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Introduction

Ten years of war and revolution decimated the Nicaraguan economy to the point that the *Frente Sandinista de Liberación Nacional* was voted out of office in February 1990. While in power, the Sandinistas were able to withstand enormous external political and military pressure. The U.S.-imposed trade embargo crippled exports and the shift in the source of aid from the Bretton Woods organizations to the Eastern Bloc stifled efficiency. At the height of the hostilities, the *contra* war absorbed 50 percent of the state budget and was responsible for total economic losses on the order of one-fourth of GDP.[1] In the last several years, hyperinflation has plagued the economy, reaching a maximum of more than 33 thousand percent in 1988 (ECLA 1989: 20). Internal economic policies have not generally enjoyed the support of the domestic bourgeoisie and, since early 1988, the Sandinistas have attempted to fight the inflation and the wildly appreciated real exchange rate through highly contractionary macropolicy (Taylor et al., 1989). Retrenchment in every area of social policy contributed to a decade of declining per capita income. Although the pre-election polls were deceiving, in retrospect it is small wonder the Sandinistas lost.

The domestic bourgeoisie will now replace the loose coalition of workers and peasants as the dominant political class in Nicaragua. But will the transition to a post-Sandinista Nicaragua necessarily mean a decline in the wellbeing of the popular classes? Much will hinge upon the evolution and intensity of the class conflict, which so far has blocked recovery from the 1979 revolution. It is the objective of this paper to explore possibilities and tradeoffs that lie ahead in the medium run.

The formal framework follows Bacha (1984, 1989), Taylor (1990), and others, with roots in work of the 1960s on the "two-gap model."[2] A two-sector, two-class

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model is provided to account for effects on the distribution of income of two medium-term scenarios. In the first, the powerful domestic class that controls agricultural production (and, thus, exports) is willing to play by new rules of the game and output recovers at a reasonable rate. In a second, less optimistic scenario, the class conflict of the Sandinista period continues; government investment stagnates and the private sector fails to respond. Demands for nominal wage increases will improve the distribution of income, but the economy requires a substantial injection of foreign capital. If it is not forthcoming, the conflictive strategy causes the income distribution to deteriorate substantially.

The paper is organized as follows. In the next section, a simple structural model of growth is developed in which the economy is potentially constrained in three dimensions: (1) domestic spending, (2) foreign exchange, and (3) a public sector borrowing requirement expressed as a fraction of GDP. The third section discusses the three constraints and the short-run behavior of the model. The final section presents some growth exercises for Nicaragua based on the model, and it is seen that the prospects are bleak for either substantial GDP growth or balanced trade in the near future. Without a virtually miraculous recovery in agricultural output, the best the country could achieve over a five-year period would be a restructuring of total output toward the agricultural export sector. The good news is that the restructuring implies only a mildly regressive redistribution of income. The database used in the model is presented in an appendix.

II. The basic model

Nicaragua is an agrarian economy. It exports agricultural goods, processed to various degrees, in exchange for intermediate and capital good imports. With excess labor and land, harvested output depends upon planting. Acreage sown by the private sector, which even under the Sandinistas controlled 88 percent of the productive land (Zalkin, 1990), reflects expectations about the degree of stability of government.

Let potential agricultural output, Q, be the maximum amount that could be produced assuming full utilization of the means of agricultural production; $x_1 \leq Q$ is the level of output corresponding to the current planting decision. The ratio:

$$\mu = \frac{x_1}{Q}$$

defines capacity utilization in the agricultural sector.

Investment demand is assumed to depend as well upon the planting decision and therefore upon μ. Total investment is divided into public, i_g, and private, i_p, both normalized by Q. The investment function is then written:

$$i = i_g + i_p = i_0 + (1 + \alpha)\, i_g + \beta\mu$$

where i_0 is autonomous investment and represents a "crowding-in" effect of public on private investment (Taylor, 1990). ß is the responsiveness of total investment demand to agricultural harvests.[2]

In addition to the agricultural sector, there is also a nontraded, nonagricultural good that depends primarily upon noncompetitive intermediate imports. "Capacity" in this sector is not well defined, given the extreme import dependency of production. The industries are characterized as *toque final* or "final touch" assembly operations, even though value added can be deceptively high due to scarcity rents. This treatment implies that "capital" is not the binding constraint as in more mature economies. Output in the nontraded sector can increase only when more imported intermediate goods are available.

