Discussion Paper 8903 February 1989

The Effect of Ricardian Rent on Macroeconomic Performance

by

Manuel F. Montes

Abstract

A macroeconomic, instead of a microeconomic, analysis of the role of rent carried out in this study. In the sphere of production, a Ricardian process of rent generation, as formalized by Pasinetti, is utilized. Rent extraction induces supply-side declines. Attempts to overcome economic slowdown through Keynesian-type demand inducement brings the economy closer to its foreign exchange constraint.

1. Introduction

Rent-seeking has become a current explanation for the problems of the Philippine economy. The actual channels of influence on the evolution of the Philippine economy have been hypothesized extensively, but the extent of positive analysis on the proposed explanation is at an infant stage.

Within the mainstream economics discussion in the Philippines, the policy suggestions toward liberalization (of imports, of the financial sector, of exchange-rate setting, for example) are premised on two things. First, that these liberalizations will permit a domestic price vector more closely aligned with world prices and promote efficiency. Second, that these liberalizations will promote competition by destroying special priveleges granted by the government.

---

[1]Central Bank of the Philippines Diamond Jubilee Associate Professor of Money and Banking, School of Economics, University of the Philippines, Diliman, Quezon City, The Philippines. This paper is the author's solicited contribution to the planned Festschrift volume on Professor Shinichi Ichimura's retirement from the Center for Southeast Asian Studies of Kyoto University. The author gratefully acknowledges the comments of Arsenio Balisacan, Emmanuel de Dios, Raul Fabella, Ricardo Ferrer and Orville Solon but is responsible for all errors.

These propositions beg for empirical and analytical study. Empirically, excepting for 20th century reincarnations of Venice and Florence in Hongkong and Singapore, the most successful export-oriented developing countries have been the most protectionist and laden with distorted internal prices.

Analytically, there is, first of all the controversy that if rents represent nothing but pure income transfers, then rent-seeking does not inflict distortions in the economy. Secondly, there is the issue that, if indeed economic agents are genuinely profit-maximizing, distortionary rents should provide entrepreneurs with the resources they need to improve their efficiency and expand their output (including the motivation to sell overseas).[2]

Frustrated developing countries, such as the Philippines, also provide a fertile ground for political economy discussions about the nature of underdevelopment. There is a current discussion on whether the Philippine economy can be characterized as "capitalist" or "pre-capitalist." The importance of the discussion originates from the effort to specify development strategies alternative to the ones that have been implemented, so far, in the Philippines.

---

[2]See Rodrik [1988] for a discussion of this issue.

Those who take the first position take their inspiration from the dependency school and often describe the economy as capitalist but modified by adjectives such as "peripheral," "backward," "dependent." This economy has been established through the "penetration" of a "world capitalist system." Thus, the suggestion that a "socialist" economy as the solution to Philippine underdevelopment is made.

An example of such an analysis is the following:

> We have consistently characterized the Philippines as an underdeveloped and dependent capitalist society with remnants of feudalism. The capitalist rather than the feudal sector is the most dynamic aspect of this social system. It is expanding while the feudal sector is shrinking, and the growth of the capitalist sector sets the pace and direction of the development of the country as a whole.[3]

The empirical riddle with this view is the problem that if indeed the capitalist sector is dominant there should have been vigorous reinvestment and expansion in response to the highly protectionist microeconomic environment in the Philippines. That U.S. firms, presumably quite modern and profit-motivated, vigorously participated in an import-substitution experiment which did not evolve into successful export performance both confirms the intensity of the inward-looking policy environment and deepens the empirical riddle.

---

[3]BISIG [1987], page 27.

The analytical issue that the dependency view appears to beg is the question of how the capitalist sector articulates with (and, presumably, causes the shrinkage of) the "feudal" sector. Why is there, for example, limited motivation for agrarian reform or for the promotion of manufactured exports, if indeed the capitalist sector is dominant?

The discussion in this article takes the position that the inadequacies in both views stem from an insufficient understanding of the relationship between profit-making and rent-seeking.

This paper explores a model in which capitalists actually maximize profit, they actually decide how much employment occurs in the economy, but because of the rentier nature of the economy their room for expansion is constricted. We demonstrate that the rate of employment would be less than that level which would prevail if rentier income were not a structural characteristic of the economy.

