking account of its three-dimensional topography.

Of course, we might insist on holding a(I) constant; then something else will have to "give" as investment increases. Some component of domestic output must change (and of course, if it's X_2 that changes, this in turn will alter a(X) and/or a(C), since the domestic supply of importables changes, which must affect import propensities somewhere).

The basic point, thus, remains: the formulation of this constraint as a two-variable equation with a determinate intercept and slope is meaningless, unless we have a set of behavioural relations for the X's, the a's, and/or the C's, with respect to F. If drawn in the spirit of Taylor, the foreign-investible -resources constraint will have an inter-cept reflecting the upper bound on the economy's net supply of produced (or earned) investment goods, and a slope of 45° unless we suppose that foreign borrowing has some effect on the size of the realised domestic surplus.[6] If foreign borrowing "crowds out" some domestic savings, then the constraint will tend

[6] There was a considerable debate on this possibility in the early 1970s: see, e.g., Griffin, K.B., "Foreign Capital, Domestic Savings, and Economic Development" in Oxford Bulletin of Economics and Statistics May 1970, and debate in the same journal in May 1971; also Newlyn, T., The Financing of Economic Development (1977) Chapter 4.

to have a slope of less than 45° - since consumption imports will make growing inroads into the foreign-exchange surplus, an even greater modification to the Taylor view.

Now we note, interestingly enough, that our line of argument has brought us towards what Charles may have had in mind when making his case for a savings constraint. As revised, our new version of what started out as a "balance of payments constraint" has mutated into a domestic-investible-resources constraint, and the economist reader must by now be wondering whether I haven't extinguished the original distinction between the balance-of-payments constraint and the savings constraint. Have not the savings gap and the foreign-exchange gap collapsed into one, along the lines always argued by neoclassical critics of two-gap models?[7] The answer is no - in ex ante terms, we are still talking about two different animals.

[7] See, e.g., Joshi, V.J., in Streeten, P.P. (ed.) Unfashionable Economics (1969); and . . Findlay, R., "Some Theoretical Notes on the Trade-Growth Nexus", in Ranis, G. (ed.) The Gap Between Rich and Poor Nations (1972).

The savings constraint corresponds to the "savings gap" part of the two-gap model and is concerned with the "role of foreign capital inflows in..... supplementing domestic savings" in Taylor's words.[8] The savings gap is the ex ante difference between desired investment expenditure I and the volume of GDP remaining after planned consumption expenditure has been undertaken. It is determined, in other words, by the level of total domestic output, the level of consumption, and the level of desired investment. The "savings constraint" is therefore imposed by the extent to which households are prepared (or can be obliged) to forego consumption out of current GDP; in the absence of capital imports, there is simply not a large enough flow of goods and services passing through the aggregate marketplace per period to permit investment plans to be carried out. The role of capital imports thus is to augment the total flow of goods and services available for current use, so that after consumers have laid claim to their planned share of the total, enough is left over for planned investment. "Goods and services" are here treated as a single homogeneous substance - putty - which can equally well be put to any use (consumption or investment). Domestic and foreign output are perfect substitutes for each other, and it therefore doesn't matter precisely who imports <u>which</u> goods with the foreign money made available by capital inflow.

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[8] Taylor (1971) p.50.

The balance-of-payments gap, on the other hand, reflects "the role of foreign capital inflows in... making possible additional imports", rather than in supplementing the aggregate flow of homogenous goods and services. There is, in other words, something special about foreign production as distinct from local production. In the two-gap model, what is special is that foreigners have a natural monopoly in the production of certain goods and services which are essential inputs to local production and investment. In order to function, the local economy must have access to some supply of these goods, which must of necessity be imported. In order to achieve target levels of investment and growth, the economy must be able to obtain some minimum volume of such imports; and simply foregoing domestic consumption will not make more imports available, because the local resources thus released from the production of consumer goods cannot be transferred (or not easily or profitably transferred) into the production of the required investment goods or intermediate goods nor into increased exports to purchase them with. The problem, thus, is that there is a structurally-determined lower bound on each of a(I) and a(X), and (in the short-medium term at least) an upper-bound on a(E). There is, in addition, a limit to the production system's ability to switch production from X_3 to X_1 (exportables) and/or X_2 (importables), so that again, aggregate reductions of consumption expenditure ex ante do not fall only (or even necessarily mainly) on exportables and importables - but reduced demand for non-tradeables cannot increase the economy's access to imports, except in the case where resources can costlessly and without friction be transferred from sector to sector.

The neoclassical answer, of course, is that the intersectoral rigidities referred to above arise as much from the absence of a working relative-price mechanism as from physical limits to feasibility. In the short run, this is doubtful; in the longer run, it is quite plausible, provided that relative-price incentives to switch resources from one line of activity to another are not swamped by recessionary feedback, imposed by the requirements of ex post macro balance in the economy. The two-gap model rests on the view that elasticities of substitution are low over the period bounded by the planning horizon, so that even if relative-price signals are put in place (by planners or the market) during the planning period, the constraint on investment performance will still be the shortage of particular categories of importables, which can be secured only by capital inflow.

From the above discussion, it will be noted that if a foreign-investible-resource constraint exists, then the savings constraint does not exist (since the latter holds only when domestic and foreign resources are perfect substitutes over the relevant range).

THE WRONG QUESTION?

It is now time to stand back and ask whether the Chenery/Taylor two-gap model, as reformulated, gives us the answer we seek. As Hicks used to tell his classes, if the answer doesn't feel right, perhaps the

question was wrong.

When we come right down to it, the idea of the balance-of-payments constraint, as set out in my September 14 comments on Charles Perrings, turns out to be rather different from the Taylor constraint which bears the same name - although there are family resemblances. In a two-gap model, what the constraint does is to prevent the economy from achieving a particular range of growth rates in the absence of foreign capital inflows. The problem of how you actually get the economy to a point where it is bound by the constraint is glossed over. In the tradition of growth economics within both Harrod-Domar and Swan-Solow frameworks, it is assumed that some mechanism or other will keep the economy on or near its warranted growth path (despite the fact that Harrod himself took much interest in the possibility that the economy might be found in the morning lying on its back in the far corner of the field).

The Taylor model gives us interesting answers provided that we have solved the problem of effective demand for the production to be turned out by the planned investment projects. In other words, we take as given a desired level of investment above what is attainable without capital imports and the question is: what "cost" in terms of rising indebtedness must be paid for increased levels of realised investment? The question is most interesting when one's capitalists and/or state enterprise managers are raring to go with lots of growth-oriented investments. It is least interesting when the economy has trotted off to the bottom of the paddock

and lain down for a long rest. If investment is constrained by lack of profitability, or lack of animal spirits - in other words, by lack of plans - then the possibility that there may be a constraint on the realisation of plans is of abstract rather than concrete interest. We have a cart, but the horse is in hiding.

