Effects on the Real Exchange Rate of Demographic and Fiscal-Policy Induced Changes in National Saving: Is the Conventional Academic Wisdom Always Right?

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February 2000

Abstract

Within the framework of an overlapping-generations model, this paper investigates the effects on the real exchange rate of changes in birth/death rates and changes in fiscal policy. These changes induce changes in national saving that set in motion a dynamic adjustment of the real exchange rate and the current account. In contrast to the conventional wisdom about the short-run response of the exchange rate to, say, an increase in national saving, the analysis of this paper shows that the short-run response is an appreciation if the country is a sufficiently large net debtor.

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I. Introduction.

How does an increase(decrease) in national saving affect the exchange rate? In the short run, what one might call the conventional academic wisdom argues as follows: higher (lower) saving (relative to investment) lowers (raises) aggregate demand, in turn lowering (raising) the domestic interest rate. This lower (higher) interest rate creates a capital outflow (inflow) that depreciates (appreciates) the domestic currency. Viewed another way, if saving minus investment increases (decreases), the current account must improve (worsen) by virtue of the national income accounting identity. An improvement (deterioration) in the current account must be accompanied by a currency depreciation (appreciation)[1].

The purpose of this paper is to construct a plausible model based on individual optimizing behavior that generates an alternative short-run result to this conventional academic view. Specifically, we use Buiter's 1987 variant of Blanchard's overlapping-generations model (Blanchard, 1983) to study the effect on the real exchange rate of a change in national saving. The key question in which we are interested is the instantaneous (short-run) exchange-rate response to this change: in response, say, to an increase in saving, does the exchange rate immediately increase (a depreciation of the value of domestic output) as predicted by the conventional wisdom, or does it decrease (an appreciation of the value of domestic output)?

What we show is that the conventional academic explanation may not hold if a country is a net debtor. One of the neglected elements in the conventional analysis is the effect of domestic interest-rate changes on net factor payments. This effect is asymmetrical, reinforcing the conventional wisdom result in the net creditor case but counteracting it in the net debtor case.

Consider the example of an increase in national saving that lowers the domestic interest rate. For a net creditor, this lower interest rate immediately reduces net factor

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[1] This view is elaborated, for example, in Feldstein (1995) or Krugman (1995). Their interest was in the effect of a contemplated United States fiscal contraction on the

payments from abroad; in this case, the increased rate of accumulation of foreign assets generated by the increase in national saving requires an even larger trade surplus than would be the case if net foreign assets were zero. Hence, the conventional wisdom is correct here: the exchange rate must go up to generate a trade surplus.

For the case of a net debtor, though, a lower interest rate reduces net factor payments abroad, thus, ceterus paribus, improving the current account at the existing exchange rate. Could such an improvement be sufficient to generate the required asset transfer even with a zero or negative trade surplus? This paper shows the conditions under which such a scenario is possible.

A second element of the conventional analysis concerns the effect of changes in domestic interest rates on relative demands for domestic and foreign assets. The presumption is that, say, lower domestic interest rates arising from higher saving create incipient capital outflows. These incipient outflows depreciate the domestic currency until there exists expected future appreciation that balances the lower domestic interest rate, thus equilibrating rates of return on domestic and foreign assets.

How, then, could a lower domestic interest rate be consistent with an instantaneous appreciation? What our analysis shows is that, in the net debtor case, an instantaneous appreciation is possible because it is consistent with further expected appreciation. This is because the increase in national saving that generated the lower interest rate leads to long-run appreciation. The logic is: higher saving leads to a higher level of net foreign assets; higher levels of net foreign assets lead to higher net factor payments from abroad. Since the current account must balance in the long run, this means these higher net factor payments from abroad must be balanced by a larger trade deficit. Consequently, in the long run the exchange rate, (defined as the domestic currency price of foreign exchange), must go down, that is, the currency must appreciate, to generate this larger trade deficit.[2]

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exchange rate, but clearly thought the fiscal effect would be mediated through national saving.