The analysis in the paper takes the view that, indeed, there exists "dynamism" in the capitalist class but this dynamism is circumscribed by the rentier nature of Philippine economy, a proposition explored in the Philippine context by Ferrer [1987]. According to the point of view adopted in this paper, both the dependency and the neoclassical (in its normal, ahistorical mode) suffer from the insistence that there are only two classes in society:

capitalists and workers, and ignore the role of the third class (of rentiers).

The discussion utilizes a rent-generating model first suggested by Ricardo [1817], and formalized by Passinetti [1977]. The actual manner by which rent is generated in the Philippine context should be a subject of more empirical research.[4] Ricardo's model is adequate for the present purpose to the extent that rent arises from special access to more productive economic assets.

The losses imposed by rent in this model stem from the macroeconomic role rent plays in the model. This is as opposed to its microeconomic (allocative efficiency) effect commonly used in neoclassical economics.

The model will be explained first from the supply side (Section 2), and then from the demand side (Section 3). Section 4 discusses the dilemmas in the growth process generated by the type of economy described here. Section 5 presents the concluding comments.

---

[4]The problem is that "rent" as defined here is not normally estimated in the national accounts. This should become clear from the model. Part of the interest in this line of research is to motivate the estimation of this type of rent. The concept of "rent" here also does not correspond to the normal Marxist conception where rent is usually estimated from income of financial enterprises only.

2. The supply side

The supply side of the model is a modification of Pasinetti's model of a Ricardian economy.

The model is stated in the following way:

(1) $Y = f(N; K) = f(N)$

(1a) $f''(N) < 0$ for all N

(2) $R = f(N) - N f'(N)$

(3) $W = (w/p) N$

(4) $S = Y - R - W$

where

Y is real output. "corn." in physical units.

N is the number of workers employed.

K is the existing stock of physical capital

w is the nominal wage rate

p is the overall price level

R is real rental income. in physical units

W is the real wage bill. in physical units

S is real profit income.

Equation (1) is a standard one-input. one-output production function. Here we assume that the macroeconomic problem takes place in the context of an existing capital stock. Capitalists decide how much labor to hire in each time period.

Condition (1a) embodies the assumption of diminishing marginal returns and, as in other optimization exercises, will ensure that a finite solution exists. It will be convenient to analyze only levels of employment in which the marginal product of labor is positive:

(1b) $f'(N) \geq 0$ for all N.

When production takes place, rents are paid through equation (2). This equation embodies the Ricardian view that as the less productive activities are put into operation, owners of the more productive assets are able to capture the "differential" rent. Rental income here is quite different from that assumed in Marxian models, in which it is often estimated from interest earnings on financial lending. It is quite different from rental income in the national account statistics, which counts all income from property.

Equation (3) determines the wage bill. Equation (4) embodies the structural characteristic that profits are made only after rents and wages are paid.

There are four equations and seven unknowns, Y, N, R, W, w, p, and S. We assume that the overall price level in the macro economy is determined in conjunction with the aggregate demand schedule. Thus we are left with six unknowns to determine in the supply side.

One way to close the model is to assume full employment of existing resources:

(5) $N = N_f$

(6) $W = W_f$

where N_f is the full employment level of labor, W_f is the full employment level of working capital which is equal to the wage bill, in this model. Under this closure, given W and p, the nominal wage rate is endogenously determined.

In Pasinetti's interpretation, Ricardo closes the model in the following way:

(7) $w = w_n/p$

(8) $W = W_f$.

Under this closure, the real wage rate is at the equilibrium level at the "natural rate," w_n/p, at which the population is constant and working capital is fully employed. In this case, it is the rate of employment, N, that will be endogenous.

For our purposes, we propose the following closure. We assume the nominal wage rate fixed at some prevailing level:

(9) $w = w_u$.

and then assume that the level of profit is the outcome of the following maximization process:

$$(10) \qquad \max_{\{N\}} \; S$$

Capitalists determine that level of employment that maximizes their profit from operations. In Keynesian fashion, this level of employment could mean that part of their existing working capital could be unemployed (aside from the fact that it could also mean that part of their standing physical capital stock could be unemployed).

The first order condition of the maximization program requires that

$$(11) \qquad \frac{dS}{dN} = \frac{d\{\, f(N) - [f(N) - N\, f'(N)\,] - (w_u/p)N \,\}}{dN} = 0$$

or that the solution N_r must be such that

$$(12) \qquad f'(N_r) = w_u/p - N_r\, f''(N_r)$$

where N_r is the level of employment which maximizes profits when rent has to paid.