To simplify matters, assume that agricultural output is either consumed as food by workers or exported:

$$ep_1x_1 = m(1-s_w)Y_w + ep_1(E-M)$$

where e is the nominal exchange rate, p_1 the international price of the agricultural good; s_w is the savings propensity for workers, E is the level of exports and M is competitive imports. Note that a constant fraction, m, of workers' disposable income, Y_w, is spent on food, where disposable income is defined as:

$$Y_w = (1-t_w)(w_1l_1x_1 + w_2l_2x_2 + W_g)$$

Here t_w is the direct tax rate, w_i the sectoral wage rate, l_i the labor coefficient and W_g is government wages;[4] x_2 is the level of nonagricultural output. With this last equation, the agricultural supply–demand balance can be written in normalized form:

$$(1) \qquad ep_1\mu = m(1-s_w)(1-t_w)(w_1l_1\mu + w_2l_2u + w_g) + ep_1\varepsilon$$

where the lowercase letters are used to denote normalized variables; i.e., $u = x_2/Q$, $w_g = W_g/Q$ and $\varepsilon = (E-M)/Q$.

In the nonagricultural sector, output is divided among workers, capitalists, domestic investment, and public sector consumption. Exports from the nonagricultural sector are assumed away for simplicity:

$$(2) \qquad p_2x_2 = (1-m)(1-s_w)Y_w + (1-s_c)Y_c + p_2\theta I + p_2G$$

Here p_2 is the price of the nonagricultural good and s_c is the savings propensity of capitalists. θ is the fraction of total investment satisfied by domestic producers rather than imported directly, and G is the level of government expenditure. Y_c is capitalists' disposable income, given by the sum of profits:

$$Y_c = (1-t_c)(\Pi_1x_1 + \Pi_2x_x + J_c)$$

where t_c is the tax rate on capitalist income and Π is the per-unit profit factor in each sector. J_c is domestic interest payments to capitalists. The Π_i are defined as:

$$\Pi_1 = (ep_1 - w_1 l_1); \quad \Pi_2 = (p_2 - ep_0 a - w_2 l_2)$$

with p_0 the price of imported intermediates and a the imported input–output coefficient. p_2 is given by a markup equation:

$$p_2 = (1+\gamma)(ep_0 a + w_2 l_2) \tag{3}$$

where γ is the markup on costs.

Foreign savings in dollar terms, S_f, can now be defined as the difference between imports, foreign interest payments, and exports:

$$S_f = p_0[ax_2 + (1-\theta)I + M_g] + J^* - p_1(E - M)$$

with p_0 as the foreign price of imports, J^* as foreign interest payments, and M_g as direct government imports. It does no great violence to reality to assume that all interest payments on foreign debt are made by the government. Rewritten in normalized form:

$$\Phi = p_0(au + (1-\theta)[i_0 + (1+\alpha)i_g + \beta\mu)] + m_g) j^* - p_1\varepsilon \tag{4}$$

where: $\Phi = S_f/Q$, $m_g = M_g/Q$, and $j^* = J^*/Q$.

Government savings, S_g, is just the difference between tax revenues and expenditure. In normalized form:

$$s_g = (t_c\Pi_1 + t_w w_1 l_1)\mu + (t_c\Pi_2 + t_w w_2 l_2)u \tag{5}$$

$$- p_2 g - (1-t_w)w_g - (1-t_w)w_g - (1-t_c) j_c - ej^* - ep_0 m_g$$

with $s_g = S_g/Q$ and $g = G/Q$ and $w_g = W_g/Q$.

The public sector borrowing requirement (PSBR) is now introduced as the difference between public investment and government savings. Let π be the ratio of the PSBR to GDP:

$$\pi = \frac{p_2\theta i_g + (1-\theta)ep_0 i_g - s_g}{[ep_1\mu + (p_2 - ep_0 a)u]} \tag{6}$$

Note that government investment in the numerator must be valued in part at its domestic and in part at its international price.

The savings–investment balance can now be had by simply summing the supply–demand equations (1) and (2) normalized by Q, taking into account the definitions of foreign and government savings in equations (4) and (5):

$$s_c(1-t_c)(\Pi_1\mu_1 + \Pi_2 u + j_c) + s_w(1-t_w)(w_1 l_1\mu_1 + w_2 l_2 u + w_g) \tag{7}$$

$$+ e\Phi + s_g = [p_2\theta + (1-\theta)ep_0][i_0 + (1+\alpha)i_g + \beta\mu]$$

The model now consists of the six equations, (1) and (3)–(7), in the seven variables, ε, u, p_2, , s_g, π, and γ. The rest of the unknowns are taken as given at the

base level unless otherwise noted. As shall be seen in the following section, the notion of a "gap" can be thought of as analogous to closing the model presented in this section by choosing one of the seven variables as given exogenously.[5]

III. The three gaps in the short run

As the model has been developed so far, there are numerous possible constraints to growth. Here the three constraints considered are spending, foreign, and fiscal. Along each, i_g and u trade off according to whether effective demand, foreign exchange, or the PSBR is imposed as an exogenously given datum. As shown in Figure 1, all three constraints intersect in the base year.

