RESEARCH ARTICLE

Social and Political Factors in a Model of Economic Development and Distribution: An Application to the Philippines

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This quantitative historical paper presents a model of endogenous economic growth and distribution explicitly incorporating social extraction and political competition, with application to the Philippine experience. The model is tested and simulated using institutional information and historical data. The major objective is to explain developments in the distribution of national income and wealth and in the growth rate of per capita national income. When calibrated, the model is found to be consistent with the broad contours of Philippine macroeconomic history. The study concludes with several policy implications for a successful strategy of economic development.

***Keywords**:* Social Extraction, Political Competition, Wealth and Income Distribution, Economic Development, Philippines

JEL Codes: E13, O410, O430

This quantitative economic historical paper analyzes the interrelations among social extraction, political competition, wealth distribution, capital accumulation, and long-term macroeconomic performance. Hypotheses about these interrelationships are tested and simulated using institutional information and historical data on the Philippines. The major objective is to explain developments in the distribution of national income and wealth and in the growth rate of per capita income. Sociological and political features of the economy are incorporated in an aggregative growth model, and their economic implications are drawn to shed light on the broad contours of Philippine macroeconomic history. Sections 2 and 3 develop the theoretical and modeling framework for the analysis, which is used to explain the Philippine macroeconomic experience in Section 4. Section 5 summarizes and concludes with several policy implications for a successful strategy of economic development.[1]

Theoretical Framework

The economy is organized in Table 1. Philippine society is divided into two broad classes: the elite and the non-elite. The elite owns a large capital stock, particularly vast tracts of land, which are sources of further accumulation and income generation. In this paper, the elite is defined as the top 20% of Philippine society. As such, the elite, although representing only about a tenth of households, receives more than half of aggregate household[3] income. Members of the elite comprise the following three land-owning classes: (a) a landlord class that evolved from the land settlement policy at the beginning of Spanish rule in 1521—land consolidation by the Catholic Church that originated from bequests of Spanish settlers, including religious orders, who were granted property rights by the Spanish crown[4]; (b) a class of government servants who were awarded land for their services to the civil government of Spain, and who intermarried with Filipinos (whose descendants became the ruling elite); and (c) the Chinese, who accumulated land through money lending and commerce (Power et al., 1971).

Table 1. *Group Assets, Incomes, and Expenditures*[2]

	Elite *(e)*	**Nonelite *(ne)***
Asset	K_e	Kne, L
Income	$Y_e = (1-\tau_e)rK_e$	$Y_{ne} = (1-\tau_{ne})(rK_{ne} + wL)$
Consumption	$c_e Y_e$	$c_{ne} Y_{ne}$
Surplus	$(1 - c_e)Y_e$	$(1 - c_{ne}) Y_{ne}$
Investment in K	$i_e Y_e$	$i_{ne} Y_{ne}$
Investment in L	0	$\mu h Y_{ne}$
Political competition	$\gamma_e Y_e$	$\gamma_{ne} Y_{ne}$
Memorandum item:		
Government budget identity: $\tau_e Y_e + \tau_{ne} Y_{ne} = 0$		

The non-elite is defined as the bottom 80% of Philippine society. Although representing nearly 90% of total households, the non-elite receives less than half of total household income and owns a small stock of capital. This group consists of workers, self-employed professionals, and small- and medium-scale entrepreneurs. The non-elite owns labor and augments it by increased spending on education, on-the-job training, health care, nutrition, and other efficiency-enhancing expenditures. GDP, in this paper, refers to long-run potential output. Because short-run deviations from potential output, although important in practice, are not of primary concern in this paper, changes in factor utilization rates are not considered. An assumption of either full employment or a constant rate of unemployment is consistent with the long-run growth model developed in this paper[5]. Given the potential supplies of capital and labor, real disposable incomes are determined by the distribution of productive assets, net tax-benefit rates, and marginal factor productivities. Gross elite real income is income from owning capital, which is equal to rK_e, where r is the rate of profit, and K_e is the elite-owned capital stock. Gross non-elite real income is the sum of incomes from employment, self-employment, and income from owning capital, equal to $rK_{ne} + wL$, where K_{ne} is the capital stock owned by the non-elite, w is the wage rate, and L is employment. The net tax-benefit rates τ_e and τ_{ne} are applied to these gross incomes to derive real disposable incomes, as shown in Table 1. The net tax rates τ's are ratios to group incomes of direct (property and income taxes) and indirect taxes (production and sales taxes), less benefits received (such as educational and health benefits to workers and subsidies and direct transfers to businesses). They include benefits received from the use of public capital assets (such as schools, hospitals, and roads) and in the form of subsidies, transfers, and exemptions to boost capital income.[6]

Group income is consumed or invested. A portion of consumption is spent on political competition[7]. Group surplus is defined as group income less consumption other than on political competition. Political competition and expenditures on physical and human capital are alternative uses of group surpluses. Although socially unproductive, political competition raises group income to the extent that it protects, supports, maintains, or enhances economic advantages, specifically the portion that is extracted from labor's marginal product. The latter is achieved by effectively resisting policies leading to meaningful land reform and the strengthening of labor market institutions (particularly the wage bargaining process on behalf of workers). Because it owns the major portion of the capital stock, the elite accounts for most expenditures on political competition to augment capital income through the extraction of a portion of labor's marginal product.

Expenditures on labor include current expenditures such as nutrition (for example, caloric intakes), health care, tuition, and teachers' salaries, and capital expenditures such as on hospitals, schools, and student computers[8]. In contrast to the elite, the non-elite spends negligible amounts on political competition because it owns a small stock of capital and receives little economic favors from the ruling elite.

Asset Distribution and Social Extraction

Real-world societies, including advanced industrial nations, have a positive rate of economic extraction because of the existence, of varying degrees, of imperfect labor and capital markets, unequal distribution of wealth, and associated unequal distribution of political power. A positive rate of extraction requires the presence of political lobbying groups that allocate a certain level of expenditures to influence the state in maintaining or even increasing the extraction rate.

Factor Incomes and the Rate of Extraction

In a full-employment, perfectly competitive two-factor economy characterized by a Cobb–Douglas production function $Y = Lk^{\alpha}$, where α is the elasticity of Y with respect to capital K, the ratio of factor income shares is equal to the ratio of the respective output elasticities,

$$\rho/\omega = \alpha/(1 - \alpha), \quad (1)$$

both as ratios to GDP. Philippine data on actual factor shares and empirical work on production functions by Kikuchi (1991) in the rice sector and Sicat (1968) on manufacturing indicate that $\rho/\omega > \alpha/(1 - \alpha)$. The discrepancy is particularly large in Philippine manufacturing[9]. Although Sicat (1968) attributed the deviations partly to measurement and regression biases, he acknowledged that "even if it is possible to take out the biases in measurements due to census accounting and regression bias, the divergence due to market imperfections must still be large" (p. 54).

Sicat (1968) suggested applying a factor λ (<1) that corrects for the ratio of actual factor shares,

$$\lambda(\rho/\omega) = \alpha/(1 - \alpha). \quad (2)$$

Given data on actual ρ and ω and the estimates of α from the empirical production functions, Sicat then provided estimates of λ in 18 two-digit (ISIC) Philippine industries. The estimates of λ range from 0.125 for chemical products and 0.699 for leather products. Equivalently, a corrective factor b may be applied, representing the fraction of labor's marginal product actually paid out as wages and captured by ω, and $1 - b$ is the remaining fraction appropriated by capital[10]. In these circumstances, actual factor shares are:

$$\rho = \alpha + \beta(1 - \alpha) \quad (3)$$
$$\omega = (1 - \beta)(1 - \alpha), \quad (4)$$

where $\beta = 1 - b$ is the rate of extraction, and their ratio is

$$\rho/\omega = [\alpha + \beta(1 - \alpha)]/[(1 - \beta)(1 - \alpha)]. \quad (5)$$

Noting that the elite and non-elite own K_e and K_{ne} of capital and substituting Equations 3 and 4 in the definitions of group incomes shown in Table 1, group disposable incomes may be rewritten as:

$$Y_e = (1 - \tau_e)\rho(1 - z)Y \quad (6)$$
$$Y_{ne} = (1 - \tau_{ne})(\rho z + \omega)Y \quad (7)$$

in which $Y = Lk^{\alpha}$ and $z = K_{ne}/K$.

The Determinants of Rate of Extraction

The social extraction rate β is an institutionally determined parameter[11]. It reflects the degree of market imperfections and the relative economic and political power of the two groups in the wage-setting process.[12] Economic power rests on the asset distribution regime (summarized by z, which is determined by its initial value and subsequent group investments) and institutional arrangements in the economy.[13] The elite wields political and market power and is able to earn more than α of *GDP* by extracting $\beta(1 - \alpha)$ of labor's marginal product. From Equation 5, the extraction rate β may be expressed in terms of the actual factor shares ρ and ω and the estimated elasticity of output with respect to capital α, and related to Sicat's λ as $\beta = \alpha/[\alpha + (\lambda/(1 - \lambda))]$.[14]

Under marginal productivity pricing, $\lambda = 1$. This means that β approaches zero: the ratio of actual factor shares reflects the ratio of the relative factor contributions to output. Sicat's estimates of λ are less than unity, which implies that the extraction rate β is positive and less than unity. Two additional results are that β declines with λ and rises with α.[15] For example, Sicat estimated that the leather products industry has a higher λ (= 0.699) and a higher α (= 0.481) than the chemical products industry ($\lambda = 0.125, \alpha = 0.296$). This suggests that whether the leather products industry has a lower extraction rate is theoretically unclear and depends on the sizes of λ and α in the respective industries. However, for the range of Sicat's estimated values of α for different industries, the negative effect of λ dominates the positive effect of α, so that the extraction rate in the leather products industry appears to be less than in the chemical products industry.