[2] Gagnon (1996) provides evidence of such a long-run relationship between real exchange rates and net foreign assets. Sachs and Wyploz (1984) and Kole (1998) provide theoretical models that predict such a long-run result.

Our choice of model reflects a desire to investigate a change in national saving within a rational-expectations model in which private agents make rational decisions. As noted in Buiter (1981), choices are limited in choosing a modeling strategy for investigating an open economy with capital mobility in which countries' have different optimal savings rules. In the standard infinite-lived representative consumer model with time-additive preferences, if time preferences differ across countries, the more patient country eventually owns all wealth. Approaches that circumvent this problem include endogenous time-preference models such as Uzawa (1968), Wan (1970), or Obstfeldt (1981), precautionary savings motives models such as Daniel (1997), and overlapping-generation models. The endogenous time-preference models make the unintuitive assumption that wealthier people are more impatient. The precautionary savings model avoids this problem, but seems cumbersome for our purposes. Consequently, we use a stripped-down version of Willem Buiter's (1987) overlapping-generations "semi-small" open economy.

In such an economy, the world interest rate measured in units of foreign goods is exogenous, the world supply of the imported good is perfectly elastic, but world demand for the domestically produced good is price-sensitive. Private agents in the model are treated as in Blanchard (1983). These features allow us to investigate effects of changes in national saving on the real exchange rate in a model where all private behavioral relationships can be traced to choice-theoretic foundations.

The result we develop in this paper is in the form of a counterexample. That is, we are not attempting to develop a general model that can be used to investigate the exchange-rate effects of a wide variety of thought experiments involving exogenous changes in national saving from whatever source. Rather, our model highlights the possibility of a non-conventional response in a conventional model. We think the model does suggest, though, that the level of net indebtedness might be an important variable in any model that addresses the effects on the exchange rate of changes in national saving behavior.[3]

[3] This insight might inform extensions of related research on current-account effects of age-structure demographics, as in Higgins and Williamson (1997).

There are two major sources of potential changes in national saving: fiscal policy and demographic change. To model a fiscal-policy induced change in national saving, we assume fiscal policy takes the form of an unanticipated balanced-budget change in both lump-sum taxation and in government spending on domestic output. Furthermore, for simplicity we will assume the government has no historical debt, (and issues none since by assumption any increase in government spending is matched by an increase in tax revenues). This simple form of fiscal policy leads to changes in national saving but abstracts from complicating issues associated with whether government deficits are financed via money creation or increases in government debt.[4] While these issues are interesting, they are not the focus of this paper.

To investigate the effects of demographic changes on national saving, we consider a simple but tractable thought experiment: an unanticipated, equal, permanent change in both the birth and death rate. While this abstracts from the interesting and historically observed examples of staggered changes in these rates, with falling death rates followed by falling birth rates, we think it provides a clear, transparent benchmark for analysis of the exchange-rate effects of demographic changes.

II. The model.

The model has four basic building blocks: a goods-market equilibrium condition that is derived from aggregation of private optimizing behavioral relationships; an aggregate budget constraint (the balance of payments constraint); a government budget constraint; and two arbitrage relationships, one linking short and long interest rates and one linking returns on domestic and foreign assets.

For convenience, we describe below the model's notation. All quantities except where otherwise noted are measured in units of domestic output:

x = consumption of domestic output by a domestic consumer;
y = consumption of foreign output by a domestic consumers;
X = aggregate consumption of domestic output by domestic consumers;

[4] See Kawai and Maccini (1995) for an analysis of these issues in an overlapping-generations model similar to ours.