Consider first the spending constraint that arises from a shortage of effective demand. Under the spending constraint, the quantity of savings generated in the nontraded sector depends on the markup and the level of output or effective demand. Formally, this constraint is defined by taking the markup, γ, as a given parameter. This endows the model with a Keynesian "fix-price" character in that as demand for nontradeables rises, there is no effect on the price p_2. This spending constraint is what is known in other contexts as a "Keynesian closure."[6] See Lysy and Taylor (1979) and Gibson (1990) for comparisons of several different closures.

To say that spending is the binding constraint is to say that the economy suffers no shortage of foreign exchange and that the PSBR is within its limit.

The spending gap is plotted for the Nicaraguan data of the appendix in Figure 1. Note that the slope of the spending constraint is just the government investment multiplier on nonagricultural output. Higher levels of i_g imply a higher total level of investment due to crowding in. The increase in investment calls for increased savings that result from higher nonagricultural output, u. But could the necessary savings be forthcoming from other sources, fiscal or foreign, to the point that u actually fell? No. Foreign savings cannot rise by an amount sufficient for u to fall since u falling would decrease the demand for imports and raise available exports. Foreign savings would then fall. Apparently, foreign savings and u must always move in the same direction along the spending constraint. Similarly, government savings cannot rise unless u increases, since government consumption is fixed and taxes rise with output. All three components of savings must then be increasing with i_g. This explains why the spending constraint is upward sloping.

Which way the public sector borrowing requirement, π, moves along the spending constraint is uncertain a priori. If the multiplier is weak and there is little rise in taxes, π might rise. On the other hand, a strong multiplier and strong positive response from government savings to the change in output can cause π to fall.

Note that along the spending constraint, p_2 does not change since the price level is determined by the markup equation rather than serving to clear the nonagricultural market. But even though real wages are constant, the share of

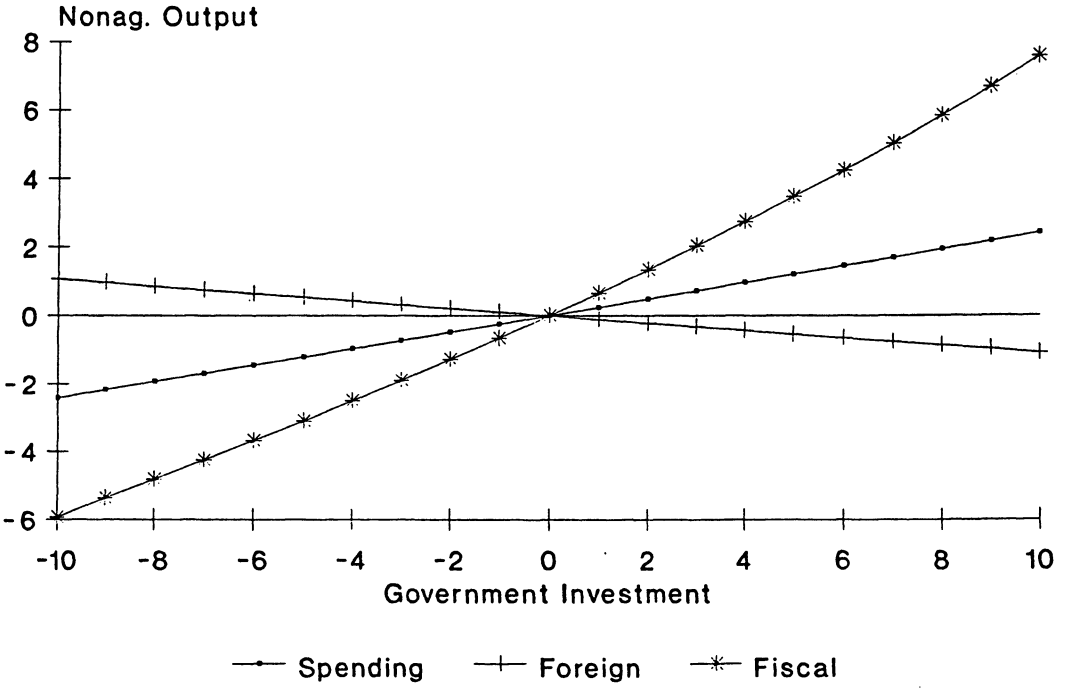
Nonag. Output
8
6
4
2
0
-2
-4
-6
-10
-8
-6
-4
-2
0
2
4
6
8
10
Government Investment
Spending
Foreign
Fiscal

