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SHORT-RUN EMPLOYMENT POLICY IN SEMI-INDUSTRIALIZED ECONOMIES

by

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Unemployment in underdeveloped economies, it is often pointed out, is not curable by the now classic remedy of expanding domestic aggregate demand. Keynesian analysis is held not to be applicable because labor alone cannot produce output; and in an underdeveloped economy it is precisely the factors of production that are complementary to labor that are in short supply. As a consequence of this situation, the Keynesian macro-theory needs to be replaced by a framework that is suited to the special factor endowment situation in underdeveloped economies. Since there are two main factors that cooperate with labor in production, capital and imports, two types of factor disequilibrium theories have been developed: the conventional surplus labor theories that focus on capital scarcity [1/] and the two-gap theories that introduce an import constraint. [2/]

In what follows, we shall argue that the conventional Keynesian analysis is applicable to the situation in which unemployment of labor

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1/ R. Eckhaus, "The Factor Proportions Problem in Underdeveloped Areas," AER, Sept. 1955.
W.A. Lewis, "Economic Development with Unlimited Supplies of Labor," Manchester School, May 1954.
G. Ranis & J.C.H. Fei, "Development of the Labor Surplus Economy."

2/ R. McKinnon, "Foreign Exchange Constraints in Economic Development," Economic Journal, June 1964.
Chenery & Strout, "Foreign Assistance and Economic Development."

and capital are accompanied by an import constraint. Furthermore, we shall apply Keynesian tools to develop an appropriate employment policy. Section II will portray the situation to be discussed, Section III will develop a formal aggregate model appropriate to it, and Section IV will apply the model to Argentinian data. Section V will present a multisectoral version of the model, and Section VI will apply it to Argentinian data. Section VII will describe an optimal subsidy policy and propose an appropriate linear programming framework and Section VIII will explore the application of the model by use of the Argentinian data.

II

Consider an economy with the following characteristics:

a) It has a sizable industrial sector producing import-competing goods behind high tariff walls.

b) The import substitution process has proceeded from consumption to intermediate and capital goods. Only a small but essential import component of output remains.

c) Due to internal competition, a number of the import duties have become unnecessarily high: a rate lower than the present one would also be enough to shut out imports entirely.

d) Prices are increasing at a rate upwards of 10% per annum, the immediate causes being a price-wage spiral and a large and chronic fiscal deficit. Furthermore, the domestic price level is very sensitive to the exchange rate, rising by the amount of the devaluation within a very short time.

e) During a recent period of large net capital inflows, considerable incentives were given to the import of capital goods. The respective productive capacity has since been put into place.

f) The balance of payments is maintained in equilibrium with repeated devaluations and tightening of import controls and bank credit.

At the time of inspection, this economy shows a rate of utilization of around 60% of its installed industrial capacity. A sizable part of the industrial labor force is unemployed or residually working in the public sector. The immediate cause for this situation is lack of domestic demand.

Domestic demand could easily be stimulated by increasing the fiscal deficit or by increasing bank credit to the private sector. In either case, however, the attendant expansion of domestic output would bring with it increased import requirements of raw materials thus bringing the balance of payments into an unsustainable disequilibrium.

An alternative more favorable from the balance of payments point of view would be the creation of industrial exports. These would at the same time create the demand necessary to activate industry and the supply of imports indispensable for its sustained operation. The export of industrial goods, however, is seriously hampered by their high cost of production. The industrial sector, as a consequence of having grown behind tariff protection, has absolute costs considerably above world market prices.

The export alternative is therefore only feasible if export subsidization is undertaken. Such a subsidy could consist in part of drawbacks and tax exemptions, but a net disbursement from the treasury can be expected to remain. Given the existing deficit such a disbursement is only politically tolerable if it does not imply a worsening of the fiscal balance.

We thus arrive at a policy proposition that is Keynesian in its essence: to spend public moneys for the increase of the level of employment and hence of income. The side conditions to this policy are typical

of the semi-industrialized economy: (i) to spend the public moneys in the form of an export subsidy on industrial products, and (ii) to make the subsidy per unit of exports no larger than the total (direct and indirect) per unit new tax revenue generated by the exports.

The quantitative importance that such a policy may have can be seen from the case of Argentina, an economy of the kind described. Table 1 shows the level and composition by sector of origin of Argentinian GDP. Table 2 shows the utilization of capacity by industrial sector from 1961 to 1965. Table 3 shows overt unemployment figures for the major urban centers for 1964/5.

Assuming that labor does not represent a bottleneck, [3/] the increases of income obtainable by fuller use of industrial capacity in 1965 are approximately the following: [4/]

Increase in Capacity Use	Increase in GDP
from 66% to 70%	2.1%
to 75%	4.8%
80%	7.4%
85%	10.1%
90%	12.7%
95%	15.7%
100%	18.0%

These increases compare favorably with Argentina's aggregate growth rate from 1950 to 1965 which has been an average of less than 3% in real terms per annum.

3/ Due to the stop-go character of the Argentinian economy firms tend to hoard labor. This tendency is reinforced by the mobility inhibiting structure of the social security system and of the unions. Thus overt unemployment understates the labor available for an increase in industrial output. In addition, public enterprises have functioned in the past as employers of last resort with the consequent overstaffing.

4/ The increments shown are calculated on the assumption that all sectors have excess capacity equal to the average for all industry.

III

In Section II we constrained the export promotion policy to take place without worsening the fiscal balance. The impact of an export subsidy on that balance is the result of two opposing effects:

a) the payment of the subsidy: an outpayment from the treasury

b) the collection of tax revenue on the new income and imports generated as a result of the new exports; an inpayment into the treasury.

Our constraint says that (a) should be smaller than (b), thus we must calculate the fiscal repercussions of an increase in exports. To this we now turn.

The conventional Keynesian open economy model with idle capacity is the following:

$$C = c_o + cY \qquad (1)$$

$$M = m_o + mY \qquad (2)$$

$$E = E_o \qquad (3)$$

$$G = G_o \qquad (4)$$

$$I = I_o \qquad (5)$$

$$Y = C + I + G + (E - M) \qquad (6)$$

where

C = consumption expenditure of the private sector

M = imports

E = exports

G = total government expenditure

I = investment expenditure of the private sector

c = marginal propensity to consume of the private sector

m = marginal propensity to import of the private sector

This system of equations tells us that consumption and imports each have one exogenous component and one dependent on income (1, 2), that exports, government expenditure and investment is exogenously determine (3, 4, 5) and that income must equal expenditure (6).