In the absence of a suitable empirical aggregate production function for the Philippines, the economy-wide retention rate b may be approximated by the function,

$$b = \mathrm{SUM}\{[s_i/(1 - \alpha_i)]v_i\} \qquad i = a, m, o, \qquad (8)$$

where s_i is the actual share of wages (noncapital costs) in value added in sector i, α_i is the estimated elasticity of output with respect to capital in the production function for sector i, v_i is the share of value added of sector i to aggregate value added (GDP), and a, m, and o denote agriculture, manufacturing, and other sectors. The actual wage shares s_i and estimated α_i for agriculture (at least for rice) and manufacturing, and the share of value-added v_i in GDP are available for sectors $i = a, m, o$.

Factor payments and factor shares in rice production are illustrated by Kikuchi (1991) on data collected from a study of a rice village during the wet season in 1976 (Hayami & Kikuchi, 1981). Rice is produced by combining land and capital (along with intermediate inputs such as fertilizer and water) owned by the elite (landlords) with labor supplied by the non-elite (farmers). The land tenure system is based on sharecropping and lease-holding arrangements, in which $s_a = 0.418$ and $\alpha_a = 0.478$, which implies a retention rate for farm labor of $b_a = 0.80$.[16] If capital and labor were paid their marginal physical products, gross real incomes of landlords and farmers would represent α or 47.8% and $1 - \alpha$ or 52.2% of farm output, respectively: (a) $Y_e = \alpha_a Y$; and $Y_{ne} = (1-\alpha_a) Y$. However, the actual factor shares were 58.2% of farm output for landlords and 41.8% for farmers: (b) $Y_e = (1-s_a)Y$; and $Y_{ne} = s_a Y$. From (a) and (b), the fraction b of labor's marginal physical product retained by farmers is equal to $s_a/(1-\alpha_a) = 0.80$, and gross real incomes of farmers and landlords would be:

$$\begin{aligned} Y_e &= [0.478 + 0.2(0.522)]Y = (0.478 + 0.1044)Y \\ &= 0.5824Y \\ Y_{ne} &= [(1 - 0.2)(0.522)]Y = (0.8)(0.522)Y \\ &= 0.4176Y, \end{aligned}$$

which are exactly the actual factor shares $1\text{-}s_a, s_a$. These shares are determined by negotiated sharecropping and lease-holding arrangements and by their compliance and enforcement, as well as by settlement of disputes.

For workers in the manufacturing sector, Sicat (1968) reported the actual share of wages in manufacturing value added of $s_m = 0.3$ and an estimate of $\alpha_m = 0.4$. Thus, the retention rate b_m is 0.5, 30 percentage points lower than b_a. This may be explained by repeated government efforts at strengthening the sharecropping and lease-holding arrangements and the rights of farm tenants over the years. There have been few comparable efforts on behalf of industrial workers. The actual factor share s_m has been determined primarily by wage-setting policies of the industrial elite.

Because the extraction rate β is one minus the retention rate b, it follows that β also depends on the actual factor shares s_i. The higher the actual s_i, the higher the rate of retention b and the lower the extraction rate β. Obviously, when there is full marginal productivity pricing ($s_i = 1 - \alpha_i$), there is full retention ($b = 1$) and no extraction ($\beta = 0$).

In general, the wealth distribution variable z has exogenous and endogenous components. The exogenous component may reflect a conscious policy of land redistribution or a policy of requiring tightly held family corporations to go public and be subject to more competitive pressure. The endogenous component arises from the fact that z reflects the behavior of both elite and non-elite investments, which are determined by group income levels and rates of return.

The optimal proportions of group surpluses devoted to group activities should be set equal to the relative contributions of those activities to group incomes.[17] Thus, for the elite, $\gamma_e = \beta(1 - \alpha)(1 - z)(1 - c_e)$ and $i_e = 1 - c_e - \gamma_e$. For the non-elite, $\gamma_{ne} = \beta(1 - \alpha)z(1 - c_{ne})$, $h = (1 - \beta)(1 - \alpha)(1 - c_{ne})$, and $i_{ne} =$

$1 - c_{ne} - \gamma_{ne} - h$. Note that the allocation ratios, except for h, are partly endogenously determined because they depend on the asset distribution variable z, which is an endogenous variable. To provide a concrete illustration of the allocation of surplus incomes of the elite and the non-elite,[18] assume $\alpha = 0.4273$, $\tau_e = -0.10562$, $\tau_{ne} = 0.124$, $c_e = 0.63$, and $c_{ne} = 0.80 + (\beta + \tau_{ne})^{1.86}$. For purposes of the simulation, the economy-wide retention rate b is raised from its base value of 0.755268 by increments that are consistent with the full retention rate (zero extraction rate) separately in the three economic sectors, followed by the full retention rate jointly in all three sectors. Each iteration generates a pair of values for β and z and subsequent allocation rates of the group surpluses. When $b = 1$ and economic extraction β is zero, the rate of spending on political competition is zero, whereas the rates of investment in both physical and human capital (ratios to group incomes) are highest. As β increases, the rate of return on political competition goes up, which raises the rate of political spending at the expense of the rate of investment (in terms of group incomes).[19] From the point of view of enhancing growth prospects, minimizing the extraction rate is desirable because the rates of investments in K and L are maximized, and the resources wasted on political competition are used productively.

Because the rate of social extraction β is institutionally determined and product and factor markets are imperfect, an even split of the group surplus rates between their respective components would require an extremely large value for β, which is not feasible in practice. This implies that relative rates of return would fail to be equalized.

The Growth Model

From the definitions of group incomes and the allocation functions, the capital accumulation dynamics can be written as follows:

$$(dK/dt)/K = i^* k^{\alpha-1} - \delta \qquad (9)$$

$i^* = i^*_e + i^*_{ne}$; $i^*_e = i_e(1 - \tau_e)A$; $i^*_{ne} = i_{ne}(1 - \tau_{ne})B$; $i_e = 1 - c_e - \gamma_e$; $\gamma_e = \beta(1 - \alpha)(1 - z)(1 - c_e)$; $i_{ne} = 1 - c_{ne} - \gamma_{ne} - h$; $\gamma_{ne} = \beta(1 - \alpha)z(1 - c_{ne})$; $h = (1 - \beta)(1 - \alpha)(1 - c_{ne})$; $z = K_{ne}/K$; $A = \rho(1 - z)$; $B = \rho z + \omega$; $\rho = \alpha + \beta(1 - \alpha)$; $\omega = (1 - \beta)(1 - \alpha)$; $\beta = 1 - b$; $b = \text{SUM}\{[s_i/(1 - \alpha_i)]v_i\}$ for $i = a, m, o$; c_e is a constant parameter; $c_{ne} = \text{constant} + (\beta + \tau_{ne})^{\varepsilon}$[21]; δ is a uniform constant rate of depreciation that applies to K and its components, K_e and K_{ne}; and $d(.)/dt$ denotes time differentiation.

The increase in the labor input is given by the definition of non-elite income and allocation function for h:

$$(dL/dt)/L = \mu h^* k^{\alpha} + n \qquad (10)$$

in which $h^* = h(1\tau_{ne})B$; and h, μ, c_{ne}, and B are as defined above and in Table 1.[22]

Time differentiating the capital/labor ratio $k = K/L$, its rate of change is given by Equation 9 minus Equation 10:

$$(dk/dt)/k = i^* k^{\alpha-1} - \mu h^* k^{\alpha} - (n + \delta) = \varphi(k, z). \qquad (11)$$

Time differentiating the ratio of non-elite capital to total capital $z = K_e/K$, using Equation 9 and the non-elite investment function, the rate of change of z is

$$(dz/dt)/z = [(i^*_{ne}/z) - i^*]k^{\alpha-1} = \Psi(k, z), \qquad (12)$$

where i^*_{ne} and i^* are as defined above. The reduced model is described by a system of two differential equations in k and z, and time.[23]

The steady-state values of the capital/labor ratio k^* and the wealth distribution ratio z^* are given by the roots of Equations 11 and 12, equated to zero:

$$i^* k^{*\alpha-1} - \mu h^* k^{*\alpha} - (n + \delta) = \varphi(k^*, z^*) = 0 \qquad (13)$$
$$[(i^*_{ne}/z^*) - i^*]k^{*\alpha-1} = \Psi(k^*, z^*) = 0. \qquad (14)$$

The equilibrium growth rate of per capita output is solved by either of the following equations:

$$g^* - n = [(dK/dt)/K - n]^* = i^* k^{*\alpha-1} - (n + \delta) \qquad (15a)$$
$$g^* - n = [(dL/dt)/L - n]^* = \mu h^* k^{*\alpha} \qquad (15b)$$

As a first step in determining the existence of a unique equilibrium pair (k^*, z^*), the slopes of the steady-state Equations 13 and 14 must be signed. For this purpose, take the total derivatives of Equations 13 and 14 with respect to k^* and solve for dz^*/dk^*:

$$dz^*/dk^*|_{(dk/dt=0)} = [(1-\alpha)i^* + \mu\alpha h^* k^*]/[\partial i^*/\partial z^* - \mu k^* \partial h^*/\partial z^*]k^* = ?$$

$$dz^*/dk^*|_{(dz/dt=0)} = 0.$$

Since $k^{*\alpha-1} > 0$, the steady-state condition of Equation 14 requires that $i^*_{ne}/z^* - i^* = 0$, which is independent of k^* and a function only of z^*. Thus, the wealth distribution curve, $dz^*/dk^*|_{(dz/dt=0)}$, is horizontal on the (k^*, z^*) coordinates at the given value of z^* determined by the steady-state condition $i^*_{ne}/z - i^* = 0$. On the other hand, the slope of the capital accumulation curve, $dz^*/dk^*|_{(dk/dt=0)}$, is indeterminate. From $h^* = h(1-\tau_{ne})B$, $h = \omega(1-c_{ne})$, and $B = \rho z + \omega$, the partial derivative $\partial h^*/\partial z^* = h(1-\tau_{ne})\rho > 0$. The indeterminacy arises from the indeterminacy of the response of the aggregate investment rate i^* to changes in z^*, $\partial i^*/\partial z^* = \{[(1-\tau_e)(1-c_e)A - (1-\tau_{ne})(1-c_{ne})B]\beta(1-\alpha)\} - [(1-\tau_e)i_e - (1-\tau_{ne})i_{ne}]\rho$.