We have, however, now got a handle on what our question has to be. We have, as I pointed out in my previous paper, an economy characterised by idle capacity, unemployment, and overseas borrowing. In the Taylor world, we would interpret this to mean that the economy is on its balance-of-payments constraint, with local resources unemployed because they cannot be used to substitute for the complementary imports without which the system can't function; capital imports thus permit an increase in the proportion of investment plans that can be carried out. Unemployment is then seen as strictly structural, and we would have to go on to ask some pretty searching questions about why, if our capitalists are dead keen to get the show on the road, there isn't more action on the relative-price and retraining/reallocation front. With excess demand for key investment goods, one would expect some signs in the relevant markets.

But to adopt the Chenery/Taylor model is to pre-empt both question and answer. The obsession with investment as the leading sector and the implicit lack of concern with expected profitability as an incentive to invest (i.e. with the position and state of the marginal efficiency of capital schedule) are both out of place in the present New Zealand conjuncture. We have excess capacity precisely in the sectors where excess investment demand should now be stretching capacity to the limits, if the Taylor constraints hold. We need to ask <u>not</u> "what limits our capitalists' ability

to carry out their ambitious investment plans?" but rather "why do our capitalists have very low investment plans, and depressed employment and output plans?" (the second of these, obviously, being a powerful contributor to the first).

Time, therefore, to turn to the world of Swan diagrams, where the balance of payments acts as a constraint not on investment per se, but on aggregate effective demand for home output.

The Perrings debate, from this perspective, went up a blind alley. We were indeed talking about different things. I shall therefore have to reciprocate to Charles' presentation of his theoretical framework, by indicating (less elegantly, inevitably) my own.

WHAT IS THIS "BALANCE OF PAYMENTS CONSTRAINT" ANYWAY?

The point of a constraint is that it places a limit on how far something can go in some direction. But what thing, and which direction? Much confusion results from loose reference to "the balance of payments constraint", when in fact there are a whole host of obstacles which may be thus labelled. Most obvious in the New Zealand debate is the confusion between constraints on the balance-of-payments (i.e. those things which prevent a particular balance-of-payments objective being secured) and constraints imposed by or through the balance of payments (e.g. the structural limitations on investment in the Taylor/Perrings model, or the

open-economy limitations on the effectiveness of fiscal policy, à la McKinnon, on which see below).

In order to clear some ground, it's worth traversing briefly some of the notions commonly met with in this field, as much to establish what I am not saying as to elucidate what I am saying. I shall be concerned mainly with the question of what obstacles may prevent a small open economy from (a) producing, (b) employing and (c) consuming or purchasing at the maximum levels permitted by its resource endowment. I shall not, therefore, pursue further the constraints on investment and growth (the subject of the first part of this paper) except insofar as they relate directly to employment or current output.

Suppose we have a idyllic economic order in which production and exchange are organised purely with a view to the maximisation of total utility (or use value in the old Adam Smith/Ricardo/Marx tradition), and in which there is no international borrowing or lending, so that in each period our country's access to goods and services from the rest of the world is restricted to what can be paid for out of current export earnings plus accrued foreign exchange reserves "saved" in previous periods. The community's aggregate supply of home production is then limited by its production possibility frontier, and its ability to lay claim to a share of world production[9] is limited by the production frontier combined with the international terms of trade between importables and exportables. The "effective full-employment GDP" represents the limit to real national

[9] Which of course includes production in our country.

expenditure, and attempts to raise expenditure beyond this limit produce an inflationary gap. More to the point in recent New Zealand discussion, a fall in the terms of trade will tighten the economy's "budget constraint", since at the new set of relative prices, the available supply of tradeable goods falls (measuring the change in tradeables supply at the original set of relative prices, of course).

Now if the production possibility frontier has the usual textbook form, the economy's budget constraint will reflect an "optimal" allocation of fully-employed home resources among the production of importables, exportables and non-tradeables. When relative prices change (e.g. the terms of trade shift) a reallocation takes place around the frontier until the economy is again taking full advantage of its production and trading opportunities. The role of the balance of payments in all this is merely to make explicit the economy's full-employment constraint, via the requirement that, ex post, exports and imports must be equal at prevailing prices. To speak of a "balance of payments constraint" under these circumstances is to mistake the nature of the actual constraint on economic welfare, which is the scarcity of resource endowment, relative to wants.

The balance of payments becomes a constraining influence in its own right when we turn to the possibility that something in our economy's international trading experience may act to prevent the system from reaching a point in its notional budget constraint. If, for example, we are unable to sell the desired volume of exports at prevailing world prices, and at the same time unable to affect those prices (i.e. bring about an

adjustment in the terms of trade, which in turn could set off the familiar "invisible hand" operations of the domestic price system) then the economy will be constrained to a level of expenditure below full-employment effective GDP with a tendency towards a deficit on the trade balance. (Remember we are still assuming no international lending or borrowing). Similarly, if we are unable to secure the desired volume of imports at prevailing world prices, and unable to alter those prices, then the system will be constrained, with a persistent tendency towards a surplus on the trade balance.

A level of national expenditure equivalent to full-employment effective GDP will then be unrealisable, in the absence of foreign borrowing or a rundown of exchange reserves.

If now we allow our economy to engage in overseas borrowing, then national expenditure can exceed effective product by the amount of the balance-of-payments current account deficit, and the "constraint" of the previous paragraph abruptly vanishes, as does the notional short-run budget constraint. With the economy no longer "bound" to "live within its income" (over the short run at least) the limit on attainable expenditure levels becomes simply the willingness of the rest of the world to provide credit to finance our current-account deficit. From being immediate and tangible, the constraint has withdrawn over the horizon. That is to say, levels of national expenditure in excess of current income are now <u>feasible</u>; if

for some reason the Government is unwilling to allow the economy to run a current-account deficit, then the constraint on expenditure is not the balance of payments per se but the Government.

At this stage, then, we have three senses in which "balance of payments constraint" may be understood, all of which are to be found in the the New Zealand debates:

1. The absolute constraint imposed on a small open economy, if foreign borrowing is impossible, by its resource endowment, production functions, and the terms of trade. While this is often described as a balance-of-payments or foreign-exchange constraint by commentators concerned about the need to "live within our income", it is really just the full-employment constraint for the open economy, and is binding in a real sense only so long as current-account balance is exogenously imposed.

2. Some constraint on achievement of current-account balance (imports = exports) when the economy is at full employment. This implies a breakdown in the neoclassical relative-price adjustment mechanism: the economy is quite capable of attaining its production frontier, but fails to locate itself at the point on that frontier which permits it to take full advantage of its trading opportunities at prevailing relative prices; or alternatively, having located at that point, it finds itself unable to realise the planned level of net export sales (i.e. some form of quantity rationing in international markets is encountered). The constraint

is thus a structural or market-failure limitation on the economy's ability to realise simultaneously two goals, namely full employment and current-account balance. If foreign borrowing is possible, this is not a binding constraint, in the sense of (1) above. It is rather an albatross, or deadweight loss, which the economic system is obliged to carry because of the "failure" of some part of the neoclassical transformation mechanism.