For purposes of fiscal analysis, tax revenue must be explicitly included. Let us define:

t_d = rate of direct taxes on income

t_i = rate of taxation on domestic transactions expressed as a percentage of national income.

a = ad-valorem duty on imports

T = fiscal revenue

Let us also define all the domestic variables (Y, C, G) to be in domestic market prices and the international variables (M, X) in free trade prices (CIF and FOB respectively).

We can now rewrite our system as follows:

$$C = c_o + c\,(1 - t_d - t_i - a\tfrac{M}{Y})\,Y \qquad (1a)$$

$$M(1 + a) = m_o + m\,(1 - t_d - t_i - a\tfrac{M}{Y})\,Y \qquad (2a)$$

$$E = E_o \qquad (3)$$

$$G = G_o \qquad (4)$$

$$I = I_o \qquad (5)$$

$$Y = C + I + G + (E - M) \qquad (6)$$

$$T = aM + (t_d + t_i)\,Y \qquad (7)$$

where consumption now depends on gross private disposable income [5/] and imports <u>at domestic prices</u> likewise.

From characteristic (d) of our economy, we can conclude that investment is not an exogenous variable: given the rate of inflation, no hoarding of money goes on. Thus, it is more appropriate to have an expenditure

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5/ Note that gross private disposable income is defined at factor cost, hence the terms for indirect taxation and import duties.

function rather than a consumption function. In addition, characteristic (b) tells us that imports are primarily raw materials. They thus depend in a direct fashion on the level of output and more roundaboutly, on gross disposable income. Building these elements into the model and defining:

P = total expenditure of the private sector

p = marginal propensity to spend of the private sector

we have the following system:

$$P = p_o + p\ (1 - t_d - t_i - a\frac{M}{Y})\ Y \quad \underline{6/} \qquad (1b)$$

$$M(1 + a) = m(1 - t_d - t_i - a\frac{M}{Y})\ Y \quad \underline{7/} \qquad (2a)$$

$$E = E_o \qquad (3)$$

$$G = G_o \qquad (4)$$

$$Y = P + G + (E - M) \qquad (6a)$$

$$T = aM + (t_d + t_i)\ Y \qquad (7)$$

We can now calculate the equilibrium level of income in our economy. Substituting (1b), (2a), (3) and (4) in (6a), we have:

$$Y_e = \frac{1}{1 - (1 - tx)\ (p - \frac{m}{1+a})}\ (p_o + G + E) \qquad (8)$$

where tx, the total tax coefficient is defined as:

$$tx = t_d + t_i + a\frac{M}{Y}$$

The increase in the level of income due to an increase in exports is

$$= \frac{1}{1 - (1-tx)(p - \frac{m}{1 + a})}\ dE \qquad (9)$$

6/ Given our reasoning, $p_o = 0$; $p = 1$, however, we will maintain the more general function in the algebra.

7/ This function is now homogeneous since in the absence of output no raw materials are required.

The increase in imports due to an increase in exports is

$$dM = \frac{m(1 - tx)}{1 + a}\, dY = \frac{m(1 - tx)}{(1 + a)\left[1 - (1 - tx)\left(p - \frac{m}{1 + a}\right)\right]}\, dE \qquad (10)$$

The increase in fiscal revenue due to an increase in exports is

$$dT = adM + (t_d + t_i)\, dY \qquad (11)$$

$$dT = \frac{am\,(1 - tx) + (1 + a)\,(td + ti)}{(1 + a)\left[1 - (1 - tx)\left(p - \frac{m}{1 + a}\right)\right]}\, dE \qquad (12)$$

The relation between the increase in imports and the increase in fiscal revenue is as follows:

$$\frac{dM}{dE} + \frac{dT}{dE} = \frac{m(1 - tx) + tx(1 + a)}{m(1 - tx) + (1 + a)\,(1 - p + ptx)} \qquad (13)$$

which for our assumption of $p_o = 0$; $p = 1$ implies

$$\frac{dM}{dE} + \frac{dT}{dE} = 1 \qquad (14)$$

Hence the improvement of the balance of trade under our assumptions is as follows:

$$\frac{dB}{dE} = 1 - \frac{dM}{dE} = 1 - \left(1 - \frac{dT}{dE}\right) = \frac{dT}{dE} \qquad (15)$$

In order to introduce a subsidy on new exports explicitly let us now define:

E^* = income to the private sector originating from exports at their FOB price plus the respective export subsidy.

λ = proportion of the E^* originating in the export subsidies

$$dTn = adM + (t_d + t_i)\, dY - \lambda dE^* \qquad (11a)$$

The net fiscal effect of export promotion is now given by:

$$Tn = \frac{am(1 - tx) + (1 + a)\,(td + ti)}{(1 + a)\left[1 - (1 - tx)\left(p - \frac{m}{1 + a}\right)\right]}\, dE^* - \lambda dE^* \qquad (12a)$$

which may be either positive or negative.

The net change of the balance of trade is now calculable as follows:

$$dB = (1 - \lambda) - \frac{dM}{dE^*} = -\lambda + \frac{dT}{dE^*} = \frac{dTn}{dE^*} \qquad (15a)$$

This equation gives us an economic reason for the political constraint on the net fiscal balance: If there is to be a net improvement in the balance of payments, there must be a net fiscal improvement; if no net fiscal deficit is allowed, the balance of payments is guaranteed not to disimprove. 8/

Since the subsidy is paid out in a lump sum at one point in time and the new revenues are collected over a time period of some length, it is important to determine the time profile of the net fiscal impact. This requires two steps:

(a) the dynamization of the tax revenue model;

(b) the determination of the subsidy payment point with reference to the revenue schedule.

To dynamize the collection model we adopt a simple period multiplier approach and lag the expenditure function by one period. The revised system consists of the following equations: 9/

$$P_t = (1 - tx)\, Y_{t-1} \qquad (1c)$$

$$M_t\,(1 + a) = m(1 - tx)\, Y_t \qquad (2b)$$

$$E_t = E_0 \qquad (3)$$

8/ If the subsidy is given also to existing exports which have heretofore received no subsidy or tax rebate the relevant formulae are

$$dTn^1 = dTn - (1 - \frac{dT}{dE})\lambda E^* \qquad (12b)$$

$$dB^1 = dTn^1 \qquad (15b)$$

Where dTn^1 will tend to be negative for a low ratio of new to existing exports. In what follows we shall assume no exports of the commodities subsidized to exist initially or what is equivalent, that a subsidy will be paid only to new exports. The latter is a feasible policy when information on individual exporters' volume is available from exchange control or other records.