Given N_r, the level of output, X_r, is determined from equation (1), rental income, R, from equation (2), the wage bill from equation (3) assuming p is determined elsewhere, and the resultant level of profits from (4). Under this

model, there is no guarantee that the outcome will involve the full employment of working capital or of labor. This is discussed briefly in the next subsection.

2.1 Unemployment

An implication of the model is that the level of employment, N_r, is lower than that in a non-rentier economy. If the fixed prevailing wage rate is set above that which would make labor markets "clear," N_r would be below full employment. But in this model there is another source of unemployment – the rental extraction in the production process. Even when the prevailing wage rate is set below the supply price of workers, the level of employment would be less than in a competitive economy.

In a "capitalist" economy, the level of employment will be determined as the solution to this problem:

$$(13) \qquad \max_{\{N\}} \; Y - W$$

whose first order condition requires the marginal productivity of labor condition:

$$(14) \qquad f'(N_c) = w_u/p$$

where N_c is the rate of employment determined by profit maximizing capitalists who do not have to pay rent.

For any given real wage (w_u/p), diminishing marginal productivity (1a) and conditions (12) and (16) imply that

(15) $$N_r < N_c.$$

The level of employment in the rent-seeking economy is below that of the "capitalist-controlled" economy. In the nature of the model, (15) also implies that working capital utilized in the production process would be less in the rentier economy.

We can presume that unemployed labor can be "stored" somewhere. The question is: where does unemployed capital go? It might be disposed of, like labor, as idle balances lying around.

In a small but relatively open, underdeveloped country, such unemployed capital, as would rental income, could find their way as (1) investment overseas, (2) consumption, often modified by the adjective "conspicuous," or (3) political expenditures for protection of property and retention of rental privileges. Some, but not all of these possibilities are reflected in the demand side of the model.

2.2 Slope of the supply schedule

We now determine the slope of the aggregate supply function of the economy.

The sufficient conditions for a maximum at N_r require that:

$$(16)\quad 2\, f''(N_r) + N_r\, f'''(N_r) < 0$$

a condition that involves the third derivative. If $f'''(N_r) \leq 0$ the sufficient condition will automatically be satisfied. However, equation (18) would still be true $f'''(N_r) > 0$ as long as:

$$(17)\quad 2\,\left|\frac{f''(N_r)}{N_r}\right| > f'''(N_r)$$

What happens when the real wage rate increases? Sufficiency permits us to determine the sign of the supply curve:

$$(18)\quad \frac{d\,N_r}{d\,(w_u/p)} = \frac{1}{2\, f''(N_r) + N_r\, f'''(N_r)} < 0$$

In this case, capitalist demand for labor in the rentier economy exhibits the "normal" sign. An increase in the real wage rate reduces demand for labor.

Equation (18) permits us to conclude that an increase in the price level alone increases employment and output. The aggregate supply curve is upward sloping.

At any given level of capital stock, there is an upper limit to employment and output in this type of economy if profits are constrained to be strictly positive. Write out equation (4):

$$(19) \quad S = Y - R - W$$
$$= f(N) - f(N) + Nf'(N) - (w_u/p) N$$
$$= f'(N) - (w_u/p)$$

A condition that $S > 0$ requires that $f'(N) > (w_u/p)$, the marginal product of labor must always exceed the real wage. Because of diminishing marginal productivity, there will be some level of employment, N_k, beyond which capitalists will not hire additional labor, regardless of demand.

If N_k exceeds total amount of labor available, N_f, then N_f is corresponds to the maximum employment possible. (In a capitalist economy, the constrast is that profits are positive as long as real output exceeds the wage bill.) If N_k is less than N_f, which is likely in a labor surplus economy, then N_k would correspond to a level of output when the aggregate supply curve turns upward even before full employment is reached.

What is the relationship between the level of employment (and output) and rental income? Differentiating (2) with respect to N:

$$(20) \qquad \frac{dR}{dN} = - Nf''(N) > 0$$

In the supply side of the economy, rental income increases as long as employment and output increase.

Graphs 1 and 2 depict these properties of the aggregate supply curve.

2.3 Effect of rental extraction through monopolization

What happens when the rate of rental extraction increases?