Y = aggregate consumption of foreign output by domestic consumers;
z = an individual's endowment income;
Z = (fixed) domestic output;
f = a domestic resident's net foreign indebtedness;
a = -f = a domestic resident's net financial wealth;
h = a domestic resident's human wealth;
F = aggregate net foreign indebtedness;
A = -F = aggregate net financial wealth;
H = aggregate human wealth;
W = A+H = aggregate net wealth;
G = domestic government spending on domestic output;
G* =domestic government spending on foreign goods (measured in units of domestic output);
τ^s = lump-sum taxes on a generation s individual;
τ = aggregate lump-sum taxes;
r = short-term domestic interest rate;
R = long-term domestic interest rate;
r* = foreign short-term interest rate;
R* = foreign long-term interest rate;
Q = exports;
E = real exchange rate (quantity of domestic output necessary to purchase one unit of foreign output);
e = log of E;
θ = probability of death;
ρ = domestic rate of time preference.

Note that by our definition of the exchange rate, an increase in E is a depreciation of the value of domestic output.

II.1. Basic structure.

First consider the basic overlapping-generations structure. At each moment s, "generation s" is born. Each identical member of each generation faces a constant probability of death θ. This generation is normalized so as to have size θ. Hence, aggregate population, determined by aggregating over all generations, is constant at 1 (one).

Each individual attempts to maximize expected utility over an infinite horizon. The utility function is time-additive with instantaneous utility given by

(1) $u = \ln x + \beta \ln y, \ \beta \geq 0$

where x is consumption of a home-produced good and y is consumption of a foreign-produced good. When our analysis addresses transitory dynamic questions, we will assume $\beta = 0$. This dramatically simplifies the analysis while leaving intact the features of the model essential for understanding the basic insights derived from the analysis. We write the model at this point with $\beta \geq 0$ to both emphasize that most of our long-run comparative-statics results are insensitive to this assumption and to let the reader see clearly the trade-offs involved in this simplification.

Denote by E the amount of home goods necessary to purchase one unit of the foreign good; this is the real exchange rate. Time preference is constant and denoted by ρ. There are perfect capital markets; people can borrow and lend abroad at the fixed short-term interest rate r* or at home at interest rate r. Denote an individual's real financial wealth measured in units of domestic output by a. There are perfect annuity markets. Each individual receives constant income of z units of domestic output per unit of time, and pays lump-sum taxes τ^s. A member of generation s thus chooses x and y so as to maximize

$$(2) \quad J_s = \int_t^\infty u(x, y) e^{-(\rho+\theta)(v-t)} dv$$

subject to

$$(3) \quad \frac{da_v^s}{dv} = a_v^s(\theta + r) - x_v^s - Ey_v^s + z_v^s - \tau_v^s .$$

This maximization problem leads to the following demand functions:

$$(4) \qquad x^s(t) = \frac{(\theta + \rho)}{(1 + \beta)}(a_t^s + h_t^s)$$

(5) $E_t y_t^s = \frac{\beta(\theta+\rho)}{(1+\beta)}(a_t^s + h_t^s)$

where h_t^s denotes human wealth of generation s at time t and is the present discounted value of disposable income:

(6) $h_t^s = \int_t^{\infty} e^{-\int_t^v [r(\upsilon)+\theta]d\upsilon}[z_v^s - \tau_v^s]dv$.

II.2. The goods market.

The three components of aggregate demand are a demand by domestic residents, a demand by government, and a demand by foreigners. First consider the demand by domestic residents. Aggregation over all generations yields the following aggregate demand functions, where an upper case denotes an aggregate variable:

(7) $X = \{\frac{\theta+\rho}{1+\beta}\}W$

(8) $EY = \beta X$

where W = A+H and

(9) $H = \frac{[Z-\tau\}}{R+\theta}$,

(10) $\frac{1}{R} = \int_t^{\infty} \exp\{-\int_t^v r(\mu)d\mu\})dv.$

Note that we have “defined” the long rate R as the solution to the following equality:

(11) $\int_t^{\infty} \exp\{-\int_t^{v} r(\mu)d\mu\}dv = \int_t^{\infty} \exp\{-\int_t^{v} R d\mu\}dv$.

Clearly, we can also think of R as the rate on a consol that pays one unit of domestic output forever.

Now consider the government budget constraint we impose in this model:

(12) $G + G^* = \tau$

We will assume that G^* , the government expenditure on foreign goods, is fixed.