The first composite term inside braces, whose sign is ambiguous, on the right-hand side of the expression for $\partial i^*/\partial z^*$ summarizes the net substitution effects of changes in z^* on i^* through changes in the rates of political competition γ_e and γ_{ne}. As z^* increases, the group rates of political competition move in opposite directions, with the elite rate falling and the non-elite rate rising. Thus, the elite rate of investment increases, whereas the non-elite investment rate decreases.

The second composite term summarizes the net income effects of an increase in z^* on i^* via changes in the group income shares A and B, with A decreasing and B increasing in value. The negative effect on i_e would normally be larger than the positive effect on i_{ne} because i_e is much larger than i_{ne}. Consequently, the sign of the second composite term is likely to be negative. For reasonable values of the parameters, it turns out that $\partial i^*/\partial z^* < 0$. Combined with the result $\partial h^*/\partial z^* > 0$, this implies that $dz^*/dk^*|_{(dk/dt=0)} < 0$. Graphically, the slope of the $dk/dt = 0$ curve is negative. Long-run equilibrium is illustrated in Figure 1, where k^* and z^* are measured on the horizontal and vertical axes, respectively.[24] The $dz/dt = 0$ curve is horizontal at $z^* = z^{**}$, while the $dk/dt = 0$ curve is negatively sloped. Long-run equilibrium occurs at the intersection of these two curves at the pair of values (k^{**}, z^{**}). This equilibrium is globally stable, as indicated by the arrows in the phase diagram.[25]

Calibration of the Model

To say something concrete about the effects of public policies (fiscal and sector-specific policies), the model is calibrated using a Cobb–Douglas production function $F(K, L) = Lk^\alpha$, a long-run growth rate of GDP (g^*) of about 0.05 per annum, rate of extraction $\beta = 1 - b$, retention rate definition $b =$ SUM $[(s_i(1-\alpha_i) v_i]$,[26] non-elite consumption ratio function $c_{ne} = 0.80$

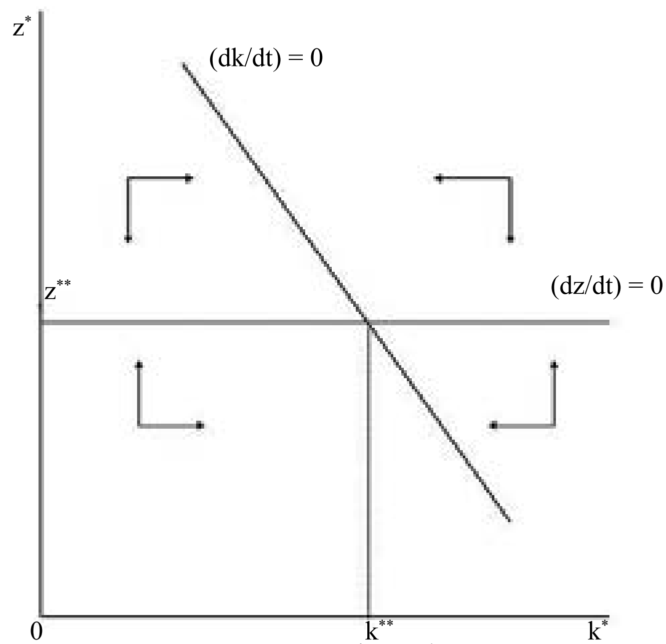

Figure 1

Long-run equilibrium

$+ (\beta + \tau_{ne})^{1.855}$, the equations for i_e, i_{ne}, h, A, and B and the following reasonable values of the parameters: $\alpha = 0.4273$; $b = 0.7553$ (for derivation, see below); $c_e = 0.6319$; $\tau_e = 0.10562$; $\tau_{ne} = 0.124$; $\delta = 0.04$; and $n = 0.03$.

Reliable empirical production functions for the other sectors (mining, construction, transport and utilities, and services) are not available. In their absence, it is assumed that α_o is equal to the estimated value of α_m, which is 0.4. To determine the sensitivity of the results to this particular assumption, a sensitivity analysis using alternative values for α_o of 0.3 and 0.5 is conducted later in this section.

Given the historical shares v_i of sector value added in GDP, the economy-wide retention rate b and the overall elasticity of GDP with respect to the aggregate capital stock α may be estimated as follows:

$$b = \text{SUM}\{[s_i/(1-\alpha_i)]v_i\} \quad i = a, m, o$$
$$= [0.418/(1-0.478)](0.35) + [0.3/(1-0.4)](0.20) + [0.5/(1-0.4)](0.45)$$
$$= 0.7553.$$
$$\alpha = \text{SUM}(\alpha_i v_i), \quad i = a, m, o$$
$$= 0.478(0.35) + 0.4(0.20) + 0.4(0.45) = 0.4273.$$

To calibrate the model, the following steps were taken.

1. The retention rate $b = 0.7553$ implies an extraction rate $\beta = 0.24473$ (both as fractions of labor's marginal product). The income share of the Philippine elite A has averaged 54% from 1961 through 1988 (Medalla et al., 1995).[27] Using the definitions $A = \rho(1-z^*)$ and $\rho = \alpha + \beta(1-\alpha)$, z^* turns out to be 0.048. The historical average (1960–1990) for i^* is about 0.20 (Montes, 1995). Using this value and substituting it into the $(dz/dt) = 0$ equation, $i^*_{ne} = 0.20(z^*) = 0.01$ in terms of GDP. The value for $i^*_e = 0.20 - 0.01 = 0.19$ in terms of GDP. In terms of elite and nonelite incomes, $i_e = i^*_e/(1-\tau_e)A = 0.319$ and $i_{ne} = i^*_{ne}/(1-\tau_{ne})B = 0.024$, where $\tau_e = -0.106$, $\tau_{ne} = 0.124$, $A = 0.54$, and $B = 0.46$. Several iterations were performed on the equations for i_e and i_{ne} corresponding to alternative values for c_e and ε in the c_{ne}-function $c_{ne} = 0.80 + (\beta + \tau_{ne})^{\varepsilon}$ to be consistent with $i_e = 0.319$ and $i_{ne} = 0.024$. The iterations yielded $c_e = 0.632$, $c_{ne} = 0.957$, and $\varepsilon = 1.855$.[28] The other equilibrium values of interest are: $\gamma_e{}^* = 0.0293$, $\gamma_n{}^*{}_e = 0.0001$, and $h^* = 0.00747$ (all measured as ratios to GDP).
2. Given $i^* = i^*_e + i^*_{ne} = 0.20$, $k^* = 4.03$ is obtained from the steady state
3. condition $(dK/dt)/K = g^* = 0.05$.[29]
4. Finally, the constant transformation parameter μ is obtained from the steady-state condition $(dL/dt)/L = g^* = 0.05$, given that $k^* = 4.03$ and $h^* = 0.00747$. This produces a value of $\mu = 1.475$.[30]

This calibration produces model values that are reasonably consistent with the observed post-war historical growth and income distribution data in the Philippines: a 5% growth rate of GDP per annum, 2% of GDP per capita per annum, and income shares of 54% and 46%, respectively, for the elite and non-elite groups of Philippine society. The implied value for the non-elite share of capital was about 5% of the total capital stock; the retention rate b and social extraction rate β were 75.5% and 24.5% of labor's marginal product, respectively; spending on political competition, mostly by the elite was nearly 3% of GDP; the aggregate rate of investment was 20% of GDP, of which 19% was undertaken by the elite; and the non-elite expenditures on nutrition, education, training, health care, and others aimed at improving the efficiency of labor averaged less than 1% of GDP.

The calibrated capital accumulation and wealth distribution curves are shown in the upper panel of Figure 2, labeled "$dk/dt = 0$ ($\beta = 0.244$)" and "$dz/dt = 0$ ($\beta = 0.244$)," respectively. The two curves intersect at $z^{**} = 0.048$ and $k^{**} = 4.03$, corresponding to $\beta = 0.244$. By construction, this pair of values is consistent with the observed income shares of the elite and non-elite and with the average 5% steady-state annual rate of growth in GDP over the post-war period, as shown in the lower panel.