Figure 1.

income accruing to workers rises slightly along the spending constraint in Figure 1. This is easily explained by the larger proportion of wages in urban versus rural value added.

The downward sloping curve of Figure 1 is the foreign exchange constraint, along which foreign savings is given. With Φ fixed, the markup is free to vary; in other words, p_2 becomes a flexible price. The character of the model changes fundamentally since, with foreign savings constant, any increase in i_g must bring about a fall in u. Again the logic is straightforward. Increasing i_g increases the demand for imported investment goods, which is a constant fraction of the total demand for investment. With a given quantity of foreign exchange, the amount available for intermediate purchases for the nonagricultural sector declines. The fixed coefficient relationship between output and noncompetitive intermediate imports implies a drop in u. This illustrates the serious tradeoff between capital accumulation and short-run levels of output. The tradeoff is worsened to the extent that investment goods are imported and, of course, to the extent that government spending crowds in private investment spending.

Along the foreign savings restriction, the impact on the distribution of income is precisely the converse of what happens when the economy is spending constrained. When Φ is constant, p_2 varies to balance demand with the supply of nonagricultural goods, determined by the level of available intermediate imports. As i_g rises, the price level then increases. Higher capital good imports imply lower levels of u, and since demand does not contract proportionately, p_2 must rise. The real wage, therefore, falls as i_g increases and vice versa. Employment declines as well and thus workers are worse off in terms of both their share of income as well as the per capita real wage.

The steepest upward sloping line in Figure 1 is the fiscal gap. This constraint depends upon the ability of the government to extract real resources from the economy. If there is an upper limit on public borrowing or the rate at which seignorage can be captured through an inflation tax, the PSBR may serve as a limit upon the entire system (Bacha 1989). With given exogenously, the model is again formally consistent; its properties, however, have undergone another radical transformation.

Given that government savings is an increasing function of u, equation (6) shows that with an increase in i_g, u must increase in order to generate sufficient government revenue to maintain the given level of public sector borrowing. This suggests that the PSBR curve in Figure 1 is upward sloping. There is no guarantee, however, that this restriction is necessarily steeper than the spending constraint. Both cases shall be considered.

First assume that the fiscal constraint is steeper than the spending constraint. It is clear, then, that the government investment multiplier along the fiscal constraint is greater than for the spending constraint. To explain this curious result, note that in order to reestablish the required PSBR ratio as the level of government investment increases, either (1) the denominator must increase; or (2) gov-

Table 1 Some Comparative Static Results--%Δ from Base

	10% change in govt. investment			10% change in exchange rate		
	I	II	III	I	II	III
Growth Rate[1]	2.4	-1.1	7.6	1.0	10.9	-5.1
p_2	0.0	15.4	-16.4	2.1	-25.5	31.7
Real xΔ Rate	0.0	-13.3	19.7	7.7	47.6	-16.5
Real Wage[2]	0.0	-13.3	19.7	-2.1	34.2	-24.1
Workers' Share	0.2	-7.5	12.3	-4.1	16.6	-18.5
Exports	-6.1	2.7	-19.2	36.6	13.6	50.7
Foreign Savings	10.5	0.0	26.0	-28.2	0.0	-45.4
Private Savings	1.0	19.6	-20.1	10.0	-26.2	44.4
Taxes	1.2	11.2	-9.9	6.0	-12.5	24.6
Govt. Savings	1.0	-7.5	9.8	1.0	15.6	-16.0
PSBR	2.1	4.1	0.0	-4.1	-7.9	0.0

1. Of u only.
2. In terms of p_2.

ernment savings must rise. Indeed, since government savings moves in the same direction as u, both tend to occur. It is the presence of p_2 in both numerator and denominator that complicates matters.