Finally, let foreign demand for domestic output be an increasing function of the log of the exchange rate:

(13) $Q = Q(e);\ Q' > 0$.

Goods market equilibrium is thus

(14) $Z = \{\frac{\theta+\rho}{1+\beta}\}W + G + Q(e) = \phi(F, R, e);\ \phi_F < 0; \phi_R < 0; \phi_e > 0$.

Note that the demand side of the goods market, though derived from microfoundations, is very Keynesian in that the arguments are similar to an ad hoc IS-curve specification.

II.3. Arbitrage conditions.

Domestic and foreign assets and short and long-term bonds are assumed perfect substitutes. This implies the following relationships between domestic and foreign short-term rates and domestic short and long rates:

(15) $r = r^* + \dot{e}$

(16) $\frac{\dot{R}}{R} = R - r$

where a dot over a variable denotes the time derivative of that variable.

II.4. Balance of payments constraint.

The change in net foreign indebtedness per unit of time must equal net factor payments abroad minus the trade surplus:

(17) $\dot{F} = rF - Q(e) + EY + G^* = rF - T(e,A,R)$; $T_e > 0$, $T_A < 0$, $T_R > 0$.

III. The steady state.

In the steady state, all time derivatives are zero and r = r* = R = R* . Let overbars denote steady state values. Net indebtedness can be computed as

(18) $\overline{F} = [\frac{Z - \tau}{r^* + \theta}][\frac{r^* - \rho}{r^* - \theta - \rho}]$.

As will be shown shortly, a condition for stability is $[r^* - (\theta + \rho)] < 0$. Hence, assuming this condition holds, a country is a net debtor ($\overline{F} > 0$), a net creditor ($\overline{F} < 0$), or neither depending on whether its rate of time preference (ρ) exceeds, falls short of, or equals the world interest rate r*. Let us call a country with $\rho > r^*$ an impatient country, and a country with $\rho < r^*$ a patient one. Hence an impatient country is a net debtor and a patient country is a net creditor.

Our first experiment is to change taxes and government spending on domestic output equally, that is, set $dG = d\tau$. The effect of this on net indebtedness is thus

$$(19)\quad \frac{d\bar{F}}{dG} = \frac{-(r^*-\rho)}{(r^*+\theta)[r^*-(\theta+\rho)]}.$$

Whether a balanced budget increase in government spending on domestic output increases or decreases net foreign indebtedness thus depends on whether the domestic rate of time preference is greater or less that the world interest rate. That is,

$\frac{d\bar{F}}{dG} > 0$ if and only if $\rho < r^*$.

Next we calculate the effect of this fiscal policy on the long-run (log) exchange rate:

$$(20)\quad \frac{d\bar{e}}{dG} = \left(\frac{-1}{Q'}\right)\left[\frac{\beta(r^*+\theta)(r^*-\theta-\rho)+r^*(r^*-\rho)}{(1+\beta)(r^*+\theta)(r^*-\theta-\rho)}\right].$$

The sign of this comparative-statics result is ambiguous, depending on the magnitude of β. For the case of $\beta = 0$, though, the expression simplifies to

$$(21)\quad \frac{d\bar{e}}{dG} = \left(\frac{-1}{Q'}\right)\left[\frac{r^*(r^*-\rho)}{(r^*+\theta)(r^*-\theta-\rho)}\right].$$

For this case, we see that the effect depends again only on whether the country is patient or impatient. For an impatient country ($\rho > r^*$), $\frac{d\bar{e}}{dG} < 0$; that is, a balanced-budget increase in government spending on domestic output lowers the log exchange rate. For a patient country, the result is reversed.