Simulating Effects of Public Policies

Policies aimed at high growth with equity through reductions in the rate of social extraction include macroeconomic and financial measures that (a) minimize the net tax/benefit ratio applied to non-elite income and (b) encourage an increase in the non-elite

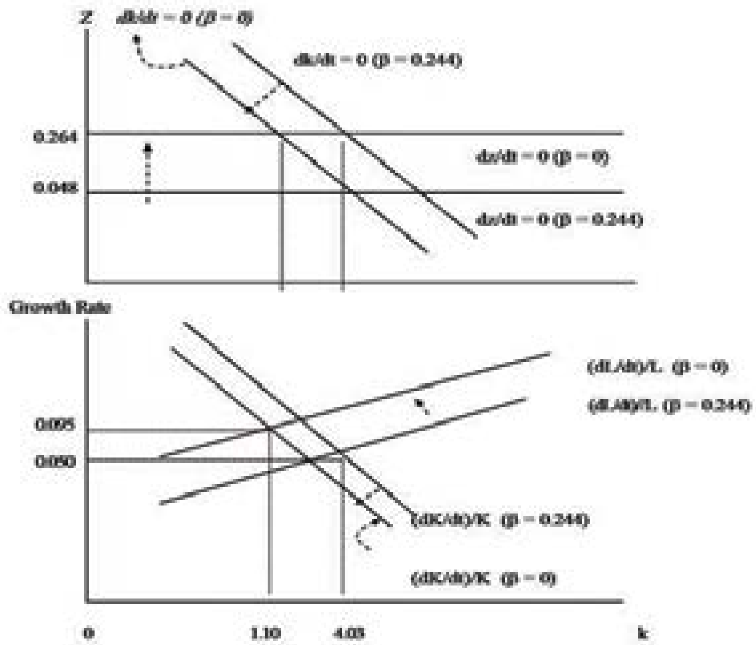

Figure 2

Effects of Eliminating Extraction

ownership of the capital stock; and sector/institutional measures that (c) eliminate extraction activities by each group including inter alia, strengthening and enforcing tenant/farmer rights and the role of labor unions in the collective bargaining process with the objective of raising the share of wages in value added to levels dictated by the relative contribution of labor to GDP (measured by $1 - \alpha$), opening up elite family corporations and subjecting them to more competitive pressure, and dismantling of oligopolies and oligopsonies. The model is simulated to determine the implications of some of these policies for the distribution of national income and wealth and overall economic growth. There are seven policy simulations. The first four simulations are sector/institutional policies in agriculture, industry, and other sectors aimed at altering separately (the first three simulations) and jointly (the fourth simulation) the factor shares in line with estimated values of α and $1 - \alpha$ for each sector. The next three simulations are fiscal in nature. Two simulations assume unchanged extraction rates, one characterized by a neutral fiscal stance (zero values for τ's) and the other by a progressive net tax incidence (reversal of the existing regressive incidence). The third and final experiment simulates the ideal situation in which extraction is completely eliminated and fiscal policy is neutral in its net tax incidence.

Sector-Specific and Institutional Policies

The agrarian policy simulation involves raising the ratio of the actual rental and wage shares in farm output to the ratio $\alpha_a/(1 - \alpha_a)$. This could be accomplished by negotiating sharecropping and lease-holding arrangements between farmers and landlords, and instituting procedures for compliance and adjudication of disputes. The simulation targets the actual wage share s_a to the level of the production elasticity ($1 - \alpha_a$), such that $b_a = 1$.

The results are reported in Table 2. The overall rate of retention b rises from 75.5% to 82.5%, implying a decline in the rate of extraction β from 24.5% to 17.5% of labor's marginal product. The asset distribution z increases to 11.5% of the total capital stock (from 5%). The distribution of income improves, with the non-elite share increasing to 53% of GDP (from 46%). The aggregate investment rate dips slightly from its base value of 0.2, with the non-elite share rising from 5% to 11.5%. The human investment rate nearly triples to more than 2% of GDP. These developments redress the imbalance in physical and human capital accumulation and lower the ratio of capital to effective labor to 2.5 (from 4). The productivity of both capital and labor is enhanced substantially, and the growth rate of per capita GDP increases to 4.5% per annum (from 2%).

Table 2. *Steady-State Economic Performance Under Alternative Public Policies*[a]

	Base [b]	Sector A[c]	Sector M[d]	Sector O[e]	All Sectors[f]	Fiscal[g]
β	0.244	0.175	0.144	0.169	0.000	0.244
z	0.048	0.115	0.143	0.120	0.264	0.385
A	0.540	0.467	0.437	0.461	0.314	0.349
B	0.460	0.533	0.563	0.539	0.686	0.651
i^*_e	0.190	0.173	0.165	0.172	0.128	0.103
i^*_{ne}	0.010	0.023	0.028	0.023	0.046	0.064
i^*	0.200	0.196	0.193	0.195	0.174	0.167
γ_e^*	0.029	0.017	0.013	0.016	0.000	0.009
$\gamma_n{}^*{}_e$	0.000	0.000	0.000	0.000	0.000	0.007
γ^*	0.029	0.017	0.013	0.016	0.000	0.016
h^*	0.007	0.021	0.027	0.022	0.062	0.054
k^*	4.03	2.52	2.12	2.44	1.10	1.14
$g^*- n$	0.02	0.045	0.055	0.047	0.095	0.085

[a] *Assumptions:* $n = 0.03$; $\delta = 0.04$; $\alpha = 0.4273$; $\alpha_a = 0.478$; $\alpha_m = 0.4$; $\alpha_o = 0.4$; $c_e = 0.63$; $c_{ne} = 0.80 + (\beta + \tau_{ne})^{1.855}$; $\mu = 1.475$. *The extraction rate* β *is a fraction of labor's marginal product; z is a fraction of total K owned by the non-elite; and A, B,* i^*, i^*_e, i^*_{ne}, γ^*, γ_e^*, $\gamma_n{}^*{}_e$, h^* *are fractions of GDP;* k^* *is ratio of capital to effective labor; and* $g^* - n$ *is the growth rate of per capita GDP.*

[b] $\tau_e = -0.106$; $\tau_{ne} = 0.124$; $s_a = 0.418$; $s_m = 0.3$; $s_o = 0.5$.

[c] $\tau_e = -0.106$; $\tau_{ne} = 0.124$; $s_a = 1 - \alpha_a = 0.522$; $s_m = 0.3$; $s_o = 0.5$.

[d] $\tau_e = -0.106$; $\tau_{ne} = 0.124$; $s_a = 0.418$; $s_m = 1 - \alpha_m = 0.6$; $s_o = 0.5$.

[e] $\tau_e = -0.106$; $\tau_{ne} = 0.124$; $s_a = 0.418$; $s_m = 0.3$; $s_o = 1 - \alpha_o = 0.6$.

[f] $\tau_e = -0.106$; $\tau_{ne} = 0.124$; $s_a = 1 - \alpha_a = 0.522$; $s_m = 1 - \alpha_m = 0.6$;
$s_o = 1 - \alpha_o = 0.6$.

[g] $\tau_e = 0.124$; $\tau_{ne} = -0.106$; $s_a = 0.418$; $s_m = 0.3$; $s_o = 0.5$.

The industrial policy simulation involves the improvement in the functioning of industrial labor markets to ensure that the actual factor shares do not deviate significantly from those implied by the estimated α_m, that is, $s_m = 1 - \alpha_m$, so that $b_m = 1$. Table 2 reports the results. The economy-wide retention rate b reaches an elevated level of 85.5% of labor's marginal product, implying an extraction rate β of 14.5% (a reduction of 10 percentage points from the base level). The effects on income and wealth distribution are more favorable than those produced by the agrarian reform, with the non-elite share of income and wealth increasing to more than 14% of the capital stock and more than 56% of GDP, respectively. The change in the composition of investment in favor of the non-elite strengthens, as does the rate of human investment, which rises to 2.7% of GDP. The capital/labor ratio is rationalized further to just over two, half of its base level. The larger enhancement in efficiency of the economy is reflected in a higher growth rate of per capita GDP (annual rate of 5.5%).

The policy reform in the other sectors has a quantitative target of raising s_o to (1 α_o). Because the reduction in the rate of extraction is broadly similar to the reduction under the agricultural policy reform, the effects on wealth and income distribution, physical and human capital accumulation, and growth rate of per capita capacity output are also broadly in line with those generated by the agrarian reform.

The last simulation involves simultaneous reforms in all sectors of the economy with the quantitative objective of ensuring that actual factor shares do not deviate significantly from those dictated by marginal productivity pricing. The retention rate rises to unity and the extraction rate to zero. The macroeconomic effects are dramatic. Political competition is eliminated. The non-elite increases its share of wealth to more than 26% of the total capital stock and its share of income to more than 68% of GDP (nearly two-thirds as wage income and just over a third as capital income). The non-elite steps up its investment rate to 4.6% of GDP, and the rate of human investment reaches its highest level at more than 6% of capacity GDP. This development rationalizes the capital/labor ratio from about four to just over one. The growth rate of per capita GDP increases to 9.5% per annum.

The effects of eliminating extraction on wealth distribution, capital intensity, and the growth rate of per capita output are graphed in Figure 2. In the upper panel, as β is reduced to zero the $dz/dt = 0$ curve shifts upward, and the $dk/dt = 0$ curve shifts downward to the left. The equilibrium non-elite share of wealth z^* increases to 0.264 and the equilibrium capital intensity k^* decreases to 1.10. In the lower panel, as extraction is eliminated, the capital growth curve shifts downward, but the labor growth curve shifts upward by much more. Consequently, the equilibrium capital/labor ratio falls to 1.10, and the growth rate of per capita capacity GDP increases to 9.5% per year.

Because political competition involves socially unproductive spending, its elimination and the reorientation of resources previously devoted to it toward investments in physical and human capital are desirable developments from the perspective of strong economic performance. Similarly, because the rate of non-elite saving is positively enhanced by reduced rates of extraction, maximizing the former by minimizing the latter is also a desirable objective for public policy.

Fiscal Policies

As alternatives to sector/institutional policies that eliminate the rate of extraction, two fiscal policy simulations are performed conditional on the existing rate of extraction. The results are compared with those that would have prevailed under the full elimination of extractive activities (the penultimate column in Table 2). The final simulation complements or supports the full elimination of extraction with a neutral fiscal policy stance. The first simulation under an unchanged extractive regime involves a neutral fiscal policy, that is, tax and expenditure policies that produce zero values for τ_e and τ_{ne}. The wealth and income distribution profiles improve, although by less than the improvement under the full elimination of extraction. The neutral fiscal stance raises the non-elite share of wealth to 20% and the share of income to more than 54%. The decline in the aggregate rate of investment is less by a percentage point, to 18.5% of GDP, with the elite maintaining a much larger share. The rate of human investment, at about 3% of GDP, is only half of the level attained under full elimination of extraction. Consequently, the growth rate of per capita GDP is more than three and a half percentage points lower, at 5.8% per year. The lower levels of investment in physical and human capital partly reflect the amount of resources consumed by political competition, at more than 2% of GDP.