9/ Note that collections are assumed to take place with a "pay as you earn" system. A different assumption could easily be built in.

$$G_t = G_o \tag{4}$$

$$Y_t = P_t + G_t + (E_t - M_t) \tag{6b}$$

$$T_t = aM_t + (t_d + t_i)\, Y_t \tag{7a}$$

which yields the following difference equations.

$$Y_t = \frac{1 + a}{1 + a + m(1 - tx)} \left[(1 - tx)\, Y_{t-1} + E_t + G_t\right] \tag{16}$$

$$dY_t = \frac{1 + a}{1 + a + m(1 - tx)} \left[(1 - tx)\, dY_{t-1} + dE_t\right] \tag{17}$$

$$dM_t = \frac{m(1 - tx)}{1 + a}\, dY_t \tag{18}$$

$$dT_t = \left[\frac{am(1 - tx)}{1 + a} + t_d + t_i\right] dY_t \tag{19}$$

The sum of the income effects over time is equal to

$$\sum_{t=o}^{n} dY_t = \frac{1 + a}{1 + a + m(1 - tx)}\, dE_o \quad \sum_{t=o}^{n} \left[\frac{(1 + a)(1 - tx)}{1 + a + m(1 - tx)}\right]^t \tag{20}$$

which can be shown to equal

$$\frac{1}{1 - (1 - t)\left(1 - \frac{m}{1 + a}\right)}\, dE_o$$

the static multiplier of equation (9).

The subsidy payment point depends basically on the administrative regulations implementing the subsidy program: If we assume that the subsidy is paid at the moment of physical export of the merchandise, then there will be a one period lag between order and execution since this is the time it takes to produce the merchandise. Thus, in this case, there is some new tax revenue already before the subsidy is paid out. The respective equation describing the subsidy and the net fiscal time profile are the following:

a) for a one-time subsidy:

$$S_1 = \lambda E^*_o \tag{21}$$

$$S^t = 0 \text{ for } t \neq 1 \tag{21a}$$

$$dTn = \left[\frac{am\ (1 - tx)}{1 + a} + t_d + t_i\right] dY_t - S_t \tag{21b}$$

b) for a continuous subsidy:

$$S_t = \lambda E^*_{t-1} \tag{22}$$

$$dTn_t = \left[\frac{am\ (1 - tx)}{1 + a} + t_d + t_i\right] dY_t - S_t \tag{22a}$$

IV

We now turn to the application of the model of Section III to the Argentinian economy.

Table 4 shows the basic data of the Argentinian economy. From it the following parameters have been derived by a nonprobabilistic inspection method:

$$\frac{\text{Household consumption + Gross fixed private investment}}{\text{Gross domestic product at market prices}} = p\ (1 - t) = 0.857$$

$$\frac{\text{Imports of goods \& services}}{\text{GDP at market prices}} = \frac{m\ (1 - t)}{1 + a} = 0.11$$

$$\frac{\text{Revenue from import duties}}{\text{Imports at CIF prices}} = a = 0.24$$

$$\frac{\text{Direct Taxes \& Social Security Contributions}}{\text{GDP at factor cost}} = t_d\ (1 + t_i) = 0.05$$

$$\frac{\text{Indirect taxes}}{\text{GDP at factor cost}} = t_i\ (1 + t_i) = 0.075$$

Solving for the parameters, we obtain:

$$\begin{aligned} p &= 1 \\ m &= 0.159 \\ a &= 0.24 \\ t_d &= 0.0467 \\ t_i &= 0.07 \end{aligned}$$

Inserting these values in expression (12) we have

$$dT = \frac{(0.24)\ (0.159)\ (0.857) + (1.24)\ (0.1167)}{(1.24)\left[1 - (0.857)\ \left(1 - \frac{0.159}{1.24}\right)\right]}\ dE$$

$$dT = 0.566\ dE$$

which means that every peso of additional private sector export income generates 56.6 centavos* of tax revenue for the treasury.[10/]

It follows from the above that the Treasury can pay out 56 centavos in subsidy per every 44 centavos of FOB value of exports without thereby increasing its deficit.

This reasoning is confirmed by formula (12a) where

$$dTn = 0.566\, dE^* - \lambda dE^* \geqslant 0$$

$$dTn = (0.566 - \lambda)\, dE^* \geqslant 0$$

$$\lambda \leqslant 0.566$$

Furthermore, it is interesting to note that the admissible export subsidy is equivalent to 130% of the FOB value of new exports:

FOB value of exports: $(1 - \lambda)\, dE^*$

Subsidy λdE^*

Ratio of subsidy to FOB value $s = \dfrac{\lambda}{1 - \lambda} = 1.3$

Given the estimation method used to obtain the parameters, it is desirable to conduct a sensitivity test of the stability of the results. Parameter changes were based on the following criteria.

Case I: Marginal tax rates 10% lower than the average rates. Proportional reduction in the parameters.

Case II: Offsetting changes in import coefficient and import duty maintaining the contribution to the total rate of taxation constant. Two alternatives.

Case III: High import coefficient, low total tax rate, constant contribution of import duties.

The resulting values are as follows:

10/ It should be remembered that this calculation assumes that exports pay all the existing taxes at the same rates as domestic sales. Thus any tax exemption is equivalent to an outright subsidy.

* 1 Peso = 100 centavos.

Sensitivity Tes.

	Basic	I	IIa	IIb	III
t	0.143	0.129	0.143	0.143	0.129
t_d	0.0467	0.042	0.0467	0.0467	0.1024
t_i	0.07	0.063	0.07	0.07	
a	0.024	0.216	0.264	0.22	0.22
m	0.159	0.159	0.158	0.160	0.168
p	1	1	1	1	1

Marginal tax revenue varies as follows

	Basic	I	IIa	IIb	III
dT	0.566	0.534	0.580	0.554	0.518

The time profile of the increases in income, imports and tax revenue is set out in Table 5 which also shows the cumulative portion of the total effect which has taken place by the end of each income period.

Finally, an estimate of the expenditure period is presented in Table 6 which tabulates the income velocity of money for the period 1953-1965.

V

We proceed in this section to the sectorialization of the model developed in section III.

The fiscal effects of expanding the exports of varied industrial sectors differ for the following reasons:

(i) each sector has a different composition of imports, domestic intermediate inputs, value added and direct and indirect taxes;

(ii) each sector has a different functional income distribution.