3. A self-imposed constraint on the level of national expenditure, reflected in a refusal by Government to borrow abroad up to its binding limit in each period. This is not, in fact, a constraint in the same sense as the other two, because it rests not on physical resource endowment, or structural imperfections in current goods markets, but rather on a perceived imperfection in the world capital market. The Government (quite likely reflecting the preferences of the community) fears to run too great a current-account deficit, presumably because of what it believes will be the longer-run consequences of rising overseas debt. Overseas borrowing is limited, by the decision of the borrower and not the lender, to some perceived optimal level, taking into account the expected future capacity/willingness to repay debt at maturity. The community, in other words, declares itself satiated with credit-financed imports, and refuses to opt for a boundary position at the margin of its set of current-expenditure possibilities. Instead, it achieves a sort of unconstrained optimum level of current expenditure, given its preferences about future as compared to current consumption.

This appears to be the sort of self-imposed balance-of-payments constraint envisaged in Buckle's (1978, p.13) definition of "external balance" as "a desired balance of payments position in relation to aggregate domestic production".

None of these three, however, is my meaning, when I use the term "balance of payments constraint". Since we have external borrowing options in hand, (1) does not apply in any binding sense. Since (2) is not binding, it cannot in itself prevent the system from attaining full employment; it merely results in sub-optimal resource allocation at full employment. And since (3) is a self-imposed decision to forego current satisfaction, it is not a constraint in my sense, however evident it may be that all communities face an intertemporal budget constraint of some kind.

The type of constraint which I had in mind in my paper of September 14 is the imposition of an upper limit on the attainable level of effective demand for home output, and hence on the volume of realised profit which can accrue to local capitalists. It is a constraint on the Government's ability to move the economy up its aggregate supply curve - a constraint which is imposed by the existence of a world supply curve intersecting the home aggregate-supply curve at a point below full employment output. By the same token, it removes the possibility that a surge of animal spirits among home capitalists might generate a full-employment level of output before the import coefficient on domestic investment rises

to 100% at the margin. Put at its most simplistic, it is the constraint on a price-taking capitalist enterprise (the aggregate NZ economy) imposed by the exogenously-given world market price.

Following McKinnon[10] we can get a good impression of how models along these lines work, although one might (as always) want to quibble here and there. Start by imagining a small open economy in which all production is tradeable, and where capital stock and techniques of production are given, but labour employment can be varied in the short run. In this situation, under free trade the local market prices of all goods and services will be the world price multiplied by the exchange rate. For any given exchange rate, therefore, the local price level is exogenously set. The profitability of home producers then rests on the difference between the given price at which output can be sold, and the (variable) unit cost of production. For simplicity local capitalists are assumed to operate (as in standard microeconomics) by setting labour employment and total output at the level where the cost of hiring extra units of labour (i.e. the money wage rate) is equated to the value marginal product of labour (which falls as employment increases, because capital stock is fixed). For any given level of the money wage, then, there will be a unique, determinate

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[10] McKinnon, R.I., "The Limited Role of Fiscal Policy in an Open Economy", Banca Nazionale del Lavoro Quarterly Review No. 117, June, 1976.

level of output and employment, which cannot be affected by fiscal or monetary policy unless such policies have some effect on the wage rate.

Now, with capitalists modelled in this way, we can obviously retell the same story in terms of the concept of the aggregate supply curve of home production. If we hold fixed the money wage, techniques of production, and the ruling expected rate of profit or markup, then output and employment will change only if there is an increase in the price at which output can be sold. Employment will then rise if

1. world prices rise
2. the exchange rate is devalued
3. tariffs are imposed which raise the local price of importables, and hence raise the (weighted average) domestic price level.

In all three cases, the local economy is moving up its aggregate supply curve of home production. The diagram below is Merv Pope's representation of the basic McKinnon model[11]:

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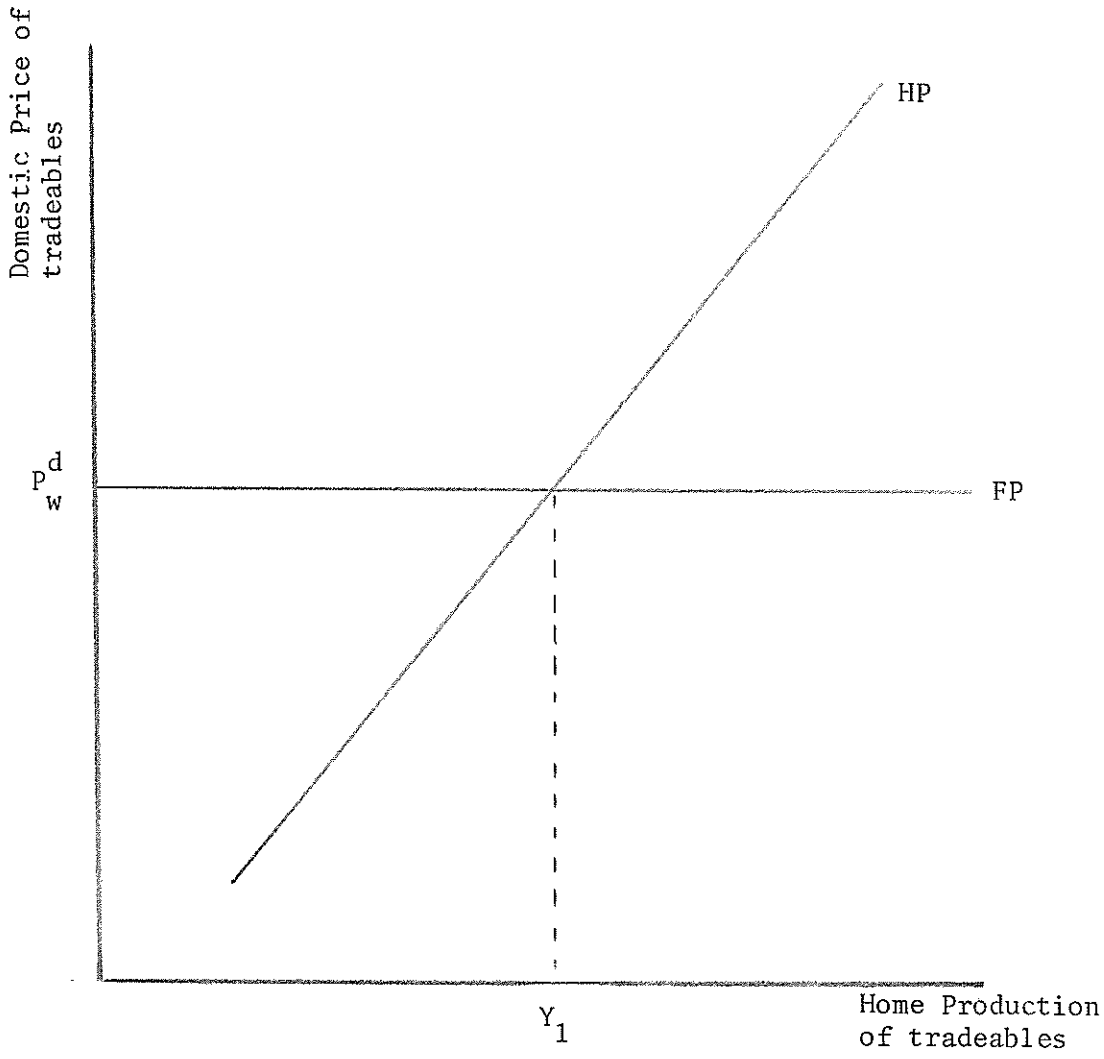
[11] Pope, M., "Adjustment to What - Do We Really Have a Balance of Payments Problem?", Paper to N.Z. Association of Economists, August 1983.