Now consider the steady-state effects of our demographic experiment of a one-time unanticipated step change in the birth/death rate, θ. Straightforward differentiation yields

(22) $$\frac{\partial\bar{F}}{\partial\theta}=\frac{(2\theta+\rho)(r^*-\rho)(Z-\tau)}{(r^*+\theta)^2(r^*-\theta-\rho)^2}$$

(23) $$\frac{\partial\bar{e}}{\partial\theta}=\{\frac{r^*}{Q'(e)}\}\{\frac{(Z-\tau)(2\theta+\rho)(r^*-\rho)}{(1+\beta)(r^*+\theta)^2(r^*-\theta-\rho)^2}.$$

For an impatient country ($\rho > r^*$), an increase in the birth/death rate decreases net foreign indebtedness ($\frac{d\bar{F}}{d\theta}<0$), while for a patient country the effect is reversed. Likewise with respect to the value of domestic output, an increase in θ for the impatient country increases the value of domestic output ($\frac{d\bar{e}}{d\theta}<0$), while for the patient country the effect is reversed.

Insight into these long-run comparative statics results can be gained by considering the impact, or initial, effect of these changes in government spending/taxes and in the birth/death rate on national saving.

IV. Direct impact effects on saving.

As a prelude to the transitional dynamic results that we will develop, first consider what we might call the direct effect on saving of our two thought experiments: (1) an equal change in taxes and government spending, where the change in government spending falls only on domestic output, and (2) a permanent unanticipated step-change in θ, the birth/death rate. We will call the direct impact effect on saving the change in national saving at unchanged values of R, r, F, and e. Imagine our economies are at an initial steady state. Denote the values of the endogenous variables at this initial steady state by F_0 and e_0 (interest rates r and R are of course at their fixed exogenous values of r* and R*). National saving, denoted by S, is income minus expenditure:

(24) $$S \equiv Z - rF - C - G - G^*$$

where C denotes consumption and is total household expenditure on domestic and foreign output, and is proportional to wealth:

$$(25) \qquad C = (\theta + \rho)[-F + H] = (\theta + \rho)[-F + \frac{(Z - \tau)}{(R + \theta)}]$$

Denote by S_0 the initial level of saving at steady-state values of r, R, F, and e. Now consider the effect on S_0, holding r, R, F, and e constant at the initial steady-state value, of an increase in τ matched by an increase in G. This effect has two parts: the change in consumption, and the change in G. The effect on consumption at unchanged F and R (remember that consumption doesn't depend behaviorally on e) of an increase in τ comes from the decrease in human wealth associated with the higher tax rate:

$$(26) \quad \frac{dC_0}{d\tau} = \frac{-(\rho + \theta)}{R^* + \theta},$$

where C_0 denotes the initial level of consumption at initial steady-state values of r, R, F. Hence, the effect on national saving of a balanced increase in taxes and government spending is given by the sum of the decrease in consumption stemming from the increase in taxes and the increase in "government consumption":

$$(27) \qquad \frac{dS_0}{d\tau} = -\frac{dC_0}{d\tau} - \frac{dG}{d\tau} = -\frac{dC_0}{d\tau} - 1 = \frac{\rho + \theta}{R^* + \theta} - 1$$

This implies that $\frac{dS_0}{d\tau} > 0$ if and only if $\rho > R^*$. For an impatient country, a balanced increase in taxes and government spending reduces private consumption more than it increases government consumption, and thus has a direct impact effect of an increase in national savings. For a patient country, that is, a country with $\rho < R^*$, the effect is reversed: a balanced increase in taxes and government spending reduces private consumption less than it increases government consumption, and thus has a direct impact effect of a decrease in national savings.

Now consider the effects on saving of a change in θ. At unchanged values for interest rates, exchange rates, and net indebtedness, the effect on savings is simply the negative of the effect on consumption. There are two effects of a change in θ on consumption: it increases the proportion of total wealth consumed, but it decreases the present discounted value of human wealth. The net effect again depends on whether a country is patient or impatient, as seen from the following derivative:

$$(28)\quad \frac{dC_0}{d\theta} = -F_0 + \frac{[Z-\tau]}{[R^*+\theta]^2}[r^*-\rho] \ .$$

For an impatient country, net indebtedness is positive ($F_0 > 0$), so an increase in the birth/death rate decreases consumption and thus increases saving. The results are of course reversed for the patient country.