Return for a moment to the spending constraint, which shall be used as a benchmark for the discussion. Recall that p_2 is constant all along the spending constraint, since from equation (2), p_2 depends only upon fixed parameters. As i_g rises, the PSBR ratio is free to vary. Say that for "normal" parameter values, π will be increasing along the spending constraint (this is in fact true for Nicaraguan data). If the fiscal constraint is steeper, then, u must increase even faster in order to raise taxes and restore π. This accounts for the higher multiplier. But note that if u rises more rapidly along the fiscal constraint, p_2 must be falling in order to balance supply and demand in the nontraded market, since a constant p_2 was just sufficient to do the job along the spending constraint. The fall in p_2 helps lower π, since it is the nominal value of government consumption that enters into the fiscal constraint. Where, then, does the extra spending come from to raise the multiplier? As the price level falls, the real wage increases and this improves the distribution of income. The shift in income in favor of workers lowers the effective tax rate, thereby stimulating output. There has been negative "forced taxation."

If the spending constraint is steeper than the PSBR curve, however, the multiplier for investment spending is lower when there is a PSBR constraint. This case seems more reasonable a priori in that the PSBR limit is reached before the full spending multiplier can take effect. With output expanding less rapidly than along the spending multiplier, p_2 then rises and the distribution of income shifts away from workers and toward capitalists who are taxed at a higher rate. The PSBR constraint asserts itself by limiting the multiplier and causing inflation in a way similar to the foreign-exchange constraint seen above. If the spending constraint is steeper than the fiscal constraint, there has been "forced taxation" as the distribution of income shifts toward capitalists. The higher effective tax rate becomes a drag on the system as a whole.

The relationship between the two constraints depends upon all the parameters in the system and is determined empirically. Figure 1 shows that, for Nicaraguan data, the fiscal constraint yields a higher multiplier than the ordinary Keynesian multiplier. There is negative forced taxation. This result, in effect, removes the possibility that the constraint can be binding in a meaningful sense.

To see in more detail how the economy behaves along each of the constraints, consider the data of the first panel of Table 1. The numbers in each column are the percentage changes from the base data corresponding to the three constraints, I–spending, II–foreign savings, and III–fiscal constraint. The table confirms that the government consumption multiplier is indeed much larger when the PSBR constraint binds than when the spending constraint holds. Nontraded output rises by 7.6 percent as opposed to 2.4 percent. And p_2 moves as just described; along the spending constraint it is constant, but rises along the foreign savings constraint and falls along the fiscal constraint. Consequently, the real exchange rate, defined as the terms of trade between the traded and nontraded goods sectors, does not change along the spending constraint, but appreciates by 13.3 percent along the foreign exchange constraint and depreciates by 19.7 percent with the PSBR restriction. The distribution of income improves somewhat with the spending restriction since the share of nonagricultural output grows. Under the foreign-exchange constraint both the real wage and the share of total income move in a regressive direction. Along the fiscal constraint, however, the negative forced taxation takes over and the distribution of income greatly improves. Exports, foreign and private savings behave as expected, responding to changes in the level of output in each of the three constraints. Similarly government savings increases by 1 percent under the spending restriction, falls under the foreign-exchange constraint by 7.5 percent, and rises by 9.8 percent along the third. Along the second constraint, the value of nominal government expenditure rises with the increase in p_2; since output and tax receipts are also falling, government savings fall precipitously. Conversely, along fiscal constraint, government savings rises for just the opposite reasons.

The last line of Table 1 shows how the PSBR moves along each of the constraints. A 10 percent increase in government investment causes the PSBR to

Table 2 A Five Year Horizon--Cumulative %Δ from Base

	Reconciliation		Conflict Continues	
	I	II	III	IV
Ag. Output	15.9	36.4	5.1	5.1
Non-Ag Output	-13.0	3.9	-21.7	-28.2
p_2	100.0	100.0	178.6	309.0
Workers' Share	-1.9	-3.3	15.6	-10.0
Exports	77.3	145.6	-68.4	-43.8
Foreign Savings	-51.7	-100.0	26.0	0.0
Private Savings	111.9	138.2	73.6	189.1
Govt. Savings	49.1	68.7	27.0	4.3
PSBR	-29.4	-41.4	-32.1	-43.8

increase by only 2.1 percent along the spending constraint. The absolute borrowing requirement rises, but, since there is a positive multiplier, the fraction of GDP rises much less. Under the foreign-exchange constraint, output falls but tax collections actually rise by 11.2 percent due to the shift in the distribution of income. Thus, the main reason why government savings fall is due to the higher costs of government consumption. Along the fiscal restriction, the PSBR obviously remains constant. Tax collections fall by 9.9 percent but government savings nevertheless rise due to the fall in p_2. Real GDP can rise dramatically since p_2, which affects nominal GDP, is falling.