The second fiscal policy simulation preserves the existing rate of extraction but acts to neutralize it by reversing the net tax incidence on the two groups, with the net tax rates assuming the following values: $\tau_e = 0.124$ and $\tau_{ne} = -\ 0.106$. The results reported in the last column of Table 2 are as dramatic as those attained when extraction is fully eliminated. Although yielding a strong growth rate of per capita GDP of 8.5% per annum (only a percentage point lower than under full elimination of extraction), the distributional effects on wealth are much larger—the non-elite share of capital increases to 38.5% of wealth (26.4% under no extraction)—whereas the distributional impact on income is broadly similar, with the non-elite income share rising to 65%. The aggregate rate of investment is lower at 16.7% of GDP, with the change in its composition leaning more in favor of the non-elite. The rate of human investment is only 0.6 percentage points lower, at 5.4% of GDP. The rate of political competition remains positive at 1.6% of GDP, with the non-elite now accounting for more than two-fifths (owing to the substantial increase in the non-elite share of capital). This rate of political spending naturally detracts from an otherwise higher growth rate of GDP. The redistributive fiscal policy in favor of the non-elite essentially finances this political competition and makes it possible for the non-elite to maintain a high growth rate of human investment and thus to support an elevated level of economic growth that is comparable to the level associated with the zero-extraction regime.

Because the ultimate goal for public policy is to minimize the wastage of scarce resources and to attain the maximum feasible growth rate in capacity output and at the same time to convince both groups of society to accept this goal, the final simulation involves a policy package consisting of a neutral fiscal policy stance and the elimination of extractive activities and hence of political competition by both groups. Neutrality in fiscal policy may be needed to persuade both groups, mainly the elite, to forego the rate of extraction and to convince the non-elite to forego progressivity in fiscal policy.[31] The implementation of this policy package requires prior political reforms aimed at strengthening the regulatory capacity and independence of the state from the particularistic interests of the private sector.

The results are more balanced in many respects and, therefore, have a better chance of acceptance by both groups. Besides attaining the highest level of per capita growth rate of capacity output (11.3% per year), largely on account of the elimination of political competition, the non-elite increases its share of capital to 40% of the total capital stock and its share of income to 75% of GDP. The aggregate rate of investment stands at about 16% of GDP, with the elite accounting for about 60%. What is most noteworthy is that, owing to the elimination of extraction, the rate of human investment is maximized at 8.5% of capacity GDP, which allows for maximum efficiency of the labor force. The capital/labor ratio is rationalized at 0.77, which implies a 158% increase in the output/capital ratio over its base level. At this stage, the elite/non-elite distinction gets blurred. The elite, representing a tenth of households, now accounts for 60% of capital (down from the base level of 95%) and for a quarter of GDP (down from the base level of 54%). An egalitarian society is born.

Sensitivity of Results to Assumption on α[32]

Table 3 shows the sensitivity of the results for the base run and for the simulated effects of the assumed elimination of extraction to changes in the assumption about the elasticity of output with respect to the capital stock, α. Alternative values of α equal to 0.38 and 0.47 were assumed.[33] As regards the sensitivity of the calibration of the model to alternative values of α, Table 3 shows that ε declines as α gets larger, with ε corresponding to $\alpha = 0.4273$ close to the average value. The wealth distribution variable z—the non-elite share of capital—is not affected by changes in α. As expected, the equilibrium capital–labor ratio increases with α.[34] The estimate for the transformation parameter μ is in the 1.3 - 1.6 range.[35]

On the sensitivity of the simulated effects of eliminating extraction, Table 3 shows that the improvement in the distribution of wealth and income and the decline in the equilibrium capital/labor ratio are not sensitive to changes in the assumption about α. To the extent that α is actually higher (at 0.4723 instead of 0.4273), the model overpredicts the growth rate of per capita output by two percentage points. Even in this case, however, the elimination of extraction that produces a growth rate of per capita *GDP* of 7% per annum is not insignificant. The reverse is true: to the extent that α is lower (at 0.3823) the model underpredicts per capita economic growth by more than two percentage points.

Table 3. *Sensitivity Analysis*

	$\alpha = 0.3823$	$\alpha = 4273$	$\alpha = 0.4723$
Base simulations			
ϵ	2.149	1.855	1.512
μ	1.616	1.475	1.271
z	0.048	0.048	0.048
k^*	3.64	4.03	4.54
Simulated effects of eliminating extraction			
z	0.280 (+0.232)	0.264 (+0.216)	0.227 (+0.179)
A	0.275 (-0.265)	0.314 (-0.226)	0.365 (-0.175)
B	0.725 (+0.265)	0.686 (+0.226)	0.635 (+0.175)
k^*	0.84 (-2.80)	1.10 (-2.93)	1.58 (-2.96)
$g^* - n$	0.112 (+0.092)	0.095 (+0.075)	0.073 (+0.053)

Philippine Macroeconomic Experience

The fact that the present analytical framework can shed light on the long-run growth performance of the Philippine economy should not come as a surprise; it was intended to do so. The question is whether the Philippines fits in the above conceptualization. The institutional facts about Philippine social, political, and economic structures point to an affirmative answer. Aided by a weak and underdeveloped state machinery, the political and economic elite had a dominant position over the non-elite by virtue of majority ownership of land and other productive capital assets and the effective exercise of political power. The social extraction parameter β and the political competition rate γ summarize the politics of growth and growth of politics, respectively. Both politics and economy were characterized by parallel oligopolies, whose powers were disguised by ostensible trappings of democracy and an unruly but ultimately ineffective press. New entrants did not destabilize the "game" because they only wanted in.[36]

The political and economic power of the elite had been manifested not only in oligopolistic behavior in output markets and oligopsonistic behavior in labor markets but also in the exercise of brute force.[37] Referring to the monopolization of the sugar industry under martial law, Seagrave (1988, pp. 285–286) stated:

> (Through the early1980s), cane workers were paid less than a dollar a day. The sugar barons always had been criticized for this exploitation and for salting their profits abroad, but under the (monopolization of the sugar industry), costs rose and profits fell, planters stopped their old-fashioned paternalism (such as it was), abolished free services, cut payrolls, and forced laborers to pay old debts. Said one grower: "If the planters are squeezed, we squeeze our labor." Real income in the cane fields dropped to the lowest point since the beginning of the plantation system in the late eighteenth century. In 1986, most Filipino sugar workers received less than 80 cents a day, in pesos that had lost their buying power by more than half, so in real terms, they earned one-third their 1940

> wages. On Negros alone, 750,000 children were suffering malnutrition, existing on meager rations of sweet potato and cassava, hundreds of them going blind, thousands suffering brain damage. While the world agonized over famine in Ethiopia, a worse famine was sweeping what Manila travel brochures persisted in calling Sugarlandia.

On the exercise of coercion at the local level, McCoy (1993, p. 15) stated: “On the frontiers, local elites formed private armies to defend their extraction of net resources through logging, mining, or fishing—the basis for wealth in many localities.” He also cited as a specific example the extralegal transport “tax” paid by tobacco farmers to a provincial warlord during the 1960s.

In the Philippine context, a high concentration of capital in the hands of a few (low z) and a positive rate of extraction (an elevated level of β, supported by a positive and elevated level of τ_{ne}) reflected the following forces at work.

Wealth Distribution

A low z stemmed from a highly skewed distribution of capital assets, particularly land, with the majority of Filipinos owning little land or physical capital. Because land was proven collateral for obtaining credits used in generating future income, the highly skewed wealth distribution translated into a correspondingly highly skewed distribution of income. It had been suggested that a policy of raising the non-elite share of capital through sector/institutional reforms and fiscal policies would improve income distribution and simultaneously raise the long-run growth rate of per capita capacity output.

The Rate of Social Extraction

A high extraction rate β is sustained by the following factors.

Inflation

Recall that the obverse of the retention rate b is the social extraction rate $\beta = 1\ \ b$, where $b = ae$, a is the fraction of the price of the domestic good produced by labor and capital reflected in the valuation of the real wage rate, and e is the fraction of the marginal physical product of labor actually paid out. The term a is the price or inflation adjustment factor, and the term e is the real or productivity adjustment factor. The discussion below focuses first on the inflation factor, then on the actual division of output between capital and labor.

As analyzed by Bautista (1976), Philippine inflation had been fueled by inadequate food supplies and high import dependency coupled with a lack of export substitution. Policies impinging upon food production capability exacerbated food shortages, whereas trade and industrial policies served to keep the high import and the low export ratios, thus making domestic inflation heavily influenced by developments in external prices and periodic depreciation of the exchange rate. The domestic import-substituting industry had been protected by import restrictions and high tariffs, resulting in inflated prices of industrial products. To these factors may be added periodic excess liquidity generated by the Central Bank financing of the fiscal deficit, which reflected the narrowness of the tax base (particularly low taxation of income from property) and generous subsidies to the business elite.