In a closed economy, standard Keynesian policies would be effective over the full range of the aggregate home supply curve, HP. In the open economy, they work only over the part of the curve up to and including the exogenously-given demand-price level P_w^d (that is, the world price converted into local currency, and modified by any tariffs on imports and export taxes or subsidies). Levels of home output (and hence employment) above Y_1 cannot be attained by fiscal or monetary policy; instead, every extra dollar added to the Government's budget deficit is simply an extra dollar of deficit on the balance of payments current account. All additional purchasing power pumped into the local economy is spent on imports, not home production - because once home production

reaches the level Y_1, local producers cease to be competitive with foreign producers at the margin.

McKinnon then extends his analysis to the case of an economy with non-tradeable as well as tradeable production, and finds that under his assumptions, the government can raise total employment if tradeable production can be held at Y_1 while non-tradeable output is raised. Employment creation in non-tradeables, provided that it does not have too much feedback on tradeables producers (e.g. via wage rates) can be successful in reducing unemployment.[12] However, obviously enough, to the extent that extra income earned in non-tradeables sectors is spent on tradeable goods, there will be a negative impact on the trade balance. This, however, is not our concern here.

McKinnon briskly sums up his conclusions as follows:[13]

> ... engaging in heavy fiscal deficits as the principal response to unemployment could be a perilous policy for the stability of an open economy. Unemployment would not be significantly alleviated, and the resulting foreign deficits could cumulate so as to threaten the economy's international credit-worthiness. Nevertheless, such a policy response is often considered respectable by civil servants and economists steeped in old "closed-economy" Keynessian economics.

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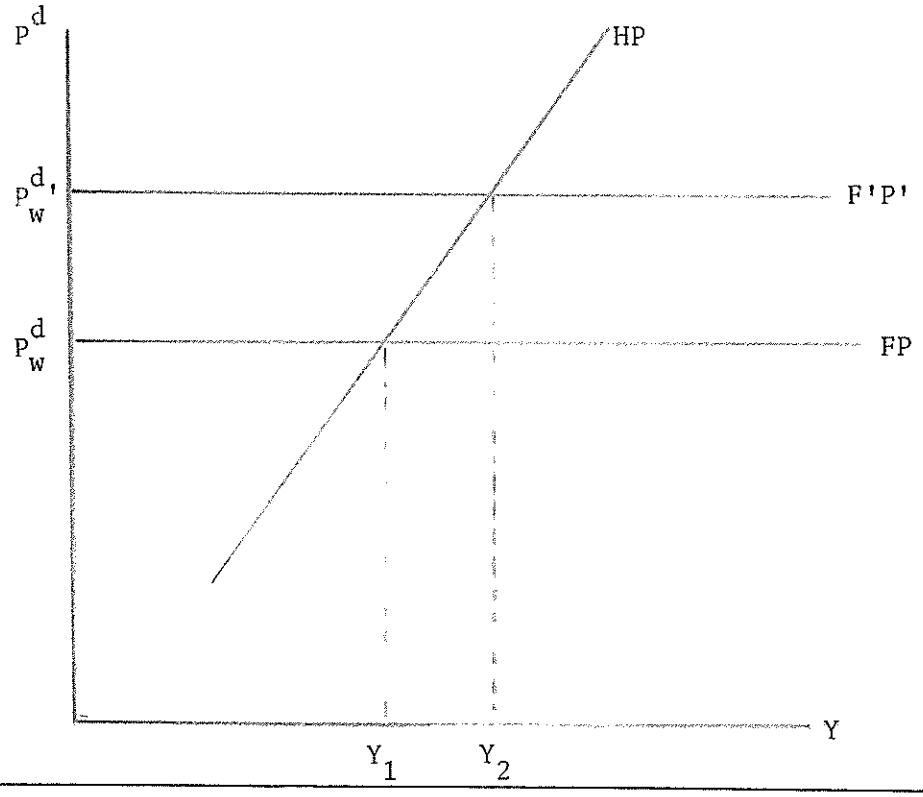
[12] This line of attack on unemployment was canvassed briefly in my September 14 paper, pp. 13 and 22.

[13] McKinnon (1976) p.116

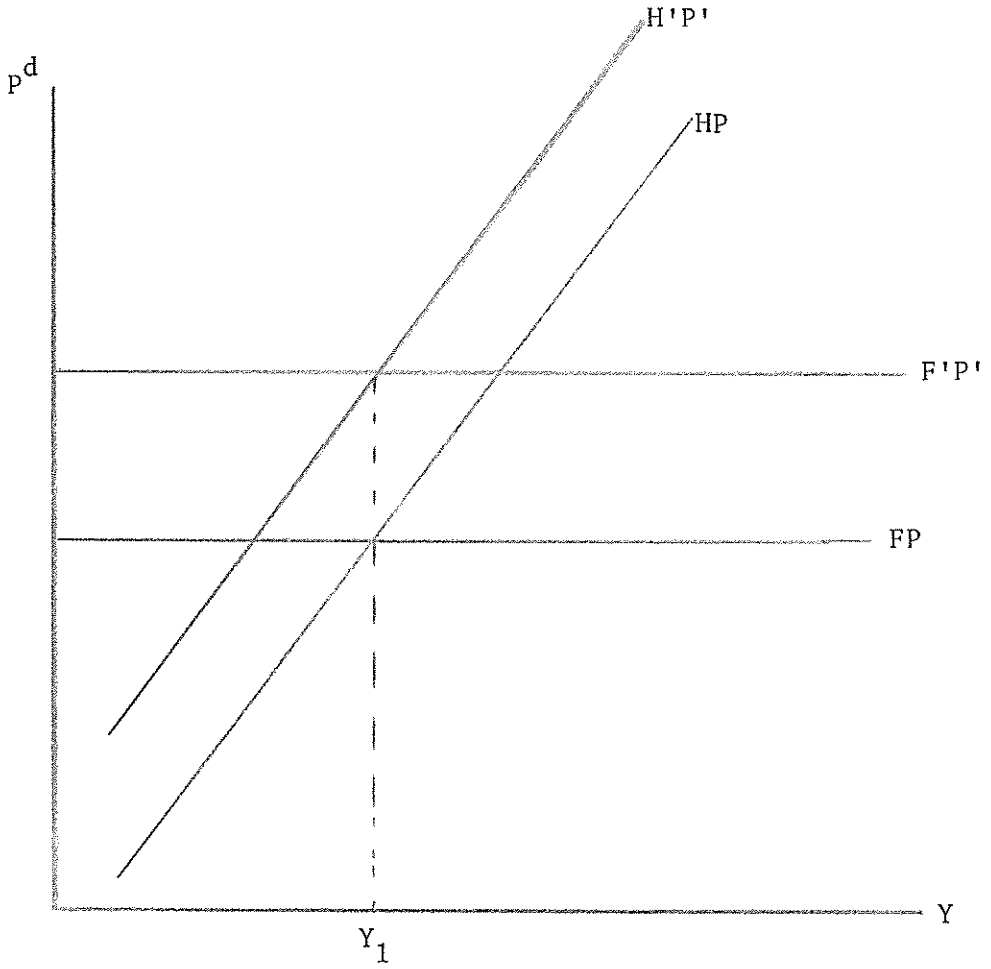
> On the other hand, while monetary cum exchange-rate policy can give a sharp short-run stimulus to an open economy with rigid money wages, it lacks viability if used repeatedly. As this official policy response becomes anticipated, money wages lose their rigid character. Indeed, labour unions may come to overestimate future exchange depreciations in bargaining session...