Furthermore, sectorialization allows us to distinguish between the composition of total final demand and that of its endogenous component, private expenditure.

All these elements can be taken into account in an input-output formulation. The model to be developed below, however, will not consider point (ii) nor the respective differences in the consumption vectors of profit earners, wage earners and rent earners. The purpose of this exclusion is to keep the model calculable on the basis of existing data for Argentina.

The following system is homologous to equations (1b) to (7).

$$P = P_o + p\ V'X \tag{23}$$

$$M = \hat{m}X \tag{24}$$

$$E = E_o \tag{25}$$

$$G = G_o \tag{26}$$

$$X = AX + P + G + E \tag{27}$$

$$T = a'M + (t_d + t_i)'\ X \tag{28}$$

where all symbols refer to column vectors; a prime denotes transpositions, a circonflex denotes diagonalization and

P = private total expenditure on goods of the different sectors at market prices.

P_o = autonomous private expenditure on goods of the different sectors.

p = marginal propensity of the private sector to spend on the goods of the different sectors.

V = gross value added at factor cost less direct taxes in the different sectors.

X = output of the different sectors at market prices.

M = imports of goods similar to those of the different sectors at CIF prices.

m = importment requirements at CIF prices of the different sectors per unit of output at market prices.

E = exports of the different sectors at FOB prices.

A = matrix of domestic input-output coefficients.

G = total government expenditure on products of the different sectors.

T = fiscal revenue generated in the different sectors.

a = ad-valorem rates of import duty on the products of the different sectors.

t_d = rate of direct taxation as a proportion of gross out-put in the different sectors.

t_i = rate of indirect taxation as a proportion of gross out-put in the different sectors.

Substituting (16), (17), (18), and (19) in (20), we obtain the equilibrium levels of output and income:

$$X = \left[I - A - pV'\right]^{-1} (p_o + G_o + E_o) \tag{29}$$

$$Y = V'X = V' \left[I - A - pV'\right]^{-1} (p_o + G_o + E_o) \tag{30}$$

The relations between the marginal quantities are as follows:

$$dY = V'dx = V' \left[I - A - pV'\right]^{-1} dE \tag{31}$$

$$dM = \hat{m}dX = \hat{m} \left[I - A - pV\right]^{-1} dE \tag{32}$$

$$dT = a'dM + (t_d + t_i)' dX \tag{33}$$

$$dT = \left[a'\hat{m} + t_d' + t_i'\right] \left[I - A - pV'\right]^{-1} dE \tag{33a}$$

Furthermore, the increases of imports and taxes sum to the increase in exports as can be seen from the following proof:

$$i'dM + dT = i'dE \tag{34}$$

$$i'\hat{m} \left[I - A - pV\right]^{-1} dE + \left[a'\hat{m} + t_d' + t_i'\right] \left[I - A - pV\right]^{-1} dE = i'dE$$

$$\left[i'\hat{m} + a'\hat{m} + t_d' + t_i'\right] \left[I - A - pV'\right]^{-1} = i'$$

$$\left[i'\hat{m} + a'\hat{m} + t_d' + t_i'\right] = i' \left[I - A - pV'\right]$$

$$i' - i'A - V' = i' - i'A - V'$$

Q.E.D.

The balance of trade improvement follows from the above:

$$dB = i'dE - i'dM = dT \tag{35}$$

Introducing the export subsidies, we obtain:

$$dTn = \left[a'\hat{m} + t_d' + t_i'\right] \left[I - A - pV'\right]^{-1} dE^* = \lambda' dE^* \tag{36}$$

$$dB = i'dE^* - \lambda' dE^* - i'dM = dTn \tag{37}$$

where Tn is the vector of net fiscal revenue, λ is the vector of subsidies and E* is the vector of private sector income from exports and export subsidies.

To dynamize the system we again lag the expenditure function and obtain the following system:

$$P_t = pV'X_{t-1} \tag{38}$$

$$M_t = \hat{m}X_t \tag{39}$$

$$E_t = E_o \tag{40}$$

$$G_t = G_o \tag{41}$$

$$X_t = AX_t + P_t + G_t + E_t \tag{42}$$

$$T_t = a'M_t + (t_d + t_i)\,X_t \tag{43}$$

The resulting difference equations for gross output are

$$X_t = \left[I - A\right]^{-1}\left[pV'X_{t-1} + G_t + E_t\right] \tag{44}$$

$$dX_t = \left[I - A\right]^{-1}\left[pV'dX_{t-1} + dE_t\right] \tag{45}$$

$$dM_t = \hat{m}dX_t \tag{46}$$

$$dT_t = \left[a'\hat{m} + t_d' + t_i\right] dX_t \tag{47}$$

The sum of the output effects over time is equal to

$$\sum_{t=o}^{n} dX_t = \sum_{t=o}^{n} \left(\left[I-A\right]^{-1} pV'\right)^t \left[I-A\right]^{-1} dE_c \tag{48}$$

which can be shown to equal the static multiplier of equation (29).

VI

We now present the results of the application of the multisectoral model to the Argentinian data. In the calculation, the Input-Output matrix for 1960 has been used [11/] with the break-down of value added obtained from CONADE worksheets.[12/]

Table 7 shows total fiscal revenue per peso of new export earnings of

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11/ CONADE, "Actualización de la Matriz de Insumo-Producto del Año 1953 al Año 1960," Buenos Aires 1965.

12/ The composition of private expenditure was obtained by summation of the columns for private consumption, gross fixed investment, stock adjustment and statistical discrepancy.

each sector and the corresponding maximum subsidy level as a percentage of the FOB price.

Table 8 calculates the export exchange rate implicit in the maximal subsidies and compares them to the implicit import exchange in force as of March 1967.[13/]

It should be pointed out that the sectoral results show a higher fiscal revenue than the aggregate model. In fact, when the sectoral values are weighted by the share of each sector in total use, we obtain an average of 0.698. This average is comparable with the 0.566 calculated from the aggregate model. Table 10 attempts to analyze the differences by comparing the multipliers and the tax levels implicit in the two calculations. It is apparent that both contribute to the higher sectoral values.

The underlying factor producing this difference lies in the data used for the two models:

(i) the aggregate model is based on CONADE's National Accounts while the sectoral model is based on CONADE's Input-Output matrix.

(ii) the aggregate model uses parameters representing the period 1960-1965 whereas the sectoral model uses 1960 data.