What these results show is that our thought experiments do in fact lead to temporary forces that change national saving. When the effect is an increase in saving, this is also matched by a decrease in long-run net indebtedness; when the effect is a decrease in saving, this is matched by an increase in net indebtedness. For sufficiently small values of β, decreases (increases) in net indebtedness are matched by long-run appreciation (depreciation) of the value of domestic output.

V. Transition dynamics.

We show in Appendix A that linearization of the model around its steady state values leads to the following coupled system of differential equations:

$$(29)\quad \begin{aligned} \dot{e} &= a_{11}e + a_{12}F + c_1 \\ \dot{F} &= a_{21}e + a_{22}F + c_2 \end{aligned}$$

where the a_{ij}'s are complicated functions of underlying structural parameters and c_1 and c_2 are constants. With $\beta = 0$, though, things are much simpler: $a_{12} = 0$. Throughout the rest of this paper, we impose this restriction. What is essential to our analysis is not a price-sensitive domestic private demand for foreign output, but rather a price-sensitive foreign demand for domestic output. As shown in Appendix A, imposition of the restriction that $r^* > \frac{\rho}{2}$ (along with the previously mentioned restriction that $r^* < \theta + \rho$) is sufficient to insure saddlepath stability, that is, for this case, that $a_{11} < 0$.

Now consider the dynamic adjustment of the exchange rate and net indebtedness in response to either of our experiments. For illustrative purposes, we consider changes that lead to increases in the long-run exchange rate and the long-run level of net indebtedness. That is, for patient countries we consider either balanced-budget increases in government spending on domestic output or an increase in the birth/death rate. For these patient countries, such policies reduce saving on impact and lead to greater long-run net indebtedness. In contrast, for impatient countries, policies that lead to greater long-run net indebtedness are balanced-budget decreases or decreases in the birth/death rate.

Our question is what happens to the exchange rate on impact? The answer to this is best seen with the aid of a phase diagram. First consider what we will call the long run balance of payments constraint (LRBOP): all those pairs of (e,F) for which $\dot{F} = 0$. This equation is given by:

(30) $$\bar{e} = \frac{r^* \bar{F}}{Q'(e)}.$$

Any point of steady-state equilibrium must lie on this line. This line is depicted in Figure 1, with Point A denoting a position of an initial steady-state equilibrium at $(\bar{e}_0, \bar{F}_0)$ and Point B denoting a new steady-state equilibrium at $(\bar{e}', \bar{F}')$ following, for example, a contractionary fiscal policy.

The $\dot{e} = 0$ locus is depicted as the horizontal line in Figure 1. The $\dot{F} = 0$ locus has slope given by

$$(31)\quad \frac{de}{dF} = \frac{r^*}{Q' - a_{11}\bar{F}'}$$

which, in Appendix A, is shown to be positive as long as $r^* > \theta + \rho$ and $\rho < 2r^*$. Since $a_{11} < 0$, this locus is less steep than the LRBOP locus if $\bar{F} > 0$ (an impatient country) and steeper than the LRBOP locus if $\bar{F} < 0$ (a patient country). Figure 1 depicts the case of a net debtor. The arrows of motion illustrate that the saddlepath is positively sloped but less steep than the $\dot{F} = 0$ locus. Possible saddlepaths are depicted as heavy lines in Figure 1.

As can be seen from the phase diagram, the question of whether the initial response of the exchange rate is to fall (appreciation) or rise (depreciation) is identical to the question of whether the saddlepath is steeper or flatter than the LRBOP locus. If steeper(flatter), the impact effect is a fall(rise) in e. If the saddlepath has the same slope as the LRBOP locus, the exchange rate doesn't change on impact.