We can augment the model by adding a parameter to represent this factor. This rate will depend on the degree of monopoly power and political concentration in society. Let $m \geq 0$ represent an index of rental extraction and redefine equation (2) thus:

$$(2') \qquad R = m [f(N) - N f'(N)].$$

The profit function (4) becomes

$$(21) \quad S_m = (1 - m) f(N) + m N f'(N) - (w/p) N.$$

If $m > 1$ the first term in equation (21) is negative and the only term contributing to positive profits is the second term.

. Profit maximization requires that:

$$(22)\quad f'(N_m) = w_u/p - m\,N\,f''(N_m).$$

Based on (22), it is clear that $N_m \leq N_c$. Equation (20) also implies that for a given (w_u/p):

$$(23)\quad \begin{array}{lll} N_m = N_r & \text{for} & m = 1 \\ N_m > N_r & \text{for} & 0 < m < 1 \\ N_m < N_r & \text{for} & m > 1 \end{array}$$

For the extended problem, the sufficient condition for a maximum requires that:

$$(24)\quad (1 + m)\,f'(N_m) + m\,N_m\,f'''(N_m) < 0.$$

From this condition, we can determine the effect on the employment rate of an increase in the rate of rental extraction:

$$(25)\quad \frac{dN}{dm} = \frac{-N_m\,f''(N_m)}{(1 + m)\,f''(N_m) + m\,f'''(N_m)} < 0$$

since by (1a) the numerator is positive and by (22) the denominator is negative.

Equation (25) demonstrates that increasing monopolization reduces employment and supply. Ceteris paribus, the aggregate supply curve shifts to the left as concentration increases.

3. The demand side

The aggregate demand schedule of the economy is derived from a modification of the IS-LM model that takes into account the income distribution. This approach has its precedents in structuralist macroeconomics, such as in Taylor [1983].

We can rewrite (4) in terms of the sum of incomes in the economy:

(4') $Y = W + R + S$

There are three sources of demand in the economy, consumption, investment and exports, part of which is served from imports. Output in the economy is therefore equal to

(26) $Y = C + I + X - M$

where C is consumption (possibly including the government), I is investment, X is exports, and M is imports.

Total consumption spending is the sum of expenditures on domestic products and imported products:

(27) $C = C^d + C^m$

.

Let us make the extreme assumption that wage income is spent solely on domestic products while the demand for imported consumption goods is a certain proportion k of rental income:

(28) $C^d = W$

(29) $C^m = kR \qquad 0 < k < 1$

Assume that current spending in investment in capital equipment is a certain proportion, a ("animal spirits"), of profit income S in the current period:

(30) $I = a S$

In this economy, only capitalists save and invest (and they do not consume). Workers consume all of their income. Rentiers spend part of their income on imported consumption goods while the rest expresses itself as investment overseas.

Let us define the import function in this way:

(31) $M = bY + C^m$

where b is the proportion of domestic activity, including trading and exporting but mostly equipment investment in an underdeveloped economy, that must be imported and C^m the imported component of consumption.

The IS schedule of the rentier economy is derived by substituting the behavioral demand equations into (24), assuming exports are exogenous, and solving for Y. The result is:

$$(32) \qquad Y = \frac{1-a}{1-a+b} W - \frac{a}{1-a+b} R + \frac{1}{1-a+b} X$$

Since $a < 1$, (32) implies that in the goods market increasing real wages or exports is consistent with a higher level of income, while higher real rental income is consistent with a lower level of national income.

For convenience we will also write (32) as:

$$(33) \qquad Y = \mu W - \Gamma R + \epsilon X$$

where the coefficients of (33), all presumably of positive sign, correspond to the respective but more complicated expressions in (32).

We must now specify the financial market underlying the aggregate demand curve. Equilibrium in the money market requires that:

$$(34) \quad \dot{H}^s / p = H^d / p - l Y - h (1-k) R$$

where H^s/p is the real supply of high powered money and H^d the demand for nominal money balances. According to the second equality in equation (32), the real demand for money is an increasing function of real income Y, via parameter l, and a decreasing function of rental income not devoted to imported consumption, (1-k)R, via parameter h.

In a more elaborated model, capital flight, (1-k) R, will have a corresponding effect on the supply of money. The parameter f embodies a view that on a net basis, possibly because of illegal transactions, capital flight has a net dampening effect on demand for real local currency balances independent of its effect on the supply side.