The importance of the first point can be seen from the fact that Gross Value Added for 1960 from the two sources differs by 20%. The effect of the differences in dates can be judged by comparing Table 4 with the values used: the main difference is in the import tax ratio.

13/ Taken from B. Balassa, "Integration and Resource Allocation in Latin America," in The Next Decade of Latin American Development, Tom Davis, Editor, Ithaca, 1967.

VII

In this section we shall develop an optimal subsidy policy. The main purposes of this policy are the following:

(a) raise the level of the country's income; and

(b) reduce the demand inflation originating in the government deficit.

The first of these goals is achieved by the simple expansion of industrial exports -- as long as the required subsidy is small enough not to cause a net fiscal and balance of payments deficit.[14/]

The second objective requires that there be a net fiscal and balance of payments surplus so that some excess aggregate supply be available to absorb the existing aggregate demand. This implies that the subsidy policy should be directed at the products that require the least government payment and thus generate the highest net surplus. A simple rule of thumb derived from this implication would be to rank all products by the size of their required subsidy and then just choose the lowest on the list. Such a policy would not be successful, however, since as exports generate new domestic income, domestic consumption will expand and exportable surpluses will diminish. Thus as income rises, a greater range of products need to be exported to maintain export income. We must therefore either derive our policy by successive approximations or derive the cut-off point ex-ante by the use of a suitable technique. The latter alternative is presented below in the form of a linear program.

A subsidiary goal which must also be considered in shaping the policy is allocative efficiency. In the short run, given excess capacity and

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14/ Recall the equivalence of fiscal and balance of payments positions given in equations (15) and (15a).

unemployment in all sectors, the domestic opportunity cost of exports is negligible in all sectors, thus we have no short-run allocative preference between them. In the longer run, however, we only wish to promote the activities in which we have a comparative advantage. Thus for those activiti the subsidy should cover total cost and hence induce investment. For the remainder, the subsidy should cover only variable cost thus inducing contraction. With suitable adjustments, these factors can also be included in the linear program designed to achieve the two principal objectives. 15/

The linear program designed for the calculation of an optimal subsidy program should maximize income subject to constraints representing installed capacity, the balance of payments and the fiscal balance. The latter two are independent constraints in this system since domestic demand is assumed to come from existing internal excess demand as well as from new exports. Indeed, new exports are determined in fact by the import needs arising out of domestic demand. In symbols, our linear program is the following:

Maximize ΔY

Subject to

$$(1 - A)X + (I + d)M - IE - p\Delta Y = c \qquad (49)$$

$$X \leqslant K \qquad (50)$$

$$-m'X \quad -l'M + e'E \geqslant 0 \qquad (51)$$

$$t'X \quad +a'M - g'E \geqslant 0 \qquad (52)$$

15/ In actual practice it may be difficult to set the total and marginal cost subsidies exactly. It should be remembered, therefore, that since the initial conditions include idle industrial capacity, a second best solution is required, and this may well be a long run growth path not identical to the comparative advantage one and only convergent to it in the distant future.

where ΔY is a scalar denoting the increase in income, A, X, p, E, a, and m are defined in Section V, M is a vector of competitive import activities, d is a vector of ratios of market to CIF prices, K is a vector of potential additional output through 100% capacity use, e is a vector of marginal revenue in export markets (i.e., price FOB export point), and g is a vector of export subsidies (covering total or marginal cost according to the purpose of the calculation).

The solution to this linear program will give:

(i) the maximum level of income obtainable

(ii) the commodities exported and hence the marginal export subsidy required to achieve the optimum[16/]

(iii) competitive imports required to overcome sectoral bottlenecks

(iv) the net change is the fiscal situation originating in the move to full capacity utilization.

VIII

In this section, we describe the exploratory application of the optimal subsidy model to Argentina.

The data sources used are the following:

(a) A - The Input-Output table for 1960 was used with the modification of two rows: transport and commerce on imports was consolidated with the corresponding row for domestic transactions.

(b) d - Since no information on this parameter is available at this time for competitive imports, the corresponding data for actual imports into each sector was taken from the work sheets of the import matrix for 1960.[17/]

16/ In this model it is implicitly assumed that commodities will be differentiated for subsidy purposes to the same extent that a differentiation exists for tariffs or quotas on the import side. The discussion of the relative advantages of this and other alternatives in terms of allocation and administration would carry us beyond the scope of this paper.

17/ The study on Effective Protection in Argentina which is currently under way at CONADE is designed to provide information on parameters d and a for competitive as well as non-competitive imports.

(c) P - Calculated from the sum of private use columns of the Input-Output table.

(d) K - Calculated by applying capacity utilization ratios and production indices to 1960 sectorial outputs as shown in the Input-Output table.

(e) m - Taken from worksheet of the import matrix for 1960.

(f) a - Since no information on competitive imports is currently available actual incidence ratios for each sector were taken from worksheets of the import matrix for 1960. 17/

(g) t - Calculated from worksheets on breakdown of gross value added in each sector in 1960 and from worksheet of import matrix for 1960.

(h) e - Derived from Felix's Argentinian/U.S. price comparison by assuming:

(i) freight and insurance is 30% of FOB price.

(ii) duty in importing country is 20% of CIF price.

(iii) selling costs in importing country are 20% of landed price.

These coefficients were assumed to be the same for all sectors. 18/

(i) g - Taken equal to 1-e in order to calculate the total subsidy solution.

It should be noted that the estimates of the parameters d and e obtained in this fashion may well be inconsistent, e.g., one dollar's worth of CIF imports may have a d of 2.5 (and hence sell for 2.50 domestically) while at the same time having an e of 0.5 which implies that the same merchandise can be exported at $1.25. Similar peculiarities may arise with regard to noncompetitive imports. It is clear, of course, that when such parameters are inserted into the model, an unbounded solution implying infinite income results.

17/ See preceding page.

18/ A survey currently undertaken by CONADE in connection with the study on Effective Protection attempts to obtain direct information on FOB prices.

Table 11 tabulates the parameter values used in the exploratory run of the model. Table 12 portrays the results of the run.

It can immediately be noted that most industrial sectors are not being operated at full capacity. This is due to an inconsistency between the e_i and m_i which cause some sectors to appear to use more direct and indirect foreign exchange in their productive processes than they earn when exporting their output. Whereas such a situation is conceivable in reality, our method for estimating e allows us to indict these values as the prime suspec of the result.

Despite the excess capacity remaining, however, the model shows an increase in GCP of 2.1% over the realized level of 1965 which approximates the growth of one year for Argentina.