By standard methods the slope of the saddlepath can be computed as

$$(32)\quad \frac{de}{dF} = \frac{r^* - a_{11}}{Q' - a_{11}\bar{F}}.$$

Comparison of this to the slope of the LRBOP shows that the saddlepath is steeper than (flatter than, equal to) the LRBOP if and only if $\bar{F} < (>,=) \frac{Q'}{r^*}$. In other words, the initial response of the value of domestic output (the exchange rate) to a shock that decreases saving is a depreciation if the country is a sufficiently large net debtor. If the country is a sufficiently small debtor or a net creditor, though, the initial response is a conventional appreciation.

Two elements are important in delivering this non-conventional result of a short-run exchange-rate movement in the same direction as the long-run movement. First, the interest-rate change in the net debtor case allows the trade balance and current account to diverge. Second, the long-run movement of the exchange rate allows the short-run rate to move in the same direction while still permitting an expected change in the same direction.

VI. A shred of empirical evidence.

The evidence appealed to by academicians who exposit the conventional wisdom about saving and the exchange rate in the short run is the "dazzling dollar" associated with the U.S. fiscal expansion of the early 1980's and the strong Deutschmark associated with German reunification (see, for example, Feldstein (1995)).

Is there any evidence that the view espoused in this paper, that the net foreign asset position of a country may lead to differential exchange-rate responses to a change in national saving, is true? While we have no definitive evidence, we have indirect evidence emanating from the relatively varied experiences of numerous countries with fiscal policies, which presumably affected national saving in the absence of perfect Ricardian equivalence, and exchange-rate movements. These experiences, documented in the 1995 World Economic Outlook published by the IMF, are presented in Table 1.

Table 1

Exchange Rate Performance Around Fiscal Shifts

Country	Fiscal Policy	Time Frame	Exchange Rate	Net Foreign Asset Position
USA	Expansion	Early 1980's	Appreciation	Creditor
Germany*	Expansion	1989-1992	Appreciation	Creditor
Japan*	Expansion	1990-1994	Appreciation	Creditor
Finland*	Expansion	Early 1990's	Depreciation	Debtor
Italy*	Expansion	Early 1990's	Depreciation	Debtor
Sweden*	Expansion	Early 1990's	Depreciation	Debtor

France*	Expansion	Early 1990's	Depreciation	Debtor
Canada*	Expansion	Mid-1980's	Depreciation	Debtor
Denmark	Contraction	Mid-1980's	Appreciation	Debtor
Ireland	Contraction	Mid-1980's	Appreciation	Debtor

*Source: IMF (1995, p. 76)

This table, of course, does not provide anything more than suggestive evidence that the effect of net foreign asset position may be important. Other factors such as monetary policy are surely important in exchange-rate determination and would need to be controlled for in a serious empirical investigation. Nonetheless, the striking correlation between exchange-rate responses to fiscal policy and net debtor status suggests our theoretical interest in this question might provide some guidance to future empirical work.

VII. Concluding comments.

This paper has developed an overlapping-generations model in which the short-run response of the real exchange rate to a change in national saving depends on a country's level of net foreign indebtedness. In particular, the short-run and long-run response will be in the same direction if a country is a sufficiently large net debtor.

This result arises from a combination of the effect of a changed interest rate on net factor payments and the effect of changed saving on the long-run exchange rate. The net factor payment effect allows the trade account and current account to change initially in different directions, thus permitting, for example, accumulation of foreign assets (a current account surplus) to coexist with a trade deficit that is consistent with appreciation. The long-run response permits, say, a lower interest rate to be consistent with both an initial appreciation and expected future appreciation.

The broader lesson of this analysis, we submit, is that there may be a wide array of exchange-rate behaviors in response to changes in national saving. Even in the stripped-down model of this paper, the exchange rate may go up or down, depending on the net foreign asset position. Embellishments of the model will most likely increase the range of conditions under which the non-conventional result is possible.

A number of extensions may be fruitful. Unbalanced changes in government spending and taxing with associated government-debt finance may provide interesting predictions of intermediate-run exchange rate dynamics. More realistic demographic shocks may also give rise to different and interesting dynamic paths of adjustment. Finally, introduction of adjustment costs in the trade balance (a possible J-curve effect) may give rise (theoretically) to the “twin deficit” phenomenon.

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