The aggregate demand equation is derived by solving out the R from (33) and (34) and solving for the price level, p, as a function of the level of aggregate output Y. With a

linear LM curve of (34) the resulting aggregate demand curve can be written as:

$$(35) \quad Y = \frac{\emptyset}{\emptyset + \lambda \Gamma} (\mu W + \epsilon X) + \frac{\Gamma}{\emptyset + \lambda \Gamma} \frac{H^S}{p}$$

where

$$\emptyset = h(1- k)$$

None of the signs of parameters within the aggregate demand schedule are ambiguous. The aggregate demand for output is an inverse function of the overall price level. as is expected.

Some of the special features of the model are reflected in the aggregate demand curve. Raising the real wage bill, W. or increasing exports. X. or increasing the money supply increases aggregate demand at each price level. At every (Y,p) combination on the schedule with a lower Y and a higher p. the level of rentier income. R. is higher.

4. Dilemmas in growth

The kind of economy that we have outlined continually faces dilemmas in the process of growth. Here we discuss a few of them.

4.1 Supply induced slowdown

The first is the supply induced slowdown. If growth in total output is propelled through monopoly-increasing intervention, the supply curve in the Y-p plane shifts to the left. Rental incomes go up, but as we have set it up there is no corresponding increase in domestic demand. The result is incipient inflation.

The effects of the supply reduction can be alleviated, paradoxically, through increases in the demand side as long as the economy is not yet in the portion of the supply curve where profits are zero. What can be done is to induce investors to increase their rate of investment or to attempt to increase the wage bill, W, through increases in the nominal wage. If the economy is already in the portion of the supply curve where profits are (almost) equal to zero, further increases in demand will only exacerbate the inflation triggered by the supply reduction. See **Graph** 3.

4.2 Foreign exchange limits

The foreign exchange constraints provide the limit to demand induced maintenance of output or growth. These constraints are made more difficult by the role rental incomes play in the economy.

Write the current account deficit as:

(36) CA deficit = M − X − J

where the new symbol is J, net unrequited transfers from abroad. Taking net aid J, and exports, X, as exogenous (and without any direct import-inducing effects), substitute for M the import equation (31) and for Y from goods market equilibrium equation (33). The resulting equation for the current account deficit is:

(37) CA deficit = $(k - b\Gamma)R + b\mu W - (1-\epsilon)X - J$

In equation (37), increases in the wage bill, W, unambiguously worsen the current account deficit. Since $\epsilon < 1$, exports reduce the current account deficit: so does net aid. Any reduction in the current account deficit reduces the foreign financing requirements of the economy.

The effect of rental income, R, on the current account deficit is ambiguous. If the coefficient of R is positive, rental income worsens the current account deficit: if negative, that is $k < b\Gamma$, increasing rental income reduces the deficit. The reason rental income has a potentially positive effect in the current account is that an increase in rental income dampens aggregate demand, and hence some of the demand for imports via the term $b\Gamma$.

When the whole balance of payments is taken into account, we must also consider the capital flight that rental income induces. Write the balance of payments as:

(38) BOP balance $\equiv$ $dZ = CA\ surplus + dF - (1-k)\ R$

where dZ, the net change in international reserves (identical to overal BOP balance), is equal to the current account balance plus the net financing from abroad, dF, which, for the present purpose includes net foreign borrowing and net foreign investment, minus rental income-induced capital flight, (1-k) R.

We can take dZ exogenous and in practice based on a target of number of months of next year's imports. We can solve (38) for dF and substitute for current account expression from (37) to get:

(39) $dF = dZ + (1 - bT)\ R + bu\ W - (1 - \epsilon)\ X - J$

Increases in the real wage bill will increase the foreign financing requirements, as exports and net aid, J, reduce them.

According to (39), increases in rental income could potentially increase foreign financing requirements one-for-one except for the fact that such incomes also have a dampening effect on aggregate demand. A fractional value

for $b\Gamma$ is most appropriate, since $b < 1$ and $\Gamma < 1$. This means that an increase in rental income by itself increases the pressure to raise foreign financing.

5. Concluding remarks

In this paper, we have proposed a rather non-standard conception of rental income. Rental income is that part of the surplus in production that is either spent on imported consumption or invested outside of the country. In the normal accounting sense, what is being proposed is that observed profits can be divided into two parts: that part that is meant not to be re-expressed in demand for domestic consumption or investment is called "rent", the rest are genuine profits in the economic sense.