Table 1 underscores the point that with a short-run increase in government investment spending, the most binding constraint is foreign exchange. A natural solution to the foreign exchange shortage is to attempt a devaluation. The results of this experiment are shown in the right-hand panel of Table 2. A nominal devaluation raises the price of the traded good, thereby cutting back on workers' consumption. The additional exports earn foreign exchange, which can be used to finance a higher level of nonagricultural activity in sector two.

Table 1 shows that there are serious problems with this strategy. As suggested by Krugman and Taylor (1978), when the spending constraint binds, nominal devaluation should be contractionary with a regressive impact on the distribution of income. Contractionary effects of devaluation are not observed here, but it is nonetheless clear that the full impact of the devaluation will be lost to the spending constraint. Output will only increase by one percent and the big gains in inflation will not materialize. The highly favorable distributive effects of the nominal devaluation under the foreign-exchange constraint are also reversed under the spending constraint. Rather than increasing by 16.6 percent, workers'

share falls by 4.1 percent.

If the PSBR constraint is active, the situation could be far worse. The table reports a highly stagflationary outcome with output falling by 5.1 percent and p_2 rising by 31.7 percent. The income distribution follows the now familiar pattern as is in evidence by the run-up in private sector savings. Government savings *fall* (despite the rise in tax revenues) due to more costly components of spending; i.e., the domestic value of government imports and debt payments. But note again that the PSBR is here an algebraic rather than a real constraint inasmuch as under both the spending and foreign-exchange constraint, the PSBR actually falls. There appears to be no meaningful sense in which this constraint binds for the Nicaraguan data.

IV. Growth exercises

How does the model behave over the medium run in which the level of agricultural output can change? Consider a five-year period in which there are two scenarios: a happier one in which the UNO government is able to form a workable coalition among its twelve member parties and instill confidence in the domestic planting class. For the annual growth rate for agricultural output, a reasonable estimate would be 3 percent over the horizon. It is further assumed that government expenditure is reduced by 12 percent per year as a result of the end of the contra war and thus, at the end of five years, government consumption is cut by almost half in real terms. At the same time, government investment rises by 8 percent in real terms, but the government bureaucracy is assumed to be trimmed by 5 percent per year. Debt service rises 8 percent per year in dollar terms.

Given the continued power of the FSLN as the most well-organized and cohesive force on the political landscape, it will be difficult for the new government to reduce substantially nominal wage growth. It is therefore assumed that nominal wages double during the period. Although President Chamorro has pledged convertibility at a stable exchange rate, the assumption here is that the nominal exchange will double during the period. These assumptions about nominal wages and the exchange rate imply that the fix-price p_2 will also double over the horizon.

Table 2 shows the results of this simulation in column I, under the heading "reconciliation." The first row shows that real agricultural output rises by 15.9 percent, ex hypothesis. Nonagricultural output, however, declines by 13 percent, so that after five years, there has been no net growth in total GDP even in this optimistic scenario. The composition of output has been effectively restructured, however, toward the traded, agricultural good. With the assumed changes, the real wage in terms of p_2 remains constant, but as a result of the shift in output toward agriculture, workers' share declines by 1.9 percent.

Because of the increase in production coupled with the shift in the distribution of income, exports rise by 77.3 percent, allowing foreign savings to decline by more than half. The additional exports are able to pay for an 8 percent yearly

increase in government interest payments as well as to maintain intermediate imports for the nonagricultural sector.[7] By assumption, government imports fall at the same percentage rate as government consumption. Under the optimistic assumptions of this simulation, the foreign exchange constraint does not bind due to the restructuring of the economy, so long as the available foreign exchange does not fall faster than about 8.7 percent per year. Foreign savings for 1989 was on the order of $285 million (ECLA, 1989, p. 24) which implies that total foreign savings assistance for the five year period 1990–94 would have to be in the neighborhood of $1,093 million.

The simulation also illustrates how sticky the government account is, even with a 12 percent reduction in government consumption. Despite the growth in GDP, government savings only rise by half. One reason is the higher interest payments. Another drain on the account is the higher wage rate that must be paid to government employees. Due to the rise in government investment, the PSBR falls by 29.4 percent Again, it is clear that the PSBR constraint does not assert itself under this set of assumptions.