IX

We now summarize the content of the previous sections of this paper.

We examined the situation of semi-industrialized countries that underutilize their installed industrial plant due to the existence of an import constraint.

We have argued that such a constraint can be overcome through the export of part of the new industrial production arising from the use of that excess capacity.

Furthermore, we have accepted that such exports can only take place with some form of subsidy and that this outpayment must not imply a net deterioration of the fiscal balance.

We have then developed an aggregate and a sectoral model designed to calculate the general equilibrium fiscal effect of subsidized exports. The application of both models to Argentina was undertaken.

Finally a linear programming framework was suggested to derive the optimal subsidy levels.

From all the above, it appears that use of idle industrial capacity is a potentially very important source of income for semi-industrialized countries. Furthermore, that such a use can take place in the face of an import constraint and under the restriction of not deteriorating the fiscal balance. Finally, that such subsidization is compatible with long run optimum allocation of resources if the less efficient industries receive subsidies that are only sufficient to cover marginal cost.

TABLE 1

GROSS DOMESTIC PRODUCT OF ARGENTINA BY SECTOR OF ORIGIN

Year	1950	1955	1960	1965
Millions of pesos				
GDP in market price	69,324	172,910	962,329	3'256,817
GDP in constant prices (1960)	732,388	855,594	977,821	1'133,258
% based on constant prices				
Agriculture	18.5	19.3	16.6	
Fishing	0.1	0.1	0.1	16.7
Mining	0.6	0.8	1.4	1.4
Manufacturing	29.6	30.6	32.1	35.1
Construction	4.9	3.9	4.0	3.5
Commerce	16.4	15.8	16.6	16.9
Transport	7.2	7.2	7.0	6.6
Communications	1.2	1.0	1.0	0.8
Public Utilities	0.9	1.1	1.3	1.8
Finance	2.0	2.0	2.0	4.0
House Ownership	2.2	2.1	2.0	6.3
Government Services	7.8	7.4	7.2	
Other Services	8.6	8.7	8.7	6.8

Source: 1950, 55, 60 CONADE, Cuentas Nacionales de la República Argentina, Buenos Aires, April 1964, pp. 58-59, 190-191, 194-195.

1965 Banco Centra de la República Argentina, Boletín Estadístico, October 1966, p. 57.

TABLE 2

UTILIZATION OF INSTALLED CAPACITY

Sector	Percentage of actual output with respect to maximum output			
	1961	1963	1964	1965
1. Food and Beverages	48,8	53,2	48,9	51,5
2. Tobacco	82,7	81,9	88,6	91,2
3. Textiles	83,2	59,2	68,9	77,1
4. Clothing	88,3	64,2	72,5	78,4
5. Wood	72,7	48,6	55,2	70,4
6. Paper and cardboard	55,1	48,3	52,7	62,4
7. Printing and publishing	73,3	58,3	62,4	70,8
8. Chemicals	73,4	59,9	68,1	73,8
9. Petroleum derivatives	87.9	78.2	84,7	83,6
10. Rubber	80,5	54,0	66,2	77,6
11. Leather	84,2	66,8	77,8	79,9
12. Stones, glass and ceramics	70,2	59,0	68,7	71,8
13. Metals excluding machinery	59,4	40,8	50,3	66,6
14. Vehicles and machinery (excluding electrical equipment)	78,6	44,6	56,5	65,6
15. Electrical machines and equipment	59,2	43,5	47,6	61,0
Weighted Average	67,2	54,6	59,5	66,1

Source: CONADE, Results of the Survey on Production and Investment Expectations of Industrial Enterprises, Buenos Aires, March 1965, Table 3.

TABLE 3

OVERT URBAN UNEMPLOYMENT
(unemployed as Percentage of Economically Active Population)

Sector[1]	Total			Greater Buenos Aires			Córdoba			Rosario			San Miguel de Tucumán			Greater Mendoza		
	Oct. 1964	Apr. 1965	Oct. 1965	Oct. 1954	Apr. 1965	Oct. 1965	Oct. 1964	Apr. 1965	Oct. 1965	Oct. 1964	Apr. 1965	Oct. 1965	Oct. 1964	Apr. 1965	Oct. 1965	Oct. 1964	Apr. 1965	Oct. 1965
Total	6.3	6.0	4.6	5.7	5.5	4.4	9.5	8.6	6.3	7.6	8.9	5.5	9.2	5.5	6.4	9.2	6.0	4.7
Primary	7.9	3.9	6.1	7.7	4.0	5.7	19.2	2.6	8.7	——	5.0	8.0	9.7	——	8.7	9.8	4.8	4.1
Agriculture, hunting, fishing and extrative industries	7.9	3.9	6.1	7.7	4.0	5.7	19.2	2.6	8.7	——	5.0	8.0	9.7	——	8.7	9.8	4.8	4.1
Secondary	4.8	4.9	3.6	4.6	4.7	3.4	6.1	7.0	4.7	5.0	4.5	4.8	6.6	6.2	5.8	7.4	5.7	4.4
Manufacturing	4.6	4.8	3.3	4.4	4.7	3.0	5.6	6.3	4.3	4.9	4.4	4.8	7.0	5.5	6.0	5.6	5.0	3.9
Electricity, gas, water	0.2	4.5	0.6	——	4.0	——	——	10.7	4.3	——	9.5	4.8	14.3	——	——	2.3	2.0	3.1
Construction	7.9	5.8	7.3	7.4	5.2	7.6	10.6	10.2	7.5	7.1	3.8	4.4	4.7	9.1	6.1	14.5	9.4	6.5
Tertiary	4.4	3.6	2.9	4.2	3.5	2.9	5.7	4.2	3.6	5.4	4.9	2.8	5.0	2.4	3.4	4.3	3.2	2.9
Commerce, Banking and Insurance	3.7	4.0	2.9	3.1	4.1	3.0	5.9	2.5	2.6	6.1	4.8	2.0	5.5	4.2	1.7	5.1	3.5	3.1
Warehousing and Communication	3.4	3.3	3.1	3.3	3.2	3.3	4.2	4.1	2.9	1.9	2.0	1.2	3.9	3.7	4.2	8.0	4.5	3.4
Services	5.2	3.4	2.9	5.1	3.2	2.6	5.9	5.2	4.2	5.9	5.6	3.8	4.8	0.8	4.2	3.0	2.9	2.6
Government and Armed Forces	2.3	1.7	1.8	2.0	1.3	1.6	3.8	5.3	3.0	3.5	2.7	1.1	6.3	2.1	3.1	0.9	1.0	2.3
Others	5.9	3.8	3.2	6.0	3.6	2.9	6.5	5.2	4.5	6.5	6.3	4.3	4.4	0.4	4.6	4.1	3.6	2.7

[1] Refers to last job

Source: CONADE, Surveys of Employment and Unemployment, Buenos Aires 1966, Table 3, pp. 48-49.