It will be straightforward to devise the microeconomic (individual optimization) story underlying the utilization of rentier incomes. One can have households whose basic consumption requirements are small compared to their incomes so that they have significant demand for imported goods.

Individual optimization behavior within a country with a "repressed" financial sector, exchange rates that are consistently overvalued until the next balance of payments crisis - coupled with multilateral agency encouragement for export promotion and diversification - will provide the

result that the part of these incomes will be invested abroad.

A certain minimum amount of success in exports is required to provide the resources for capital flight. When the balance of payments crunch (periodically) occur, drastic devaluations validate individual portfolio decisions to invest rentier income in foreign currency denominated assets.

That individual optimization-oriented economists in the Philippines have tirelessly worked to reform these institutions appear to provide adequate justification to assume their durability between balance of payments crises. Even if such durability can be blamed only on a consistent series of technical errors by Philippine policy makers, it would still provide the basis for the assumption utilized in the analysis.

A more elaborate extension would be to consider all profit income spent for conspicuous consumption or political expenses to be part of "rent" as defined here.

In modern economies, rents are earned from access to government subsidies and protection. Such microeconomic distortions appear not to have had a deleterious effect on development efforts in South Korea, Japan, and Taiwan. Even when these countries decided to go into export orientation,

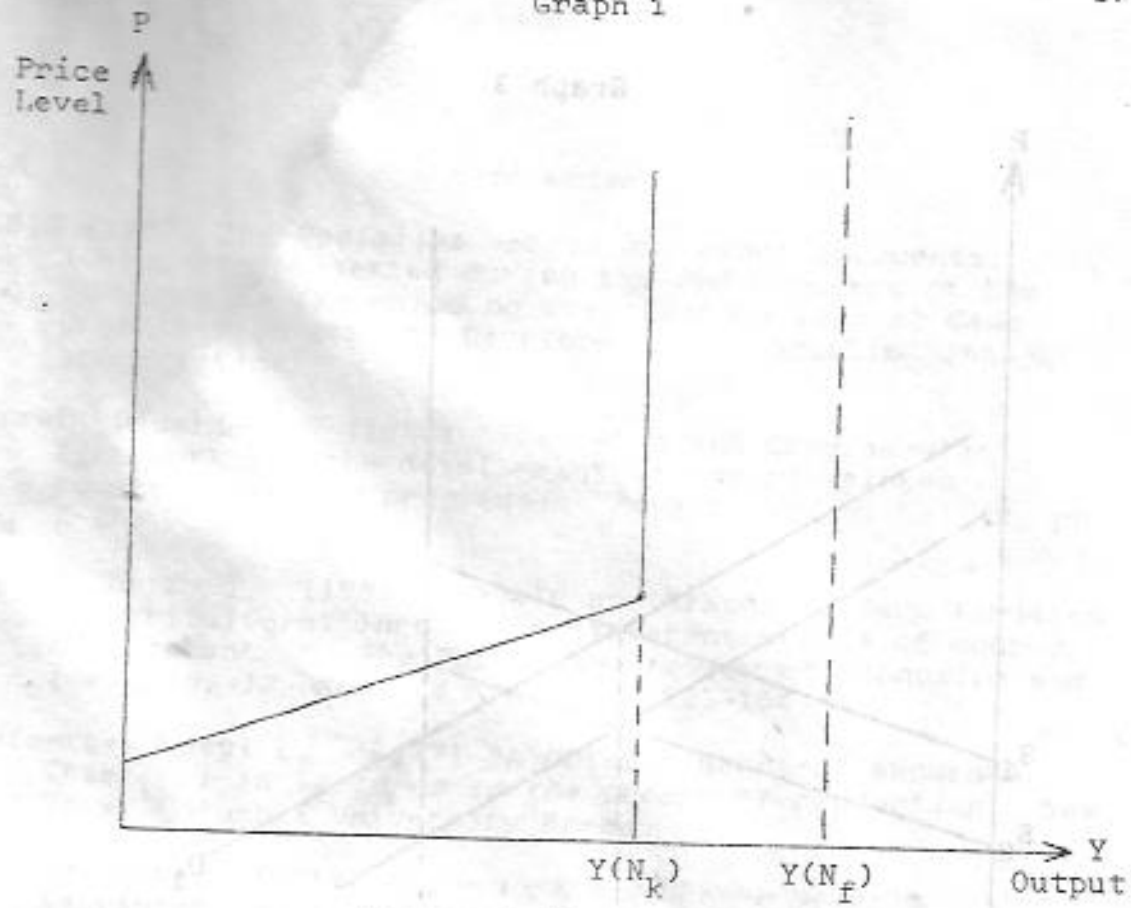
these were done through further distortionary measures such as subsidies.