These considerations are important, particularly in a country like the Philippines that already suffers from severe inequalities in the distribution of income and wealth (low B and low z) because of the land-tenure arrangements, lax enforcement of minimum wage legislation, and the highly regressive nature of the incidence of both statutory taxation and inflation.[38] On the latter, Bautista (1976, p. 204) commented, “The redistribution inequities of rising consumer prices is a fertile ground for social conflict against which reasonable safeguards should be provided...,” such as “income support programs for those hurt by the inflation, emergency surtaxes on income and wealth exceeding specified cut-off levels, changes in government expenditure pattern to provide greater benefits to low-income families.” Some of these safeguards are included in the net tax-spending policy parameter τ_{ne} in the present framework.[39]

Extractive Activities

These activities are summarized by the real retention parameter e in the extraction rate definition $\beta = 1 - b = 1 - ae$ and include a feudal land tenure system and an oligopsonistic industrial structure, reflecting the dominance of a few members of the land-based business elite (Seagrave, 1988; McCoy, 1993). The International Labor Office (1974, p. 18) report stated, “At any rate, most of the gains in agricultural income resulting from an improvement in agricultural terms of trade and an increase in productivity per hectare in the 1960s accrued to landowners, whether landlords or owner-cultivators." A meaningful agrarian policy that includes strengthened and enforced farmer/tenant rights and industrial policies that strengthen labor's bargaining position in wage negotiations will likely reduce the extraction rate 1 b by lowering the actual rental/wage ratios across industries to correspond more closely to the ratio of output elasticities of capital and labor.

The aforementioned high extraction rate β was supported by a positive rate of net taxation of non-elite income τ_{ne}. Based on studies on the incidence of direct and indirect taxation and on the distribution of public goods reported by Tan (1976), the Philippine tax system was found to be highly regressive, owing mainly to the reliance on indirect taxes such as customs duties, production, and sales taxes. Both the 1961 and 1971 studies of tax incidence by the Philippine National Tax Research Center indicated that the poorest and middle-income families, respectively, paid 37% and 18% taxes. Netting out the benefits received (such as educational and health services), the redistributive effects of public finance were found to be very weak when all public goods were counted, including administrative expenses and national defense.

All the above elements were buttressed by political factors. The privatization of public interests (dominance of private over public interests) reflected the absence or inadequacy of political independence and regulatory capacity on the part of the Philippine ruling elite (Montes, 1988, 1989; Montes & Ravalo, 1995).

In sum, the ability of the Philippine political and economic elite to extract a fraction β of labor's marginal revenue product was reinforced by certain institutional arrangements and policy distortions: (a) the dominance of a few land-based families in the political arena, which enabled public finance activities to work in their interests and against the non-elite; (b) agricultural, industrial, and trade regimes that were stacked in favor of the elite and that led to periodic food shortages and balance of payments crises and thus to inflationary pressures; (c) the existing land tenure system and industrial structure that extracted a portion of labor's marginal product; and (d) the elite's effective suppression of legitimate labor union activity, backed by private armies at the local level.

The results were declining real wage incomes, driven to subsistence levels in large sections of the dominant agricultural sector, resulting from ceilings on prices of food and other agricultural products and soaring prices of industrial products that served as inputs to the agricultural sector. Stagnant or declining agricultural wage incomes (in real terms) dampened the demand for industrial products (the Keynes-Kalecki effect) and, combined with the existence of efficiency wages in the formal urban sector, led to persistent unemployment and excess capacity.[40]

These developments intensified political competition to increase the level of β in order to maintain total elite income. The extraction parameter β reflected these wage-price distortions[41] emanating from the ruling elite's fiscal, agricultural, trade, and industrial policies and from the same land tenure system inherited from the Spanish colonial era.

Although the growth framework developed in this paper does not explicitly incorporate a variable rate of unemployment, the relationship between the rate of factor utilization and the rate of extraction is particularly useful now because, unlike export-oriented (EO) industrialization, the Philippine elite opted for an import-substituting (IS) industrial strategy. The higher β associated with the IS strategy has important implications. First, the scale of operations of industrial firms is generally smaller than that of firms that cater to the world export markets (EO strategy). Empirical studies have shown that the scale factor is more important than relative factor prices in determining the level of capital utilization (Bautista et al., 1981); even when faced with lower capital costs, large firms find it easier to utilize capital at a higher rate, owing to technological and management economies of scale. Conversely, relatively smaller firms, such as those operating in the Philippines, tend to have a lower rate of capital utilization. Second, as a higher extraction rate β reduces real wages, the factor utilization rate declines because of the shrinking domestic demand for industrial products.

Recent Economic Developments

Owing to stabilization and structural policies—including institutional reforms, more progressive fiscal net incidence implemented, and the adoption of flexible inflation targeting—Philippine macroeconomic performance has improved considerably (see Villanueva et al., 2023, Ch. 12). Growth started accelerating in 1993 reflecting productivity improvements and smaller distortions in industry. The average real GDP growth for the period 1993 to 2021 increased to 4.2%, compared to its 1981–1992 average of 1.6%. The government has improved the protection of property and contract rights and the rule of law, promoted fiscal, monetary, and financial stability, sustained efficient financial intermediation, built and maintained public infrastructure, and supported education, training, and digital technology. According to the World Bank (2022), the Philippines has made considerable progress in reducing poverty. Between 1985 and 2018, poverty fell by two-thirds. However, income inequality did not begin to decline until 2012.

Guided by the principles covered by Villanueva et al. (2023), Chapter 12 of the same volume narrates the evolution of a successful strategy of adjustment and growth practiced by the case of the Philippines that had shown stellar pre-COVID-19 pandemic growth performance, low and stable inflation, and a sustainable external current account position. In this regard, Peter Wallace's (2022)[42] 12-point policy agenda for the Marcos administration is well-placed and logically follows from Villanueva et al.'s (2023) analytic and empirical chapters, particularly the emphasis on upgrading the educational and health sectors of the economy; expansion and modernization of the public infrastructure; increased investments in physical, human and intellectual capital, including education-training-experience of workers; and, in both public and private sectors, widespread adoption of blueprints, methods, and processes to efficiently produce goods and services, including IT, R&D, applied software development, Internet, Internet of Things, 5G technology, AI, business management software and similar high-tech, intellectual activities.[43]

Summary and Conclusion

Considerations of social equity argue for lowering the rate of social extraction and improving the distribution of wealth and income. This paper has shown that they should be made explicit objectives of economic growth because their attainment is essential to a broad-based and rapid increase in the growth rate of per capita income. A substantially less unequal distribution of wealth, a more progressive incidence of public finance (or at least a neutral net tax incidence) to provide the majority of the working population access to basic goods and infrastructure services, a more neutral trade and industrial policy (neutral with respect to exports and import substitutes), improved labor market policies to promote efficiency in resource allocation, and sound macroeconomic policies that achieve and maintain a low inflation environment would imply a high value for the retention rate, a low value for the social extraction rate, much-improved distribution of income and wealth, and a rapid growth rate of per capita income.

Strengthening the political independence and regulatory capacity of the Philippine state is required to make economic policy reforms implementable (the lowering of the net tax rate on the non-elite by the ruling elite, the needed reforms in the wage-setting process in the different sectors) so that extraction falls to a minimum level and wealth ownership is broadened.

This paper has suggested that in a society such as the Philippines, where the initial distribution of economic wealth and political power has had long historical roots and been largely nonmarket determined, the implementation of progressive or at least neutral fiscal policy and sector-cum-institutional policies will not impede economic growth and efficiency. On the contrary, it has been shown that such policies are an evolutionary way to correct the initial wealth distribution, lower the social rate of extraction, raise the efficiency of both capital and labor, and accelerate the growth rate of per capita national income.

Notes

1 For related regional and Philippine-specific literature from 2010 onwards, see Rabiul et al. (2020), Rutkowski (2015), Sridevi (2022), and Tuano et al. (2019). Also see the United Nations sustainability agenda, particularly SDG #1, #8, and #10.

2 The aggregate production function is $Y = F(K, L) = Lf(k)$ with the standard properties, where Y is potential GDP, K is capital, L is labor, and $k = K/L$. These properties, also known as the Inada (1963) conditions, are: $\lim \partial F/\partial K = \infty$ as $K \to 0$; $\lim \partial F/\partial K = 0$ as $K \to \infty$; $f(0) > 0$; $f'(k) > 0$; and $f''(k) < 0$, for all $k > 0$. A class of production functions satisfying these conditions is the Cobb–Douglas form, which is used to calibrate and simulate the growth model developed in this paper. The simple function used is $F(K, L) = Lk\alpha$, where α is output elasticity with respect to K, which includes land and the stock of entrepreneurial capital, in constant pesos; $L = EN$, where E is an efficiency index that measures the quality of the labor force, and N is the working population, L is measured in efficiency units,

in man-years; $K = K_e + K_{ne}$; Y 's are group disposable incomes, in constant pesos; r and w are profit and wage rates, respectively, equal to actual gross rental share ρ multiplied by Y/K and to actual gross wage share ω multiplied by Y/L, where $\rho = \alpha + \beta(1 - \alpha)$, $\omega = (1 - \beta)(1 - \alpha)$, $\beta = 1 - b$ is the extraction rate, and b is the fraction of labor's marginal product paid out as wages; τ_e and τ_{ne} are net tax rates on elite and nonelite income (taxes paid net of benefits received), respectively; c's and i's are group consumption and investment rates; h is the fraction of nonelite income devoted to raising the efficiency or quality of labor, such as spending on education, training, health, and nutrition, μ is a parameter that translates these expenditures in pesos into units of L; and γ's are group rates of spending on political competition. A full discussion and derivation of these parameters are given in the main text.

[3] About 54% on the average from 1961 through 1988 (Medalla et al., 1995).

[4] The Philippines was under Spanish rule from 1521 through 1898.

[5] To the extent that the rate of unemployment increases with the rate of extraction, the conclusions are reinforced when variable rates of factor utilization are incorporated.