TABLE 4

BASIC DATA OF THE ARGENTINIAN ECONOMY

Year	Household Consumption + Gross Fixes Private Inv/GDP at Market Prices[1]	Imports of Goods and Services CIF/ GDP at Market Prices	Direct Taxes + Social Security Contributions/GDP at Factor Cost	Indirect Internal Taxes/GDP at Factor Cost	Import Duty Collections/ Imports CIF
	%	%	%	%	%
1950	83.5	n.a.	7.7	10.5	n.a.
1951	85.9	10.0	n.a.	10.7	n.a.
1952	86.9	8.3	9.1	10.8	n.a.
1953	81.4	4.7	8.2	11.1	17.5
1954	82.8	5.3	8.5	11.3	12.2
1955	86.1	6.6	7.9	10.6	16.1
1956	88.1	11.9	7.9	10.6	17.6
1957	90.4	12.1	7.5	9.8	11.2
1958	86.6	10.1	5.8	7.9	13.9
1959	85.9	11.3	5.1	6.4	19.9
1960	86.1	11.7	5.0	8.0	17.2
1961	88.6	11.1	6.7	9.0	27.0
1962	87.3	12.1	4.9	5.4	18.7
1963	83.6	9.3	5.4	7.6	20.6[2]
1964	n.a.	11.6	6.3	7.2	22.3[2]
1965	n.a.	11.9	7.4	10.5	30.2[2]

[1] Source: CONADE, Argentinian National Accounts (n.a. = not available).

[2] Provisional -- CONADE, Public Sector Office.

TABLE 5

TIME-PROFILE OF AGGREGATE MODEL

(export order dE* = 1 received in t = 0)

Period	dY	dM	dT	Cumulative % of total
0	0:901	0:099	0:129	22:8
1	0:696	0:076	0:100	40:4
2	0:537	0:059	0:077	54:0
3	0:415	0:045	0:059	64:5
4	0:320	0:035	0:046	72:6
5	0:247	0:027	0:035	78:8
6	0:191	0:021	0:027	83:6
7	0:147	0:016	0:021	87:4
8	0:114	0:013	0:016	90:2
9	0:088	0:010	0:013	92:5
10	0:068	0:007	0:010	94:2
11	0:052	0:006	0:007	95:5
12	0:040	0:004	0:005	96:5
13	0:031	0:003	0:004	97:3
14	0:024	0:003	0:003	97:9
15	0:019	0:002	0:003	98:4
Total	3:954	0:434	0:566	100:0

TABLE 6

INCOME VELOCITY OF MONEY IN ARGENTINA

(millions of current pesos)

Year	GDP	Money[1/]	Income Velocity
1953	130;054	37,732	3:45
54	144;616	43;882	3:30
1955	172;850	51;612	3.35
56	217;694	62;238	3:61
57	281;516	67;583	4:17
58	397;055	98;827	4:02
59	753;950	142;157	5:30
1960	977;821	178;640	5:47
61	1'191;634	205;445	5:80
62	1'459;504	219;663	6:64
63	1'774;970	282;872	6:27
64	2'363;336	395;649	5:97
65	3'256;817	497;482	6:55

1/ Currency and demand deposits as of December 31 of each year.

Source: GDP 1953-1963 CONADE, Cuentas Nacionales de la República Argentina
1964-1965 Banco Central de la República Argentina, Boletín Estadístico, Oct. 1966.

Money: BCRA, Boletín Estadístico.

TABLE 7

FISCAL EFFECT OF SECTORAL INCREASES IN EXPORTS

	Sector	Revenue per Peso of New Exports	Max. Allowable Subsidy Unchanged Fiscal Balance
			% of FOB Value
1.	Agriculture	0.713	248
2.	Livestock	0.712	247
3.	Forestry, Hunting, Fishing	0.696	229
4.	Mining	0.691	224
5.	Fuel & Electricity	0.632	172
6.	Foodstuffs & Beverages	0.704	238
7.	Meat	0.716	252
8.	Tobacco	0.883	755
9.	Textiles	0.714	250
10.	Clothing	0.698	231
11.	Wood	0.678	211
12.	Paper & Cardboard	0.671	204
13.	Printing & Publishing	0.653	188
14.	Chemicals	0.687	219
15.	Rubber	0.634	173
16.	Leather	0.725	263
17.	Stones, Glass & Ceramics	0.691	224
18.	Metals	0.615	160
19.	Steel	0.607	154
20.	Vehicles & Machinery	0.642	179
21.	Automobiles	0.632	172
22.	Machinery & Electrical Equipment	0.630	170
23.	Other Industries	0.689	222
24.	Recovery Materials	0.713	248
25.	Constructions	0.694	227
26.	Commerce	0.736	279
27.	Transport	0.650	186
28.	Other Services	0.720	257

TABLE 8

COMMODITY EXCHANGE RATES IMPLICIT IN TRADE POLICY 1/

		Implicit Import Rate (in force)	Implicit Export Rate (calculated)
1.	Agriculture	215	748
2.	Livestock	215	746
3.	Forestry, Hunting & Fishing	327	707
4.	Mining	284	697
5.	Fuel & Electricity	320	585
6.	Foodstuffs & Beverages	383	727
7.	Meat	215	757
8.	Tobacco	215	1,838
9.	Textiles	720	753
10.	Clothing	834	712
11.	Wood	636	669
12.	Paper & Cardboard	486	654
13.	Printing & Publishing	387	619
14.	Chemicals	492	686
15.	Rubber	544	587
16.	Leather	215	780
17.	Stones, Glass & Ceramics	396	697
18.	Metals	548	559
19.	Steel	548	546
20.	Vehicles & Machinery	535	385
21.	Automobiles	1,505	585
22.	Machinery & Electrical Equipment	529	581
23.	Other Industries	621	692
24.	Recovery Materials	n.r.	n.r.
25.	Constructions	n.r.	n.r.
26.	Commerce	n.r.	n.r.
27.	Transport	n.r.	n.r.
28.	Other Services	n.r.	n.r.