The model that is proposed here puts much emphasis on how the incomes earned through these interventions are utilized or recycled. If, for example, subsidy income from export operations were not reinvested but instead spent on imports or capital flight, then the model here would apply just as equally as it would to an "inward-oriented" economy. In fact, colonial trade has always been export-oriented from the point of view of former colonies.

The model identifies a possible source of slowdown of an economy that is different from that of inadequate external financing. Increases in rental extraction, that do not express themselves in domestic demand, lead to reductions in domestic demand for labor. Attempts to maintain output through demand inducement brings the economy closer to its foreign financing limit.

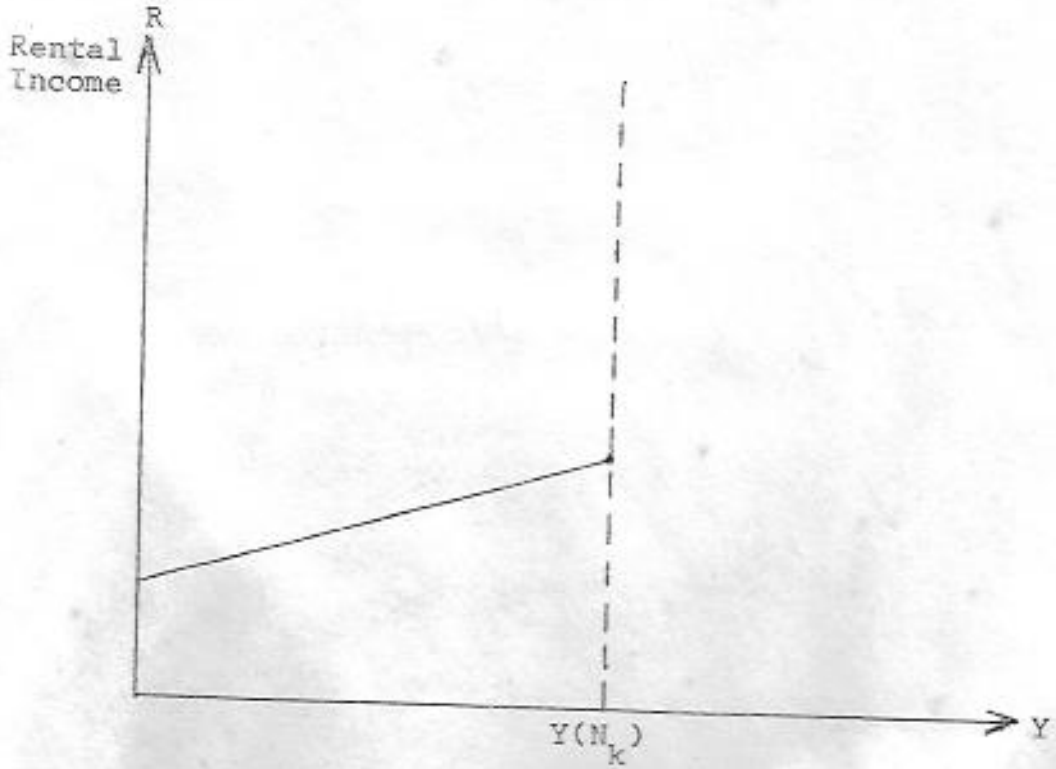
To be useful, there is need for empirical implementation of the ideas proposed in this paper. This is reserved for future work.