[6] The ratio of benefits to income by income class has been estimated by Tan (1976) based on allocators from surveys of households.

[7] The definition of political competition as a form of consumption excludes political activity that is directly or indirectly productive (generates or encourages private investment). For example, expenditures associated with a group's sponsorship of weddings or baptisms are a form of political competition, while lobbying costs associated with legislation to reduce official red tape are not. Political competition also excludes income transfers, which may be used for productive investment.

[8] In this paper, the term investment refers to physical investment. Investment in human capital will be termed human investment.

[9] Increasing returns may be an alternative source of the discrepancy. However, Sicat's massive empirical study of 18 industries, which involves estimating unrestricted output elasticities with respect to capital and labor, found that in all those industries the sum of output elasticities is not statistically different from one. There is thus empirical support for the assumption of constant returns to scale in the Philippine manufacturing sector.

[10] The retention rate b reflects nominal and real adjustments. Let the nominal wage rate $w = (aP)[e(1 - \alpha) k\alpha]$, where a is the fraction of the price of the domestic good produced by labor and capital and e is the fraction of the physical marginal product of labor retained as wages. The term a is the nominal or inflation adjustment factor, and e is the real adjustment factor. Thus, b in the present growth framework is the composite term ae. If $a = 1$, the full price of the good is reflected in the nominal wage rate; if $e = 1$, the full physical marginal product of labor is paid out.

[11] The parameter β nets out the extractive activities of members of each group against each other. See the Philippine study by McCoy (1993).

[12] For example, oligopsonistic labor markets involve some extraction of labor's marginal product, in addition to producing lower levels of employment. Land tenure arrangements, the extent of land ownership by farmers, and the strong bargaining position of the elite in other sectors of the economy determine the size of β.

[13] The determinants of β are driven by elite policies (Jurado, 1974). In share-cropping arrangements, if factor payment is made in the extracted output, workers may sell it either at market price P (in which case β tends toward zero) or at below P (for example, ceiling price of rice, in which case $\beta > 0$). The other institutional determinant of β is the set of arrangements on the actual division of real output between owners of capital and laborers. If this division reflects marginal productivity pricing, then $\beta = 0$; otherwise $\beta > 0$.

[14] Derived from Sicat's $\rho/\omega = [\alpha + \beta(1 - \alpha)]/[(1 - \beta)(1 - \alpha)]$ and Eq. (5).

[15] $\partial\beta/\partial\lambda = -[\alpha/(1-\lambda)2]/[\alpha+\lambda/(1-\lambda)]2 < 0$; and $\partial\beta/\partial\alpha = (1-\beta)/[\alpha+(\lambda/(1-\lambda))] > 0$.

[16] Capital includes farm equipment, irrigation, and land.

[17] A mathematical proof of this statement is available from the author on request. The optimal criterion is the maximization of the steady state growth rate of real income by each group.

[18] The economy-wide $\alpha = 0.4273$ is a weighted average of the α_i of the agricultural, manufacturing and other sectors, weighted by their shares v_i in total value added ($\alpha_a = 0.478$; $\alpha_m = \alpha_o = 0.4$; $v_a = 0.35$; $v_m = 0.20$; $v_o = 0.45$). This overall α is close to the value of 0.45 suggested by Williamson (1969), which is a scaled-up value of the overall $\alpha = 0.30$ used by Lampman (1967). The sensitivity of the results to changes in the assumption about the overall α is discussed in the next section. The estimates for the net tax rates are taken from Table 7.11 in Tan (1976), in which there are seven income classes; τ_e is the net tax-benefit ratio applied to the top 20% (the top income class) and τ_{ne} is the average of the net tax-benefit rates applied to the next lowest six income classes, weighted by the income share of each class in total family income of the lowest six classes. These rates consider group I benefits, which are public expenditures that directly benefit families such as education and health, the distribution of which was estimated by allocators obtained from a survey of Philippine households. The value for τ_e is adjusted for nonsocial expenditures, which generally benefit mostly the elite. The value for c_e and the parameters of the c_{ne}-function are explained in the discussion of the calibrated model in the next section.

[19] In the modern-day world there is, of course, an upper limit to β. The maximum value for β is not feasible in practice simply because no workers and thus no elite can survive with this extraction rate.

[20] This model extends the basic endogenous growth model developed in Villanueva (1994) by incorporating the rate of extraction, endogenous political expenditures, differential propensities to save, and the distribution of national income and wealth.

[21] The constant intercept serves to establish a floor on the consumption ratio as $\beta + \tau ne$ approaches zero.

[22] The labor growth equation is derived as follows. Let (i) L = EN , where L is labor, N is population, and E is a technology or efficiency index. N is assumed to grow at a constant rate n, (ii) dN/dt = nN . The efficiency of workers is assumed to increase with resources devoted to education, on-the-job training, health, and nutrition, (iii) (dE/dt)N = μhYne, Yne = $(1 - \tau ne)$BY and μ is a constant that transforms resources measured in constant pesos into units of L measured in man-years. Time differentiating (i), (iv) dL/dt = (dE/dt)N + E(dN/dt). Substituting (ii) and (iii) into (iv) yields Equation 10 in the main text.

[23] Time is not explicit in the model. Partly for this reason, phase-diagramming is used to analyze the existence, uniqueness, and global stability of the growth model.

[24] This growth model may be viewed as a modified version of the Pasinetti (1962) model, with important extensions that allow for endogenous growth and a positive rate of social extraction. These modifications, particularly endogenous growth, are critical because they resolve the Pasinetti paradox analyzed by Samuelson and Modigliani (1966), which says that the equilibrium rate of return to capital is given by the ratio n/sc (n is the growth rate of labor adjusted for exogenous Harrod-neutral technical change and sc is the saving rate of the capitalist class), and is thus independent of sw (saving rate of the working class) and the form of the production function. Bearing in mind a rough correspondence between Pasinetti's capitalist and working classes and the modified model's elite and nonelite groups, and the modified model's broader concept of saving, it is obvious from the steady-state Equation 13 that the equilibrium rate of return to capital in the modified model is given by $(n + \delta + \mu h^*k^*\alpha)\rho/i^*$, which, from the definitions of h* and i*, is dependent on group saving rates $1 - ce$, $1 - cne$, and the form of the production function.

[25] A phase diagram is a graphical tool to analyze the existence and stability of equilibrium for a system of two first-order differential equations not explicitly involving time. In Figure 1, the dk/dt = 0 curve graphs the condition $(dk/dt)/k = i^*k\alpha{-}1 - \mu h^*k\alpha - (n + \delta) = \Phi(k, \theta) = 0$, which says that k is not changing. The dz/dt = 0 curve graphs the condition $(dz/dt)/z = [(i^*ne/z) - i^*)k\alpha{-}1 = \Psi(k, \theta) = 0$, which says that z is not changing. The intersection of the two curves defines the equilibrium point, at which neither k nor z is changing. The directional arrows suggest the movement of k and z when they are in disequilibrium. The horizontal arrows, parallel to the k axis, follow from the $(dk/dt)/k = i^*k\alpha{-}1{-}\mu h^*k\alpha{-}(n{+}\delta)$ equation, which indicates that $\partial(dk/dt)/k]/\partial z < 0$. This means that a movement to the right of the (dk/dt) = 0 curve decreases (dk/dt) to a negative value; k will decrease, and the horizontal arrows point to the left. Similarly, a movement to the left of the (dk/dt) = 0 curve increases (dk/dt) to a positive value; k will increase, and the horizontal arrows point to the right. . The vertical arrows, parallel to the z-axis, follow from $(dz/dt)/z = [(i^*ne/z) - i^*]k\alpha{-}1$ equation, which indicates that $\partial(dz/dt)/z]/\partial z < 0$. This means that a movement above the dz/dt = 0 curve decreases (dz/dt) to a negative value and z will fall; the vertical arrows point down. Similarly, a movement below the (dz/dt) = 0 increases dz/dt to a positive value and z will increase; the vertical arrows point up.

[26] The si for i = a, m are actual values 0.418 and 0.30, and the vi are historical average values 0.35, 0.20, and 0.45 for i = a, m, and o. The factor shares and output elasticities for agriculture are for rice (Hayami & Kikuchi, 1981; Kikuchi, 1991) and those for manufacturing are from Sicat (1968). The factor share for others so = 0.50 is a conservative assumption (value added in the other sectors is evenly split between K and L). Together with an assumed value for αo = 0.40, bo equals 0.8333, somewhat higher than ba = 0.80 and much higher than bm = 0.50.

[27] It started at about 56 percent in 1961 and declined to 52 percent in 1988.

[28] As previously noted, the constant term equal to 0.80 in the function $cne = 0.80 + (\beta + \tau ne)1.855$ serves to impose a floor on the consumption rate as $\beta + \tau ne$ approaches zero. Owing to this constant term, the overall elasticity of cne with respect to $\beta + \tau ne$, which is equal to $\varepsilon[1 - (0.80/cne)]$, is much lower than $\varepsilon = 1.855$. Evaluated at the mean value of cne = 0.9, the overall elasticity of cne with respect to $\beta + \tau ne$ is only about a tenth of ε.

[29] $k^* = [(g^* + \delta)/i^*](1/(\alpha{-}1))$.

[30] $\mu = (g^* - n)/h^*k^*\alpha$.

[31] Progressivity in net tax incidence likely will be resisted by the elite.

[32] In Table 3, for base simulations: $\tau e = -0.106$; $\tau ne = 0.124$; A = 0.54; B = 0.46; g□ = 0.05; and g□ −n = 0.02. For zero extraction simulations: b = 1, which implies $\beta = 0$. The parameters ε and μ are held identical to their respective base values. Numbers in parentheses represent deviations from base values.

[33] These were generated by alternative values of αo equal to 0.3 and 0.5 (the base value of αo is 0.4).