The reference in the second paragraph quoted above to exchange-rate policy applies equally to other policies aimed to encourage home producers by raising the local price of tradeables: such policies operate by shifting the FP line on our diagram vertically up to F'P', thus inducing local tradeables producers to raise output from Y_1 to Y_2 provided that nothing else changes.[14] The situation would then be:



[14] As Merv Pope puts it in his (1983) paper, p.8: "Devaluation is not a change in the supply price; it is an attempt to raise the demand price in domestic currency relative to the supply price of tradeables".

On the other hand, if an increase in the local price of tradeables were to be passed on to wages and non-tradeable prices, then the profitability of tradeables producers would be squeezed on the cost side at the same time as (or very shortly after) it was enhanced on the price side, which of course would mean that the upward shift of the FP line would be followed by a corresponding shift of the HP line. Output of tradeables would then remain "stuck" at Y_1, the only change being a rise in prices. (See diagram below) This, in essence, is the result predicted by Buckle and Pope for devaluations in New Zealand, and is the basis for the pessimism about the exchange rate as a policy instrument in Pope (1983), pp. 8-9.



The alternative to using the price mechanism to "pull" local resources into tradeable production would, obviously enough, be to persuade home producers to raise output by making them more competitive i.e. by changing the position of HP. That, in turn, means action on at least one of the following fronts:

1. Wage costs and/or labour productivity - i.e. a fall in unit labour costs of output
2. Tax reductions
3. A lower "going rate" of profit
4. Technological innovations

None of these looks easy - it's obvious enough why everyone prefers to go home and pray for a world recovery. But note that the way in which a world recovery works, if we are thinking in the McKinnon framework, is by raising the demand price - and note furthermore that the steeper, and the further to the left, our HP curve is, the less home production and employment we get from any given level of world prices. In other words, moving HP to the right and/or flattening its slope has got to be good for us if employment is the goal, and similarly if growth and long-run national income are our goals.

Insofar as the McKinnon model is used as the basis for designing policy packages, we therefore have two major parts for any package:

1. Policies aiming to alter demand price, which in order to be effective must in some way be "insulated" to prevent feedback to supply price. Examples are tariff policy, exchange rate changes, and diplomatic efforts to gain access to higher-price segments of the world market. "Insulation" means an attack on indexation within the economy.

2. Policies aiming to lower the supply price of home tradeables output, which work either by changing the relative prices of tradeables outputs and non-tradeables inputs, or by altering techniques of production (raising efficiency), or by altering mark-up behaviour by capitalists.

Concluding Note

This paper is now quite long enough, and time presses. But the issue, obviously, is not closed by any means. Especially if we are to have a go at formulating some policy packages in the above framework, we need to "do over" McKinnon - particularly by distinguishing between importables and exportables, since McKinnon's model entirely lacks a terms-of-trade mechanism, and models a "world recovery" in terms of a uniform rise in world prices; whereas for New Zealand a "recovery" is generally understood to mean a rise in the price of exportables relative to that of importables.

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APPENDIX A

ABSOLUTE AND RELATIVE CONCEPTIONS OF A BALANCE-OF PAYMENTS CONSTRAINT

This appendix trots through my understanding of a couple of the major current conceptions of the balance-of-payments constraint, using two diagramatic models - one, from Swan[1], representing the role of the relative-price mechanism in relation to external and internal balance; and the other derived originally from Mundell[2] but now familiar from intermediate macro texts, showing external balance in an IS/LM context, and hence representing the role of the interest-rate mechanism.

In both cases, we are interested in the possibility that failure to attain external balance (some "limit" balance-of-payments current-account position when the economy is at full-employment) may hinder the attainment of internal balance (equality of domestic effective demand and aggregate supply at full employment) so that the ability of Government to sustain full employment is circumscribed.

The distinction between "absolute" and "relative" constraints is admittedly clumsy. What I am getting at is the distinction between having the external balance locus exogenously imposed (e.g. by foreign bankers combined with domestic structural rigidities), which is the "absolute constraint" situation; and having economic management stymied by the difficulty of reconciling conflicting objectives, even though relative-price and interest-rate elasticities may *permit* the balance of payments position to be adjusted, which I label the "relative constraint" situation.

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1 Swan, T.W., "Longer-Run Problems of the Balance of Payments", in Arndt, H.W. and Corden, W.M. (eds) *The Australian Economy: a Volume of Readings* (1963). Subsequent work by Corden, in particular, has built upon this foundation.

2 Mundell, R.A., "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability", *IMF Staff Papers* 1962, used a diagram relating the interest rate and the government budget surplus. From there to IS/LM is a straightforward step.