Graph 1



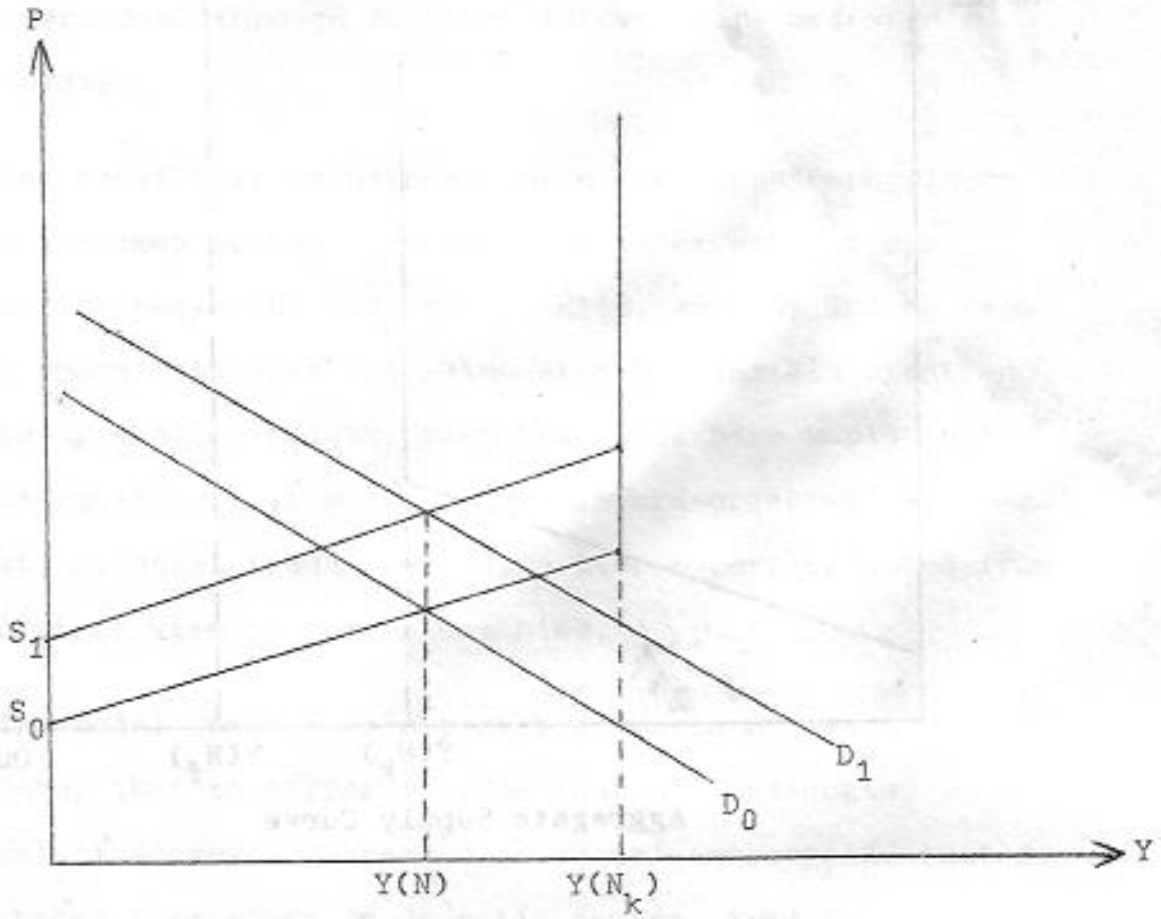
Aggregate Supply Curve

Graph 2



Rent and Output

Graph 3



Maintaining Employment through Demand Increases

References

BISIG [1987] *The Socialist vision and other documents.* (Documents presented during the 2nd Congress of the *Bukluran sa Ikauunlad ng Sosyalistang Isip at Gawa* - Organization for the Development of Socialist Thought and Practice).

Ferrer, Ricardo D. [1987] "Theoretic and programmatic framework for the development of underdeveloped countries." *New progressive review. Vol* 3, No. 2, pp. 2-25.

Oshima, Harry T. [1985] "Levels and trends of farm families nonagricultural incomes at different stages of monsoon development." *The Philippine review of economics and business, 12,* Nos. 3 & 4, pp. 123-154.

Pasinetti, Luigi L. [1977] "A brief historical excursus," Chapter 1 in *Lectures in the theory of production.* New York: Columbia University Press.

Ricardo, David. [1817] *The principles of political economy and taxation.* Reprinted in 1973. London: Everyman's Library.

Rodrik, Dani [1988] "Closing the technology gap: does trade liberalization really help?" Paper prepared for WIDER conference on "New trade theories and industrialization in developing countries." Helsinki. 2-5 August 1988.

Taylor, Lance [1983] *Structuralist macroeconomics.* New York: Basic Books, Inc.