These changes amount to what one could reasonably expect in the context of a moderate recovery after eight years of fighting. The essential character of the recovery becomes its outward orientation. Given the dominance of the private sector in the traded goods sector, and the speed of recovery there, the crucial issue is not debt repayment, but rather reducing the speed at which debt accumulates.

Would it be possible to achieve balanced trade in the next five years? Under the assumption of national reconciliation in the simulation above, achieving zero foreign savings in five years would require a 6.4 percent yearly increase in agricultural output. The effects of this markedly more optimistic scenario are listed in column II under "reconciliation" of Table 2. Note the tradeoff between workers' share and reducing the rate of debt accumulation. Balanced trade requires a staggering increase in exports, 145.6 percent, which in turn implies a greater percentage of labor in the agricultural sector. Lower wages there lead to a lower share for workers. Higher levels of output, of course, also lead to higher taxes and a consequent drop in the PSBR.[8]

The important point to note here is that the reconciliation is essentially neutral in its effects on the distribution of income. Although the share of workers falls, the real wage remains constant and overall employment increases. The alternative to national reconciliation is the bitter, class-based confrontation that characterized the Sandinista period. In this scenario, the coalition of which UNO consists does not materialize as an effective political organization and reform legislation is partially or completely blocked by a unified and hostile Frente. Rather than mending the deep divisions in Nicaraguan society, government policy is reduced to subsidizing credit to the private sector in a futile attempt to restore pre-revolutionary planting levels.

In this less felicitous scenario, the government is not able to increase investment substantially above Sandinista levels. Thus i_g remains constant in real

terms. Government consumption continues to fall by 12 percent per year, and the bureaucracy shrinks to the point that the government wage bill remains constant. The Sandinistas are successful in pushing through wage legislation that increases nominal wages throughout the economy by 200 percent during the five-year period. In response to the inflation, the nominal exchange rate doubles and the real exchange rate appreciates severely. Agricultural capitalists, discouraged by the course of events, continue their capital strike: output increases at the vegetative rate of 1 percent per year. There is no increase in interest payments; j^* is maintained at its base level.

The results of this simulation are shown in the first column of the right-hand panel of Table 2. Nonagricultural output falls by 21.7 percent due to the highly contractionary policies followed by the new government. Workers' share improves, but only because capitalists' income declines so markedly in the nonagricultural sector. Real wages in terms of the nonagricultural good rise slightly, but employment drops significantly. Exports collapse, as a consequence, and there is a run-up in foreign savings. Government savings continues to rise due to the "peace dividend" but not nearly as much as in the optimistic scenario. Since government investment remains constant, the PSBR falls by 32.1 percent.

Is it realistic to assume that despite open class warfare, stagflation, and a moribund public policy that Nicaragua would have access to foreign resources that continue to grow at nearly 5 percent per year? Probably not; a capital inflow of $1.6 billion over the next five years under the circumstances of political disintegration is fairly unlikely. It more probable that the foreign exchange gap would impose itself and this in itself would accelerate the deterioration of the economy.

The last column of Table 2 shows the results of a simulation along the foreign exchange constraint using the same parameters as in the pessimistic alternative just considered. Foreign savings are maintained at the base level. As suggested by the multiple gap analysis above, the outcome is more stagflationary and regressive in its effects on the distribution of income. The price of nontradeables increases more than threefold with the result that profits in the nonagricultural sector rise and real wages in terms of p_2 fall. Along the foreign exchange constraint, workers' share decreases by 10 percent. Exports do not suffer as much due to lost worker income. The loss of foreign savings together with the small increase in government savings requires that private savings increase dramatically. This is accomplished by way of the run-up in the urban price.

Note that in each of the simulations above, government savings improves, but hardly to the point of a surplus. Given the reduction in government expenditure following the end of the war, it would be expected that the government budget would come much closer to balance. Consequently, the PSBR constraint does not bind in any of the cases considered, even when government investment is increased by 8 percent per year. On the other hand, the PSBR remains high in absolute terms in all of the simulations, ranging from 15.1 percent of GDP in the

second simulation to 19.3 percent in the fourth. While these numbers remain comfortably below the base SAM level of 26 percent, it is clear that nominal monetary expansion will continue to be a problem for the new regime. To avoid serious appreciation of the real exchange rate, the government will have to time demand injections with new foreign exchange availability.