[34] An increase in α tends to raise the rate of investment in K and to lower the spending on L (since $1 - \alpha$ is smaller), thus increasing the ratio of K to L.

[35] Recall that μ translates spending on education, on-the-job training, health and nutrition, measured in constant pesos, into labor augmentation in efficiency units, measured in man-years.

[36] There is the popular statement attributed to a Filipino politician, "What are we in power for."

[37] The labor/capital relations in Philippine agriculture and the objective of maximizing short-run industrial profits of the traditional Filipino family capitalist under oligopsonistic labor markets contrast with the Japanese non-capitalist market economy in which the independent land-owning farmer has replaced the traditional landlord

in agriculture, and in which the objective of the industrial stakeholder is to maximize long-run output and preserve market shares while preserving employee sovereignty. See Sakakibara (1993).

[38] Although the growth model treats β and τ 's as exogenous, there is a possibility that they are endogenous variables that interact with the major macroeconomic variables. A high extraction rate β exacerbates asset inequality by producing a small value of z, which tends to concentrate political power in the elite and to encourage a relatively high value for the net tax incidence τne and a low or even negative value for τe , a low value for the retention rate b and thus a high value for the social extraction rate β. A high β value, in turn, further exacerbates asset inequality (measured by a yet lower level of z).

[39] For empirical evidence on the negative effects of inflation on income equality in 18 industrial and developing countries, see Bulir and Gulde (1995). In explaining Philippine inflation, Bautista (1976) cited supply and demand factors. On the demand side, given the narrow tax base fiscal deficits were often financed partly by inflationary money-creation at the central bank. On the supply side, Bautista mentioned the inadequate policies with regard to food production capability (inadequate irrigation, transportation, and other infrastructure facilities in food-producing regions; inadequate provision of agricultural credit, fertilizer, technical assistance and marketing facilities; existing land tenure system). In addition, the policy of import substitution of finished products has engendered high import requirements of the economy; energy conservation and development policies have been inadequate; and incentives for a diversified export structure have been weak; these policies have subjected the domestic economy to the inflationary tensions generated in the foreign trade sector.

[40] For an explanation of declining real wages in the Philippines in terms of the standard trade-theoretic Stolper–Samuelson–Rybczynski model sans growth, see Lal (1983). Lal (1983, p. 11) observed: “There is some evidence of a falling wage share and output capital ratio and rising capital intensity over the last two decades.” As the elasticity of substitution between the capital and labor is close to unity (Williamson, 1971), which would imply in the steady-state constant factor shares, constant output capital ratio, and constant capital intensity in a standard neoclassical growth model with exogenous labor-augmenting technical progress, Lal (1983, p. 45, footnote 3) explained the observed stylized facts about the Philippines by invoking “sufficiently Hicks or Harrod capital using biased technical progress”. By contrast, the growth model developed in the present paper can explain these stylized facts, despite its standard neoclassical assumption of Harrod-neutral labor-augmenting technical progress. The decline in real wages owing to repeated devaluations of the peso is captured in the less than unitary value of the retention parameter b in the present framework.

[41] These distortions drove a wedge (Sicat’s λ and the present model’s b) between the rental/wage ratio and the ratio of the marginal products of capital and labor.

[42] Peter Wallace (2022) is a successful and influential businessman in the Philippines. Read proposals 1–5 and 7–9 in his column.

[43] See the model of Chapter 4 in Villanueva et al. (2023) and its extension in Villanueva (2022) to include the overarching role of government and economic institutions in long-run economic growth. The World Bank regularly publishes six Worldwide Governance Indicators (WGI): (1) Voice and Accountability, (2) Political Stability and Absence of Violence/Terrorism, (3) Government Effectiveness, (4) Regulatory Quality, (5) Rule of Law, and (6) Control of Corruption. For an explanation of these indicators, read Kaufman et al. (2010). For regularly published data, see https://databank.worldbank.org/reports.aspx?ReportName=WGI-Table&Id=ceea4d8b. The effectiveness of growth policies and the speed of adjustment to steady state growth are determined by individual country values of the six WGI. Improvements in the WGI are political decisions made by government officials and the body politic in a democracy. The stellar pre-COVID-19 pandemic growth performance of the Philippines was supported by improvements in four out of the six WGI since 2010, namely (2), (3), (4), and (6).

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References

Bautista, R. (1976). Inflation in the Philippines. In J. Encarnacion, Jr. (Ed.), *Philippine economic problems in perspective* (pp. xx–xx). Institute of Economic Development and Research, University of the Philippines.

Bautista, R., Hughes, H., Lim, D., Morawetz, D., & Thoumi, F. E. (1981). *Capital utilization in manufacturing*. Oxford University Press.

Bulir, A., & Gulde, A. (1995). *Inflation and income distribution: Further evidence on empirical links* (International Monetary Fund Working Paper 95/86). International Monetary Fund.

Hayami, Y., & Kikuchi, M. (1981). *Asian village economy at the crossroads: An economic approach to institutional change*. University of Tokyo Press.

International Labor Office. (1974). *Sharing in development: A programme of employment, equity, and growth for the Philippines*. ILO.

Inada, K.-I. (1963). On a two-sector model of economic growth: Comments and generalization. *Review of Economic Studies*, *30*, 119–127.

Jurado, G. (1974). *The political economy of labor-capital relations and the role of the state: A preliminary sketch of Philippine manufacturing, 1956–1972* (Institute of Economic Development and Research Discussion Paper No. 74–22). University of the Philippines.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). *The worldwide governance indicators: Methodology and analytical issues* (Policy Research Working Paper No. 5430). World Bank.

Kikuchi, M. (1991). Factor share in agricultural production function: Definition, estimation, and application. In *Basic procedures for agro-economic research* (pp. xx–xx). International Rice Research Institute.

Lal, D. (1983). *Real wages and exchange rates in the Philippines, 1956–1978* (World Bank Staff Working Paper No. 604). The World Bank.

Lampman, R. (1967). The sources of post-war economic growth in the Philippines. *The Philippine Economic Journal*, *7*(Second Semester), 1–24.

McCoy, A. (Ed.). (1993). *An anarchy of families: State and family in the Philippines*. Center for Southeast Asian Studies.

Medalla, E., Tecson, G., Bautista, R., & Power, J. (1995). *Philippine trade and industrial policies: Catching up with Asia's tigers*. Philippine Institute for Development Studies.

Montes, M. (1988). The business sector and development policy. In M. Montes & K. Koike (Eds.), *National development policies and the business sector in the Philippines,* 23-300. Institute for Developing Economies.

Montes, M. (1989). Financing development: The 'corporatist' versus the 'democratic' approach in the Philippines. In M. Urrutia, S. Ichimura, and S. Ukawa. (Eds.), *The political economy of fiscal policy*. United Nations University.

Montes, M. (1995). The private sector as the engine of Philippine growth: Can heaven wait? *Journal of Far East Business*, *1*(Spring), 132–147.

Montes, M., & Ravalo, J. (1995). The Philippines. In S. Haggard & C.H. Lee (Eds.), *Financial systems and economic policy in developing countries.*Cornell University Press.

Pasinetti, L. L. (1962). Rate of profit and income distribution in relation to the rate of economic growth. *Review of Economic Studies*, *29*, 267–279.

Power, J., Sicat, G., & Hsing, M. (1971). *Industry and trade in some developing countries*. Oxford University Press.

Rabiul, I., & McGillivray, M. (2019). Wealth inequality, governance and economic growth. *Economic Modelling*, *88*, 1-13.

Rutkowski, J. (2015). *Employment and poverty in the Philippines*. World Bank.

Sakakibara, E. (1993). *Beyond capitalism*. Economic Strategy Institute, University Press of America.

Samuelson, P. A., & Modigliani, F. (1966). The Pasinetti paradox in neoclassical and more general models. *Review of Economic Studies*, *33*, 269–301.

Seagrave, S. (1988). *The Marcos dynasty*. Harper and Row.

Sicat, G. (1968). *Industrial production functions in the Philippines* (IEDR Discussion Paper No. 68–18). Institute of Economic Development and Research, University of the Philippines.

Sridevi, Y. (2022). Does vulnerable employment alleviate poverty in developing countries? *Economic Modelling*, *116*(C), 84-148.

Tan, E. (1976). Income distribution in the Philippines. In J. Encarnacion, Jr. (Ed.), *Philippine economic problems in perspective*, 214-261. Institute of Economic Development and Research, University of the Philippines.

Tuano, P., & Cruz, J. (2019). Structural inequality in the Philippines: Oligarchy (im)mobility and economic transformation. *Journal of Southeast Asian Economies*, *36*(3), 304–328.

Villanueva, D. (1994). Openness, human development, and fiscal policies: Effects on economic growth and speed of adjustment. *International Monetary Fund Staff Papers*, *41*, 1–29.

Villanueva, D. (2022). Institutions and growth: A macroeconomic framework. *DLSU Business and Economics Review*, *32*, 1-13.

Villanueva, D., Mariano, R., & Guinigundo, D. (2023). *Economic adjustment and growth: Theory and practice*. World Scientific Publishing Company.

Wallace, P. (2022, June 13). If it were me. *Philippine Daily Inquirer*. https://opinion.inquirer.net/153885/if-it-were-me

Williamson, J. (1969). Dimensions of postwar Philippine economic progress. *Quarterly Journal of Economics*, *83*, 93–109.

Williamson, J. (1971). Capital accumulation, labor saving and labor absorption once more. *Quarterly Journal of Economics*, *85*, 40–65.

World Bank. (2022). *Overcoming poverty and inequality in the Philippines: Past, present, and prospects for the future*. International Bank for Reconstruction and Development/The World Bank.