Absolute Constraint

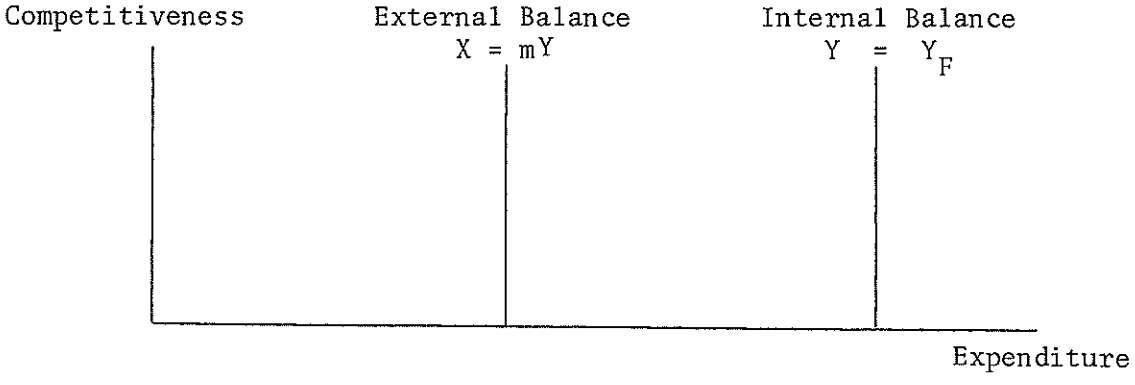
In terms of my earlier debate with Charles Perrings, this is more or less what I called the "foreign-exchange constraint". It concerns the situation where the economy faces an exogenously-fixed foreign-exchange-budget constraint, so that economic management becomes the process of allocating a limited supply of foreign exchange to best advantage. This is certainly the image which many lay commentators in New Zealand have in their minds in the present debate. The economy is conceived in terms of a simple income-expenditure model, with a fixed marginal propensity to import between 0 and 1, and with export earnings determined exogenously by world markets (the most straightforward version of this being an implicit price elasticity of world demand of 1, so that there is no payback to export earnings from price-making behaviour). We assume no capacity to borrow overseas (or else a fixed credit limit which is included in $\bar{X}$ below) so that the economy's capacity to import is determined exogenously by its current export performance (plus fixed overseas borrowing if any). We then have

$$M = mY \leq \bar{X}$$

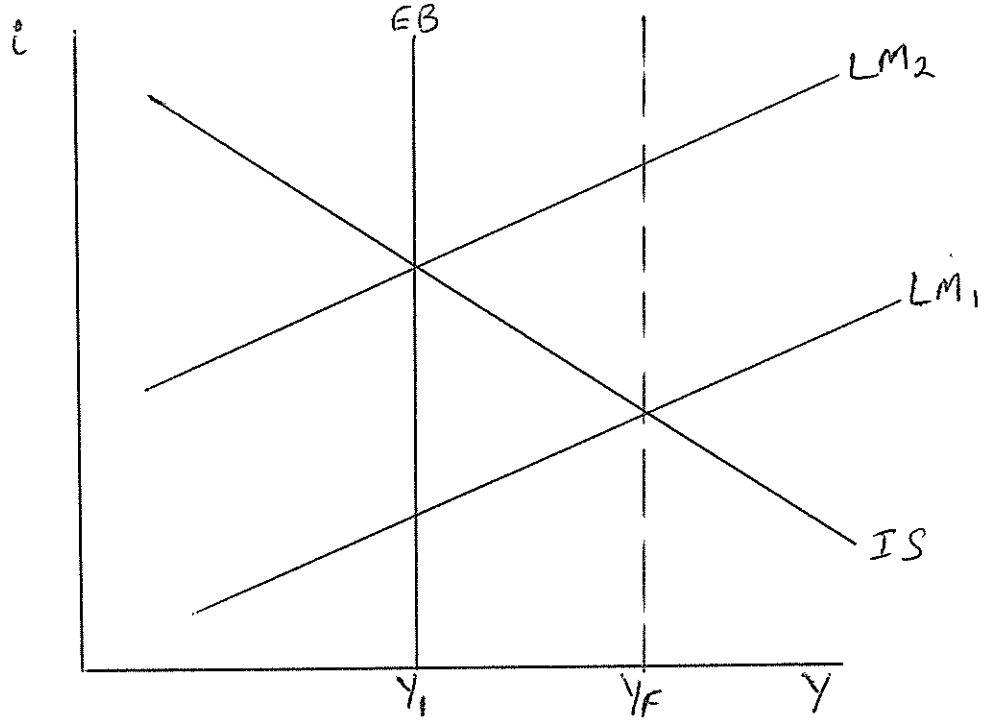
so $Y \leq \frac{\bar{X}}{m}$ which is the foreign exchange constraint.

The constraint, obviously, is a problem for short-run stabilization policy iff $Y_F > \frac{\bar{X}}{m}$ in which case full employment is unattainable with the given parameters of the system.

In terms of the Swan diagram, the situation is:



In terms of IS/LM analysis, we have



so that the attainment of full employment (at the intersection of LM_1 and IS) is impossible given the external balance constraint EB , and the excess demand prevailing when the system hits EB pushes LM up to LM_2 via domestic inflation (which, given the assumption of no relative-price elasticities of trade with the rest of the world, leaves IS unchanged).

These two diagrams make it explicit that neither the price mechanism nor the interest-rate mechanism are able to "solve" the problem of the foreign-exchange constraint. It will be noted that in the Swan diagram we require rather more stringent assumptions than those already spelt out, since the IB as well as the EB curve has to be inelastic with respect to relative competitiveness over the relevant range (the normal slope for this curve in the literature is negative, which would mean an intersection with EB at some level of competitiveness).

The attraction of this model is that it forcibly focusses attention on the structural rigidities in the domestic economy which prevent the attainment of full employment and make the system prone to inflation at less than full employment. Given an unhelpful world market, the only way in which

policymakers can move the system towards full employment is by lowering the net propensity to import - either by redistributing income toward groups with a relatively low marginal import propensity, or by promoting the production of import substitutes. Given the structural rigidities which underly the problem, it is obvious enough that the "efficiency" or "competitiveness" of import-substituting activities in terms of some comparison with performance in the rest of the world are of very little significance - the central question is the selection of import-substituting projects on the basis of their ratio of foreign exchange savings to domestic resource cost. If the proportion of domestic resources kept idle by the foreign exchange constraint is very large, so that the opportunity cost of using those resources is low or zero, it is obvious enough that it will appear worthwhile undertaking a lot of import-substituting projects which would never meet the test of neoclassical scrutiny by the likes of Little, Scott and Scitovsky, let alone Derek Quigley or Roger Kerr, since such scrutiny is premised on the assumption that the supposed constraint does not exist in the form in which it has been specified above.

The model has a perfectly respectable pedigree among economists who have worked on economies which do indeed seem to lack a reliable ability to finance trade deficits over the long term by borrowing, and where market mechanisms are perceived to operate weakly if at all. The two best-known examples are the planning of "socialism in one country" on the basis of Soviet experience during the three or four decades after the October Revolution ; and the Economic Commission for Latin America's analysis of

structural inflation, and promotion of import substituting industrialisation, during the 1950s and 1960s.[1] The solutions proposed for the structural bottleneck were planned export expansion and import replacement, in the centrally-planned case; and acceptance of structural inflation as part of a strategy of "unbalanced growth"[2] in the Latin American case, since the required incentives towards import substitution required that the economy be kept pressed hard against the EB constraint (in the IS/LM diagram above).