IV. Conclusions

The objective of this paper has been to analyze the prospects for medium-term growth in the Nicaraguan economy, given the complexities of the transition from ten years of Sandinista rule. A simple model has been employed in which traditional "gap" stories can be told following Taylor (1990) and Bacha (1989). The model complicates the usual analysis to allow for a fix–flex price that redistributes income in the short run according to which constraint, foreign, fiscal, or spending, is assumed to bind. The introduction of an endogenous price allows the possibility of cooperation between two different adjustment processes, forced-savings as well as the usual Keynesian output adjustment. More complex outcomes are therefore admissible and it is possible to explore in greater detail the implications of policies the new regime is likely to follow.

The growth exercises underscore the enormous importance of political factors in predicting the path of the economy in the medium run. The model suggests that even with a reasonable response on the part of Nicaraguan capital, aggregate data may show little improvement in GDP growth in the next five years. The best the new policymakers can hope for is a restructuring of the economy, redirecting resources from the nontraded, nonagricultural sector to the traditional source of strength in the Nicaraguan economy, agriculture.

Above all, the new administration must increase exports. A substantial quantity of foreign resources nonetheless will be required to buoy the economy in the medium run. The simulations illustrate a key tradeoff between private sector participation and foreign dependence.

Given the power of the Frente as the most cohesive and well-organized party in the country, the question of the distribution of income will remain critical. The simulations clearly show that the road to recovery must involve some degree of reconciliation of the class structure. If the Sandinistas assume a highly antagonistic attitude toward UNO's policies, pressing for large nominal wage increases through militant trade unions, the share of income accruing to workers will indeed rise, at least initially. But the simulations confirm that the strategy would be severely short-sighted. Now out of power, the Sandinistas must continue to work to bring about the *concertación* (harmony) they sought while in office. This will be much easier to do without the burden of day-to-day management of the economy, not to mention the problems of internal and external security. They recognized that *concertación* was a rational policy then and it remains so now.

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Notes

1. See the appendix for numerical values of the parameters of the equations of the model.

2. See Chenery and Bruno (1962).

3. See the appendix for numerical values of the parameters of the equations of the model.

4. For simplicity, t is assumed to account for both direct and indirect taxes.

5. Strictly speaking, this means that the constraints are locii of comparative static results, rather than "gaps." In other words, along each of the three constraints, the economy is in a savings-equals-investment equilibrium. In the traditional two-gap literature, the economy is never on any one constraint. In other words, there can be an ex ante shortage of savings to finance investment, but not ex post. The principal advantage of the ex post approach employed here is that the slope of each of the constraints is easily interpreted as a multiplier. Foreign exchange and the PSBR are then constraints on the economy to the extent that they reduce the multiplier below that of the spending constraint.

6. See Lysy and Taylor (1979) and Gibson (1990) for comparisons of several different closures.

7. By assumption, government imports fall at the same percentage rate as government consumption.

8. Comparative statics around this solution are similar to the previous equilibrium. The solution is somewhat less sensitive to changes in the level of government spending and more sensitive to variation in the exchange rate.

Appendix

The data for the model was adapted from Gibson (1990) in which a Social Accounting Matrix (SAM) for 1983 appears. The units are billions of current cordobas with the official exchange rate at 70 cordobas : 1 dollar. The SAM was aggregated and simplified to fit the assumptions of the model and appears in the table below.

SAM	*agriculture*	*industry*	*capitalists*	*workers*	*construction*	*government*	*investment*	*e-m*	*GVP*
agriculture			0.00	12.86	12.86	0.00	0.00	3.01	15.87
industry			3.69	6.66	10.34	6.02	7.38	0.00	23.74
total	14.22	8.69	3.69	19.52	23.20	6.02	7.38	3.01	39.61
capitalists	8.94	6.22				0.60			15.76
workers	6.93	13.77				2.46			23.16
	15.87	19.99				3.06			38.93
net tax	0.00	0.00	2.36	2.27	0.00				4.62
savings	0.00	0.00	9.72	1.38	11.10	–5.46		3.78	9.42
imports	0.00	3.74				1.01	2.04		6.79
totals	15.87	23.74	15.76	23.16	38.93	4.62	9.42		6.79

Obviously, such extreme simplification leads to distortions. The most glaring inadequacy is the inflated savings propensity of capitalists, since without enterprise savings they are responsible for virtually all private savings.

Parameter values for the simulations were taken as follows: $I_0 = 2.9745$; $\alpha = 0.5$; $\beta = 0.05$; $J^* = 0.202$. All initial prices and wages were taken as unity. The remaining parameters of the model were calibrated directly from the SAM.