1/ Basis: 215 Pesos = $1

Source: B. Balassa, "Integration and Resource Allocation in Latin America,"

* n.r. = not relevant

TABLE 9

TIME PROFILE OF SECTORAL MODEL

Sector:	Period: 0	1	2	3	4	5	6	7	8	9	Total
1	.081	.113	.093	.076	.063	.051	.042	.035	.028	.023	.713
2	.075	.114	.094	.077	.063	.052	.043	.035	.029	.024	.712
3	.073	.112	.092	.075	.062	.051	.042	.034	.028	.023	.696
4	.064	.112	.092	.076	.062	.051	.042	.034	.028	.023	.691
5	.197	.078	.064	.052	.043	.035	.029	.024	.020	.016	.632
6	.116	.105	.086	.071	.058	.048	.039	.032	.026	.022	.704
7	.095	.111	.091	.075	.062	.051	.042	.034	.028	.023	.716
8	.652	.041	.034	.028	.023	.019	.015	.013	.010	.009	.883
9	.143	.102	.084	.069	.057	.046	.038	.031	.026	.021	.714
10	.133	.101	.083	.068	.056	.046	.038	.031	.025	.020	.698
11	.105	.103	.084	.069	.057	.047	.038	.031	.026	.021	.678
12	.142	.095	.078	.064	.053	.043	.035	.029	.024	.020	.671
13	.105	.098	.080	.066	.054	.045	.037	.030	.025	.020	.653
14	.187	.090	.074	.060	.050	.041	.033	.027	.022	.018	.687
15	.181	.081	.067	.055	.045	.037	.030	.025	.021	.017	.634
16	.153	.102	.084	.069	.057	.047	.038	.031	.026	.021	.725
17	.128	.101	.083	.068	.056	.046	.038	.031	.025	.021	.691
18	.121	.088	.073	.060	.049	.040	.033	.027	.022	.018	.615
19	.139	.084	.069	.057	.046	.038	.031	.026	.021	.017	.607
20	.125	.093	.076	.062	.051	.042	.035	.028	.023	.019	.642
21	.133	.089	.073	.060	.049	.041	.033	.027	.022	.018	.632
22	.130	.090	.074	.060	.050	.041	.033	.027	.023	.018	.630
23	.162	.094	.077	.064	.052	.043	.035	.029	.024	.019	.689
24	.050	.119	.097	.080	.066	.054	.044	.036	.030	.024	.713
25	.098	.107	.088	.072	.059	.048	.040	.033	.027	.022	.694
26	.150	.105	.086	.071	.058	.048	.039	.032	.026	.022	.736
27	-.001	.117	.096	.079	.065	.053	.043	.036	.029	.024	.650
28	.098	.111	.091	.075	.062	.050	.041	.034	.028	.023	.720

TABLE 10

CONCILIATION OF AGGREGATE AND SECTORAL RESULTS

Sector	Multiplie dY(1-tx)/d	Tax Ratio Taxes/Disposable Income
1	5.05	0.069
2	5.09	0.069
3	4.99	0.084
4	5.01	0.110
5	3.48	0.365
6	4.70	0.213
7	4.97	0.140
8	1.85	5.978
9	4.57	0.201
10	4.52	0.164
11	4.58	0.139
12	4.23	0.231
13	4.38	0.108
14	4.00	0.493
15	3.62	0.468
16	4.58	0.257
17	4.50	0.183
18	3.95	0.203
19	3.75	0.263
20	4.14	0.166
21	4.00	0.179
22	4.00	0.224
23	4.22	0.246
24	5.30	0.053
25	4.77	0.077
26	4.69	0.186
27	5.21	-0.136
28	4.97	-0.104
Weighted Average:	4.58	
Aggregate Model:	3.39	0.167
Ratio Sectoral / Aggregate	1.35	

TABLE 11

PARAMETERS OF OPTIMAL SUBSIDY LINEAR PROGRAM

Sector	p		m	t	a	d	e	g
1	.037		.001	.043	.180	2.102		
2	.025		.000	.038		1.000		
3	.000		.000	.037		1.000		
4	-.003		.001	.049		1.395		
5	.023		.151	.163	.026	1.047		
6	.149	181.0605	.015	.041	.092	1.318	.555	.445
7	.087		.001	.027	.092	1.318		
8	.018		.007	.592	.091	1.799		
9	.055	32.4335	.013	.054	.414	2.011	.393	.607
10	.056	15.8978	.033	.038	.376	1.462	.393	.607
11	.015	11.9146	.043	.054	.254	1.421	.490	.510
12	.004	26.4239	.054	.055	.247	1.278	.328	.672
13	.010	9.7375	.099	.043	.044	1.450		
14	.032	35.3373	.058	.101	.345	2.182	.280	.711
15	.006	8.6179	.151	.112	.168	1.394	.347	.651
16	.021	6.3109	.002	.057	.078	1.594	.414	.486
17	.012	15.5273	.024	.056	.410	1.884	.48	.52
18	.034	72.1814	.084	.042	.257	1.905	.371	.629
19	.005	26.0770	.150	.086	.257	1.905	.371	.629
20	.044	58.5894	.085	.062	.140	1.895	.248	.752
21	.054	34.2922	.084	.047	.140	1.895	.248	.752
22	.043	34.9370	.094	.050	.139	1.581	.343	.657
23	.020		.045	.088	.455	1.930		
24	.000		.000	.050	.	1.000		
25	.109		.044	.034	.099	1.313		
26	.003		.000	.134	.368	2.261		
27	.037		.001	.078	.368	2.261		
28	.120		.001	.081	.531	1.741		

* in thousands of millions of pesos

TABLE 12

OPTIMAL SUBSIDY LINEAR PROGRAM

Sector	Domestic Production	Imports	Exports	Slack	% of excess capacity used
1		Yes			
2		Yes			
3		Yes			
4		Yes			
5		Yes			
6	Yes		Yes		100.0
7		Yes			
8		Yes			
9	Yes			Yes	14.9
10	Yes			Yes	23.9
11	Yes		Yes		100.0
12	Yes			Yes	10.7
13	Yes			Yes	12.3
14	Yes			Yes	14.9
15	Yes		Yes		100.0
16	Yes	Yes	Yes		100.0
17	Yes		Yes		100.0
18	Yes			Yes	4.8
19	Yes			Yes	5.8
20	Yes			Yes	4.1
21	Yes			Yes	3.2
22	Yes			Yes	3.5
23					
24					
25					
26					
27					
28					