Obviously, these examples from the international literature go rather beyond the purely static version of the exchange constraint idea, since the elimination of the constraint is perceived as necessary for *growth* as well as full employment *per se*. Indeed, once we get into it, there is really no very satisfactory dividing line between the static and the dynamic versions of the "binding constraint" thesis - discussions of full employment spill over naturally into questions of growth, and vice versa. Hence my comment on the "family resemblance" between the Perrings approach and my own.

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1 See Baer, W., "The Economics of Prebisch and ECLA" (*Economic Development and Cultural Change* Vol. 10 No. 2 1961-62); Baer, W., "Import Substitution and Industrialisation in Latin America: Experiences and Interpretations" (*Latin American Research Review* Spring 1972); Booth, D., "Andre Gunder Frank: an Introduction and Appreciation" (in Oxaal, I. *et al*, eds, *Beyond the Sociology of Development*, 1975); Thorp, R., "Inflation and the Financing of Economic Development" (in Griffin, K.B., ed, *Financing Development in Latin America*, 1971); Seers, D., "A Theory of Inflation and Growth in Underdeveloped Countries, Based on the Experience of Latin America" (*Oxford Economic Papers* June 1962). The flavour of the structuralist/monetarist debate over Latin American inflation is well captured in Baer, W. and Kerstenetsky, I. (eds) *Inflation and Growth in Latin America* (1964). A major piece of theoretical underpinning for structuralism comes from Kalecki, M., *Essays on Developing Economies* (1976), Chapters 5 and 7.

2 On which see Hirschman, A.O., *The Strategy of Economic Development* (1958).

Relative Constraint

In a world of capital flows and functioning markets, it is natural for mainstream economists to conceive of foreign exchange constraints (if at all) as residing in the *limited* range or speed of adjustment via the price mechanism or the interest-rate mechanism, rather than in the absence of these mechanisms which underlies the absolute conception of the FE constraint. The nature of the suggested limitation may vary quite widely, from genuinely structuralist "elasticity pessimism" which views the required adjustments via the price mechanism as too extreme or too slow to offer any short or medium-term relief,[1] to psychological/political pessimism, which simply views the required adjustments, however small, as "unacceptable".

Rather than taking both capital flows and price elasticities at once, let us treat them one at a time. The obvious place to start is with price elasticities, and particularly with the possibility that (real) exchange rate changes may lead to expenditure switching and domestic resource reallocation in directions which reduce the economy's aggregate import propensity and/or increase its export supply (with world demand elasticities assumed greater than unity). Real exchange rate changes, it should be noted, can be achieved in a variety of ways: nominal exchange rate changes which are not offset by domestic inflation; real wage reductions; differentials in productivity growth between traded and non-traded sectors; systems of export and import subsidies/taxes and so on. Nominal devaluation is neither necessary nor sufficient. The point of real exchange rate changes is that they alter the economy's competitive position *vis-a-vis* the rest of the world - in other words, they imply vertical movement on a Swan diagram. If either or both of the EB and IB lines on this diagram have their "normal" slopes, then there exists some range of competitiveness over which the foreign exchange constraint does not bind the economy to less than full employment.

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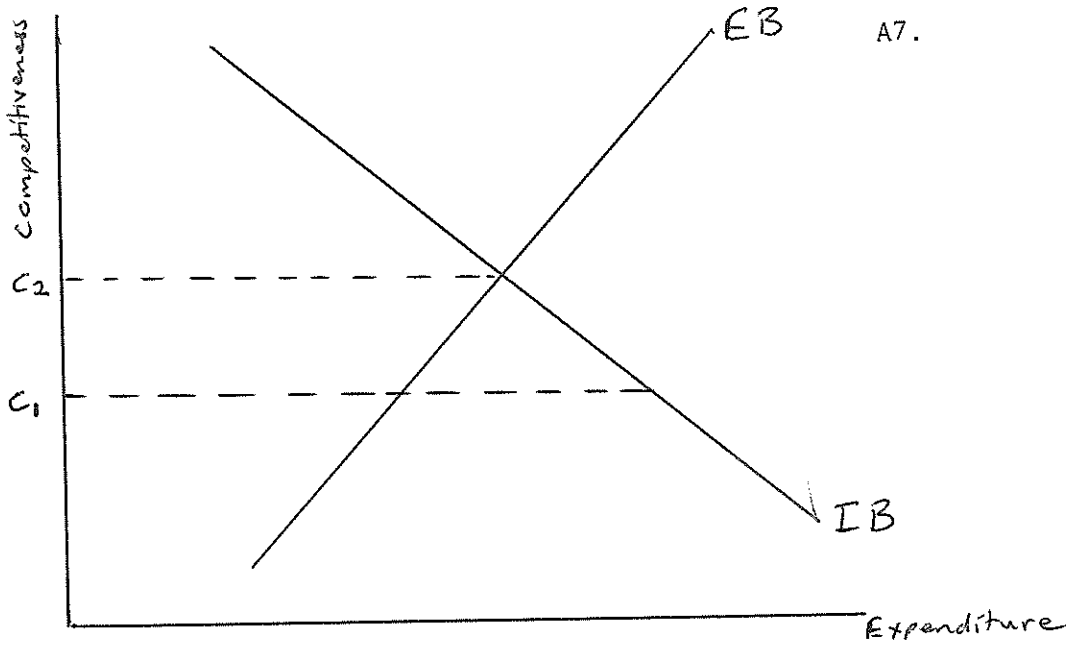
1 cf Balogh, T. *Unequal Partners*



Now if we think of the economy as presently located at the competitiveness level c_1, and if we continue to view the EB as a binding constraint in the sense that the bop current account is exogenously limited, and the economy is thus *unable* to attain points to the SE of EB (except in the very short run, by running down exchange reserves) then the attainment of full employment requires either that competitiveness be raised to c_2, or that (as in response to the absolute version of the constraint) intervention be directed to shifting the EB line to the right by the promotion of import-replacing local production.

The above paragraph raises two key issues: what determines the position of EB, and how difficult or costly is it to raise c? These are, in fact, both related to the fundamental debate over the role and effectiveness of the market mechanism. The general-equilibrium conception of the market economy would tend to view the system as having an inherent stable adjustment mechanism built in, which will tend always to move the system towards the EB/IB intersection if in fact it is not already there. The adjustment mechanism could involve exchange rate responses to excess demand for foreign exchange, which could raise c and shift the system up along EB; or it could involve labour market adjustment to excess supply of labour, lowering the real wage and thereby increasing c while shifting IB to the left (as employers raise their labour-capital ratio)*; or it could involve competitive reduction of margins by producers, again increasing c; or

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* And possibly shifting EB to the right, if employers also substitute labour for imports.

some combination of these. From this viewpoint, the economic system cannot remain "constrained" by foreign exchange shortage for long, unless "normal" postulates of rationality do not hold, or there are obstacles to the adjustment process - in which case the only policy intervention required is to eliminate those obstacles, and the foreign exchange "constraint" is a mis-identification of the real problem - namely the defective internal structure of the economy.

This line of approach, thus, tends to view the position of EB as the outcome of optimising behaviour by producers (whence EB is both fairly stable and in some meaningful sense "optimal"); and raising c is no problem (since it is automatic) providing that *internal* constraints are not allowed to intervene.

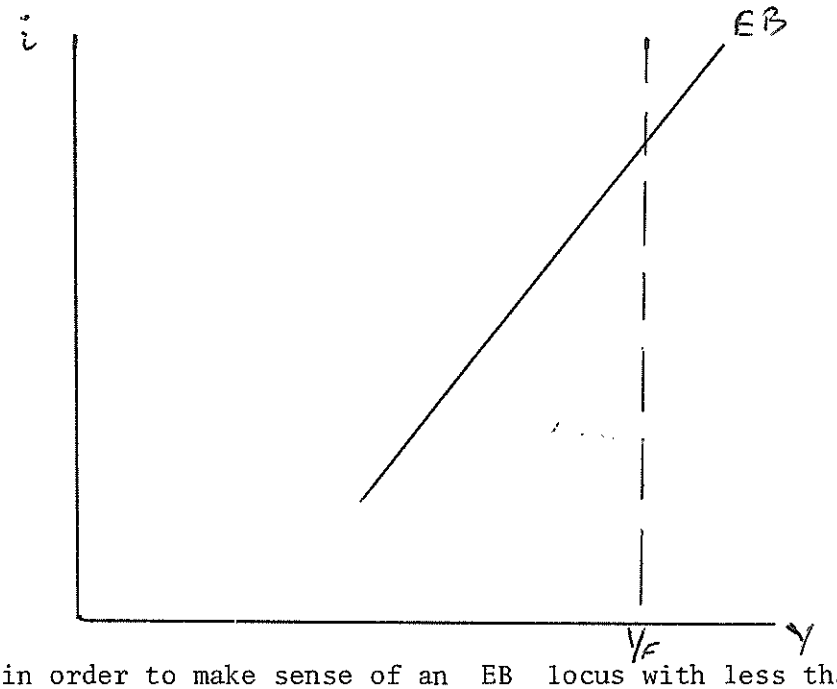
There are several alternatives to this mainstream view of matters. One is to accept that the present position of EB is the outcome of optimising behaviour by producers, but to deny that the result is optimal, while at the same time asserting that the level of competitiveness c_1 is either optimal or the maximum attainable. While it is perfectly true that the *reasons* why c_1 is the ceiling on competitiveness are internal, it is equally true that what makes c_1 incompatible with full employment is the shortage of foreign exchange - more foreign exchange would make c_1 and Y_f compatible. The point here is that the object of policy has shifted *from* achieving internal and external balance, with competitiveness perceived as a tool in this task, *to* achieving full employment at the prevailing level of competitiveness, the necessary means being to shift the EB locus (by improving trading performance, or gaining access to more foreign credit).

Such a refusal to accept the "equilibrium" level of c as optimal rests usually upon the income-distribution implications of competitiveness, it being obvious to all that in the first instance in a simple model, an improvement in competitiveness will generally be obtained at the expense of

a fall in the real wage. This in fact, however, is a superficial version of the argument - it focusses only on the partial impact effect of a change in c. The really central distributive issue is whether the wage share of national income is higher at c_1 with unemployment (i.e. foreign exchange constrained), at c_2 with full employment but with a lower real wage rate, or at c_1 with full employment (i.e. assuming that the FE constraint has been broken - or, of course, assuming that extra overseas borrowing has changed the nature of the constraint - see below). If the effect of achieving external and internal balance by competitiveness adjustment is a regressive shift in income distribution, it ceases to be clearly a "good thing" in the Pareto sense, since one group of workers (those already employed) become worse off in order to improve the lot of those unemployed. It may well be reasonable to say that "the unions" are confronted with a choice between real wages and employment, but it is not reasonable to insist that there is only one valid outcome to that choice.

(Another possible reason which might be advanced for making a low level of competitiveness a target for policy has to do with strategic/structural considerations. For example, it may be felt that certain types of economic activity should be fostered for reasons of long-run dynamic impact, or because they are inextricably bound up with the lifestyle of a group whose interests the State wishes to advance. Such cases, however, tend to be *sui generis*, and constitute grounds for the use of specifically-targeted protectionist tools, rather than overall competitiveness at the macro level.)

Turning now to the relative constraint in IS/LM space, it is obvious enough that any vertical movement on the Swan diagram (i.e. any improvement in real competitiveness) will shift the EB constraint to the right and down on the income/interest rate space. By the same token, if the EB locus has other than a vertical slope in the IS/LM diagram, then any change in the prevailing interest rate will shift the EB constraint to the right on a Swan diagram.



Now in order to make sense of an EB locus with less than a vertical slope, we have to admit explicitly the assumption that capital inflows are variable over the relevant range, and not subject to an exogenously-imposed upper limit. With capital inflow positively related to the interest rate, it follows that full employment and external balance will be compatible at some level of the interest rate. If, therefore, the *ex ante* supply of foreign exchange falls short of the demand for foreign exchange at full-employment national income, the resulting "gap" may be filled *either* by allowing the interest rate to be driven up, *or* by obtaining overseas credit at concessionary terms (i.e. by raising capital imports above the level which the private market would provide at the prevailing interest rate). This latter is most familiar as the case of "stabilisation" borrowing by the Government.

The above three general options - competitiveness, monetary/interest rate adjustment, and rising foreign indebtedness of the State - pretty well sum up the menu for New Zealand policymakers at present, so far as getting external and internal balance into line is concerned. Obviously enough, my advocacy of policies directed at the competitiveness option would be expected to offer some alleviation of the external/internal balance conundrum.

But it will be noted also that the way in which the balance of payments problem has been conceptualised here is significantly different from the

idea which I arrive at in the main body of this paper. For when we conceive of the "balance of payments constraint" in these relative terms, it becomes less a constraint than a hang-up for policymakers. The economic problems associated with the balance of payments seem to become simply a set of "trade-offs", to use that alarmingly fashionable phrase, so that it is assumed that providing the policymaker is prepared to pay the "price" of full employment, then full employment is attainable by manipulation of the familiar tools of macro management. It seems to me very important to emphasize here that if the balance of payments is *constraining* economic performance in the way suggested in my conclusions to the main paper, then monetary policy and increased levels of stabilisation financing are in fact irrelevant to the issue, and may well be counter-productive, since both tend to validate (or worse, deteriorate) the prevailing level of competitiveness. My argument is that an attack on competitiveness is a *necessary* (though obviously not necessarily sufficient) condition for tackling our present problems in the absence of a world recovery.